OPENING ADDRESS

Peter Grilc, Ph.D
INLA President,
Chairman of the Organizing Committee

Ladies and Gentlemen, dear Colleagues, dear INLA Members, dear Professor Marko Pavliha, vice-president of the Parliament, also our professional colleague and former nuclear lawyer, dear Mr. Starman, State Secretary at the Ministry for Environment, dear Mr. Žebeljan, Director General, in charge for Energy at the Ministry of Economics, dear Guests!

I am pleased and honoured to extent to you my warm welcome as a President of the International Nuclear Law Association and in the name of the Organizing Committee and Programme Committee. I feel greatly honoured by the decision of the INLA to give the Slovenia Branch the opportunity to organize the congress and to address this audience of highly qualified experts, scientists, the people from industry, the representatives of the State and people who simply care for responsible use of nuclear energy. The Congress offers a very rich programme. Just a little statistics: we have altogether 43 presentations in the following sessions: Session 1: Safety and Regulation (Chaired by Mr. Mario Cumo, Report of Working Group I + 7 presentations), Session 2: Nuclear Liability and Insurance - allow me to say, that Norbert Pelzer, our Norbert, should've chaired the session, unfortunately all we can do is to wish him a quick recovery after medical treatment. The session will be chaired by professor Vanda Lamm who kindly accepted the challenge instead (5 presentations + Discussion on activities of WG II), Session 3: Radiological Protection and Isotopes (Chaired by Miss Blanca Andrés Ordax (also from the European Commission, Reports of Working Group VI & IV + 4 presentations), Special Session 4: Nuclear Law in the New Millennium (Chaired by Mr. Patrick Reyners, 7 presentations), Session 5: International Nuclear Trade (Chaired by Mr. Juhani Santaholma, we will have opportunity to have 7 presentations), Session 6: Nuclear Waste Management and Decommissioning (Chaired by Mr. Pierre Strohl, Report of Working Group V + 6 presentations).

I would like to express my gratitude to experts who have undertaken to give individual presentations and those who will take part in discussions. The presentations are usually, and this congress is not an exemption, the consequence of a hard work before the event and the result of efforts of those who have created the programme. In this respect the central role has been played by both Committees and the INLA Board of Management. Twenty five persons form both Committees and from the Board worked really hard during last two years to offer you a good congress, both professionally and socially. The success of the Congress will be to their credit, first of all.

I would like to point out that the Portorož Congress is the inaugural Congress for two prizes, namely INLA will announce the winner of the INLA Prize and the Organizing Committee will announce the winner of the Award for Young Authors.

I will not speak in technical or legal or economic manner of congress topics and programme, but it is necessary to point out that each and every INLA event is being held
having in mind that the objectives should be, on an international or national level, to arrange for and promote studies and the knowledge of legal problems related to the peaceful utilisation of nuclear energy under the special aspects of the protection of mankind and his environment, to help promote the exchange of information among its members and to cooperate on a scientific basis.

The key words of this congress can be revealed from its topics. Even though it is classical in shape and form, its *fille rouge* or *Leitmotiv* or slogan could be marked as "Nuclear Law in the new Millennium: Evolution, Redefinition, Fundamental Changes or Status Quo?"

The classical approach reveals that international conventions, bilateral agreements, soft international law legal sources. All have the common denominator which is “think and act respecting the rule of law”, are indispensable tools that guarantee the safe application of nuclear energy and radioactive substances all over the world. The conference will analyze classic approaches and try to open space for possible new methods, institutes or phenomena. It is not heretic to open the boundaries for human mind, it is heretic not at least try to open them.

The title of the conference has a clear rationale: a lot remains to be done in the areas of nuclear security for the improvement of trust, ethics, regulation and legal perception at both national and the international level. Way of thinking in a global, responsible and international manner extents to all: to industry, science, education, public perception, government cooperation, associations and organisations in civil sphere.

The title of the conference has another strict rationale as well. Nuclear law is thanks to internationalization and globalization different than many other parts of law. Many other parts of law differ in several respects considerably from law established or rooted in national type of identity. National identities locate their legitimacy in deeply rooted histories, cultures and territories. It is needless to emphasize that nuclear law is not past oriented and it is not strictly national filled with national identity; its main features are that it is international oriented since problems are global. One must add its accent is future orientation.

In view of the fear and anxieties connected to responsible use of nuclear energy, it is worth to point out the priorities for establishing and maintaining rules based on the principle of rule of law. It is important to act responsible, always having in mind that our parents left the world to us only for the purpose of administering it responsibly and than leaving it to our children and grandchildren. It is important that while having in mind the legacy and responsibility, we always act within the sphere of the most precious moral norms and last but not least it is important to act legally.

Ladies and Gentlemen, dear Colleagues, I would like to conclude by wishing you a very successful congress, your creative work, success in your discussion and hope that you can meet the challenges ahead. At the end, please let me wish a pleasant stay in Portorož, which is in translation the Port of Roses.
OPENING ADDRESS

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Dear Participants, invited guests, Ladies and Gentlemen,

As the next speaker in this Opening Session of »Nuclear Inter Jura 2005« Conference I would like to assure you how pleased and honored I am to welcome you, in my personal name and on behalf of the Slovenian Government, on the occasion of this year's Conference of the International Nuclear Law Association.

As we have been, on one hand, greatly honored by the decision of the Board of Managers of INLA to hold the 2005 Conference in Slovenia I do hope, on the other hand, that at the end of this week we all could be pleased with the outcome of our deliberations and that your stay at the »Port of Roses« with us will be an enjoyable one.

Our administrative governmental structure is organized in a way that the competent authority for nuclear safety is part of the Ministry of the Environment. At the same time we consider the nuclear and radiation safety legislation as being a specific, but integral part of wider environmental legislation. The environmental legislation, as well as nuclear and radiation safety legislation have a long standing tradition in Slovenia. Nevertheless, the pre-accession period for Slovenia, was demanding and the environmental sector as well. Now we are in an even more crucial phase – the enforcement of the adopted rules and standards.

Slovenian Government is preparing an amended National Program for the Protection of the Environment as regards radioactive waste and spent fuel management for parliamentary adoption. The site for low- and intermediate- level waste repository must be approved by 2008 and it is to be licensed for operation by 2013.

For Slovenia, which has a very small nuclear programmed, comprised of (1) the NPP Krško, commercially operating since 1983, (2) the research reactor TRIGA Mark II at the »Jožef Stefan« Institute, initially licensed in 1966 and relicensed in 1991, (3) the Uranium mine Žirovski vrh, which was in operation from 1984 to 1990 and is now undergoing decommissioning and remediation and (4) the Central Interim Storage for Radioactive Waste, which was put into operation in 1986, the international relations have been essential from the very beginning. Vendor's legal requirements (US NRC) and international safety standards represent a frame to which our day-to-day work is heavily dependent.

Although limited in financial and human resources it is our commitment to follow as much as possible the new developments in the area of nuclear, radiation and radwaste safety. For example, our active involvement in the work of the International Atomic Energy Agency will be in the near future even strengthened since our two year term in the Board of Governors started after the last General Conference of the IAEA. Although nuclear safety as
such is not regulated on the Community level we are still firmly convinced that being part of the European Union leads us to increased and shared responsibility for effectiveness on the national level in all those fields which are and are not covered with EU. Since the time is nowadays passing more quickly than ever we have already started our internal preparations for the forthcoming Slovenian Presidency to the European Union in the first half of 2008.

Slovenia is taking an active role in most of international fora in this area, as for example IAEA, CTBTO, Zangger Committee, Nuclear Suppliers Group, Network of Regulators of Countries with Small Nuclear Programmes (NERS) or Western European Nuclear Regulator's Association (WENRA); regrettably enough, Slovenia is not a member of the OECD - Nuclear Energy Agency. We do understand that our observer status in all seven Standing Committees of NEA is only an interim solution which hopefully will be in the near future replaced by full membership.

It is needless to stress that Slovenia is a Contracting Party to nearly all of the most relevant international conventions and agreements in the area of non-proliferation, peaceful use of nuclear energy, nuclear, radiation and radwaste safety as well as nuclear third party liability. Let me point out that Slovenia has lately signed three fundamental international legal documents which amended the Paris Convention, Brussels Supplementary Convention and Physical Protection Convention and that an internal ratification process has been just initiated.

Ladies and gentlemen, I am sure that I did not mention enough the importance of international legal framework and cooperation for Slovenia. People that work in this area justly see that these tools are irreplaceable to achieve and maintain the high level of nuclear safety which is for all of us a great deal important.

Within this cooperation the (INLA) International nuclear law association takes a unique and significant part. We us lawyers are confronted with continues challenge being always at the cross road between more and more technical subject matter and completely new ethical issues. Is law still able to keep any inherent value or is just a more or less useful tool in the hands of different scientists, economists… I believe that the legal science should offer to others a trough mirror of interests. Only with the tradition of transparency which is granted by a “good argument”, the legal science reinforces democracy and public trust. There is no area of public life that is not in need of more public trust especially in young democracies. Among them “nuclear safety” is certainly on the front line.

I am confident that the objective of your Association i.e. promotion of the studies and knowledge of legal problems related to the peaceful utilization of nuclear energy and exchange of information among members, has been well addressed in the past and based on the Programmed which is in front of you, will also be in the future. This conference I am confident and not just because this time in Slovenia would add its part in achieving such objectives and meeting the challenges ahead.

May I wish you ladies and gentlemen, on behalf of Slovenian Government as well as on my behalf, every success in the outcome of this Conference and a pleasant stay in Portorož.
OPENING ADDRESS

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Ladies and gentlemen, dear guests, colleagues and friends.

It is my great privilege and honour to welcome you on behalf of the Slovenian Government. The timing of this conference coincides with the U.N.’s world year of physics. As you all well know, this particular year was chosen because it is the 100th anniversary of Albert Einstein’s revolutionary year and may be of the most known equation in the physics: 

\[ E = mc^2. \]

Nowadays we can clearly spell out that nuclear energy has brought a turning point in the field of electricity generation. We have witnessed almost two decades when nuclear energy faced a rather controversial period, abandoned by most EU countries on one hand and a strong increase in the Far East. The role of nuclear energy has been reinforced by the environmental concerns, caused by the emission of greenhouse gases. Nuclear energy is undergoing a renaissance, driven by two very loosely coupled needs, the first for much more energy to support economic growth world wide, the second to mitigate global warming. Nuclear option offers solution for both of these issues.

Many forecasts of energy demand for the 21st century have been made and they give roughly the same answer. The well known Institute for Applied System Analysis from Austria expects in their middle scenario that primary energy demand will double by 2050. By 2030 China alone will pass the US as world’s largest energy consumer. World is facing a severe concern – oil prices have sky rocketed which is also partly the case for natural gas. The only fossil fuel in abundant supply is coal, bearing in mind that it is the largest pollutant among all energy carriers.

What role can nuclear energy play in satisfying the growing energy needs in the future? With 441 power reactors operating in 30 countries, nuclear energy presently produces 16% of the world’s electricity and over 30% in EU. As already mentioned we expect large nuclear capacity growth in Asia and eastern Europe, what in other words bring along the road 22 new units under construction. The Russian Federation intends to double its nuclear fleet by 2020, in the same time China plans nearly six-fold expansion in capacity and eventually India anticipates a ten-fold increase by 2020. In US, 35 plants have received 20 year license extension and 14 more are in queue.

Slovenia embarked on the nuclear technology in mid 70s. Our sole nuclear power plant Krško is in commercial operation since 1983. The NPP Krško is a pressurized water reactor plant with a net electrical output of 676 MW(e), delivered and constructed by Westinghouse and is jointly owned with the Republic of Croatia. The operational and safety record of Krško NPP is excellent and complies with all international standards and highest safety requirements. The safety status of the plant is supervised by the Slovenian Nuclear Safety
Administration as well as by international expert missions organized by IAEA, EU, WANO, etc. Apart from power generation, Slovenia has a research reactor TRIGA Mark II used mainly for R&D and for training activities.

Electricity generated in the NPP Krško accounts about 40% of total electricity generation of the country. Its designed life-time is 40 years. In the NPP Krško activities started to investigate possibilities for life-time extension. According to positive international practice it is expected that NPP Krško will be in a position to extend its life-time by additional 20 years. It is important to mention that NPP Krško underwent a major refurbishment in 2000. Both steam generators were replaced and the low pressure turbine will be replaced in 2006. As of 2004 NPP Krško introduced an 18 month fuel replacement cycle that will until the end of projected life-time, bring an additional year of operation.

NPP Krško operates under the auspices of Slovenian Nuclear Safety Administration, an independent body within the Ministry of Environment and Spatial Planning. Plant personnel and the regulatory body are committed to closely follow the international standards and experience. Recommendations and practices derived from a number of international bodies have been integrated into the plant’s safety system. Saying so, we have clearly expressed that Slovenia will keep abreast to nuclear option as one of the main pillars of our power system. Let me assure you that we will make our utmost to maintain the highest possible level of nuclear safety, as a crucial precondition of peaceful use of nuclear energy.

Ladies and gentlemen, I wish you a very successful conference and a pleasant staying in Slovenia. Thank you.
OPENING ADDRESS

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Dobro jutro in dobrodošli v Sloveniji!

Good morning and Welcome to Slovenia!

Two previous speakers have told you almost all important details about nuclear sector in Slovenia, so I have a problem now! As the nuclear regulator I like to talk about the operation of our nuclear facilities, I like to explain how well we are harmonised with EU requirements, how tightly we are connected to international nuclear community and I certainly like to say something about the developments in the nuclear industry around the World. But all that was already said. Now I stand in front of more than a hundred lawyers and I should convey to you some positive message, which will help you to work hard through this week.

Allow me to use the opportunity and be a little bit philosophical about the basic issue, I am faced with in the everyday work as a high ranking state official.

I am not a lawyer, I have gone through the technical education and career. I used to work in the research institute and only about three years ago I was promoted to my current position. When I was young engineer I thought that solving technical problems is most demanding task for anyone. Understanding the physics, writing equations, discussing with colleagues, creating devices, which do something useful – that was the challenge! But as I was growing older, I did realise more and more how simple the physics is and how complicated we, human beings are. Natural sciences are straightforward: once you prove something, everybody believes you, that becomes a fact, which is not discussed anymore. We go on to other problems. Social sciences are very different: no theory is ever 100% valid for everybody, everything can be discussed over and over again.

Which is understandable: we are talking about differences between ratio and emotions. Thank goodness there are not only rational people on the World, the life would be really boring! As I see it most of the work of us regulators and you lawyers is really balancing between strictly rational World of Rules, we would like to have, and the beautiful wealth of human minds and feelings of all our fellow citizens, including us. It is a permanent and biggest challenge.

I consider myself lucky! Until three years ago I hardly knew about lawyers, I never needed their, that means your, services. I never read any law! Can you imagine that – a guy that does not read laws and regulations! But that is a fact of life. Most of people do not read laws and I fully understand them, I can hardly imagine any more boring text, so why bother! So, after I became a civil servant three years ago, the biggest shock for me was that incredible pressure of the legal system to anything we do. I do understand now why is that so, but at the
same time I often observe how this pressure of legality is forcing people to forget about something, which I consider to be most important thing for any human activity: common sense. So I keep reminding my fellow regulators about it. Let me explain what I have in mind with an example from the real life.

Few years ago, when we were not so enthusiastic about orphan sources yet as we are all today, somewhere in Slovenia a radioactive source was found at the construction site.

The foreman realised what that was and asked two of his workers to take it with the normal car to the central storage for radwaste, which we have here in Slovenia. There was no paperwork done, no phone announcements. It was just the foreman’s common sense triggering the action, which was in substance correct.

But, when those two workers showed up at the gate of the storage, the complicated legal mess started. There was no licence for the source, no prior announcement, at least two inspections were alarmed, nobody knew who was in charge and who was supposed to do what! Workers waited for an hour at the gate, than they simply returned back to the construction site with the source in the same car. And the mess continued for two more days between different authorities. They had first to determine who was in charge and later to get a licensed means of transportation and whole set of papers before the source was finally in the storage, where it was at the very start of the episode.

As I see it now, it was the victory of legality over the common sense. Of course we did adjust our system of authorities later and I can assure you that today in a similar situation the source would be safely stored quickly.

But the basic issue is still there. On one hand we request from all the civil servants to strictly do only things, that are written in the rules, but on the other hand we want them to make our State Administration friendly and helpful to the citizens. That seems sometimes to be contradictory. But I believe there is always a space for human creativity inside the legal possibilities, always keeping in mind the Common Sense and helping citizens solving their problems. Unfortunately, much too often this is forgotten.

Enough of my lamentations!

Some of you, that have been in Slovenia before, probably already know, but to the others I have to explain how happy we Slovenians are: this is the best place in the World to live in! Actually, I have to apologise for the last evening. I should come to your welcome dinner, but I was in the mountains and the day was so nice, that I returned too late into the valley to come here on time. And mountains are only one jewel of Slovenia, we have also almost every other natural beauty you can imagine, except deserts - they are too big for such a small country.

I hope you will have opportunity to enjoy at least some jewels of our country in addition to the hard work on nuclear law. Enjoy it and maybe come again in the future.

And never forget about Common Sense!
KEY NOTE ADDRESS

NUCLEAR LAW: DEVELOPMENTS AND CHALLENGES

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1. INTRODUCTION

Good morning ladies and gentlemen, distinguished colleagues.

It is an honour to be again invited to speak at the biennial conference of the International Nuclear Law Association (INLA). Not only did 2003 mark the last biennial conference in Cape Town, South Africa but it also marked the 50th anniversary of the international "Atoms for Peace" initiative that led to the creation of the International Atomic Energy Agency (IAEA).

Much has changed since 1953 - with every year bringing new challenges and opportunities. These past two years at the IAEA being no exception. In fact, while we see overall improvement and the Agency’s work is making a difference, it is acknowledged by our Director General, Mohamed ElBaradei and in fact also the world community that much still remains to be done.

As you are aware, the Norwegian Nobel Committee awarded the Nobel Peace Prize for 2005 “in two equal parts, [to] the IAEA and its Director General, Mohamed ElBaradei, for their efforts to prevent nuclear energy from being used for military purposes and to ensure that nuclear energy for peaceful purposes is used in the safest possible way.”

It should be noted that, in making the award at a time when the threat of nuclear arms is again increasing, the Committee underlined that "this threat must be met through the broadest possible international cooperation". They noted that, "this principle finds its clearest expression today in the work of the IAEA and its Director General". They further recognized that "in the nuclear non-proliferation regime, it is the IAEA which controls that nuclear energy is not misused for military purposes, and that the Director General has stood out as an unafraid advocate of new measures to strengthen that regime. At a time when disarmament efforts appear deadlocked, when there is a danger that nuclear arms will spread both to states and to terrorist groups, and when nuclear power again appears to be playing an increasingly significant role, IAEA’s work is of incalculable importance".

While this work is orientated towards the fulfilment of its programme, as enunciated back in 1953, in the Agency’s statutory objectives, under three main areas of activity, or the
three pillars of its mandate, namely: safety; technology; and verification - today, the Agency is on the whole in the news for the pillar of verification.

Verification issues aside for the time being, I would like to share with you some of the recent developments and challenges. In doing so, I will not address them in detail, due to the limited time available and also because I do not want to infringe on the scope of presentations to follow.

At the outset, I think it is useful to recognize that the past few years have witnessed a significant change in attitudes towards nuclear power. There is increasing attention to its benefits as an environmentally clean source of electricity and energy needs in the 21st Century. In fact, there are 441 power reactors now operating in 30 countries, generating electricity for nearly 1 billion people. Nuclear energy presently accounts for about 16% of the world’s electricity production, keeping pace with the steady expansion in the global electricity market.

At the same time, concerns still remain related to waste disposal, nuclear safety and security. There are also fears, driven by new realities. The rise in terrorism. The discovery of clandestine nuclear programmes. The emergence of a nuclear black market. To name but a few.

The aforementioned concerns, realities and developments have heightened our awareness of vulnerabilities which States are actively seeking to address. In fact international co-operation in the field of nuclear energy has yielded a mix of legally binding rules and advisory standards and regulations.

Today is an opportunity for me to review with you some of the developments and challenges, in the context of nuclear law. In particular, I intend to identify some of the achievements and developments in the areas of nuclear safety, security and nuclear verification, as well as exploring the visions for the future and the challenges that lay ahead.

2. DEVELOPMENTS

2.1. NUCLEAR SAFETY

One of the key elements of the Agency’s mandate is to help maintain the safety and security of global nuclear activities. In this regard, the past years have been a period of evolution. Achievements have been made on many fronts but there are also challenges.

In the context of nuclear safety, there is a recognised need for the maintenance of an effective and transparent global framework based on strong national safety infrastructures reinforced by widespread subscription to international agreements (i.e. legally binding and non-binding instruments) and norms (i.e. safety standards).

A main component of these global agreements and norms is the suite of harmonized and internationally accepted Safety Standards. Under the terms of Article III.A.6 of its Statute, the Agency is authorized to “establish or adopt standards […] of safety for protection of health and minimization of danger to life and property, […] and to provide for the application of these standards.”

In fact, these safety standards are the core element in setting and promoting the application for the management and regulation of activities involving nuclear and radioactive materials. Over the past few years, the Agency has continued to update these standards to fill in remaining gaps in coverage. This revision is being developed to reflect current trends and challenges facing the nuclear industry, such as deregulation, competitiveness, plant ageing and potential loss of experience.
The primary purpose of the IAEA 2004 International Action Plan for the Development and Application of IAEA Safety Standards is to put into effect the strategy for enhancing these safety standards with the aim of their universal application.

In providing for the application of safety agreements and these norms, the Agency offers a growing number of review and service missions (also in the area of nuclear security) in the context of reviewing national legislation and providing advice thereon. These review and service missions include: the International Nuclear Security Advisory Service (INSServ); the International Physical Protection Advisory Service (IPPAS); the International Regulatory Review Team (IRRT); the International Team of Experts To Promote Adherence to and Implementation of International Instruments Relevant to the Enhancement of Protection Against Nuclear Terrorism (ITE); the Operational Safety Review Team (OSART); and the Transport Safety Appraisal Service (TranSAS).

International legal agreements or instruments such as the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention) - which entered into force on 18 June 2001 - are a key component of the global nuclear safety regime. This convention is the first and only international, legally binding, treaty in the area of spent fuel and radioactive waste management.

Despite the fact that nearly all countries have some form of radioactive waste and could benefit from participation, the Joint Convention has only 34 Contracting Parties. In fact, one third of the States that operate nuclear power plants (10 out of 32 worldwide) have yet to ratify it.

In this respect, the IAEA General Conference has on a number of occasions, most recently in September, appealed to all Member States that are not yet party to the Joint Convention, to do so.

Shortly after the last INLA biennial Conference, the first Review Meeting of Contracting Parties under the Convention was held in November 2003. Contracting Parties noted with satisfaction that not only had participating in the process of the Convention been valuable but also their participation in the Review Process had provided them with a unique insight into the overall status of spent fuel and radioactive waste management activities. The second Review Meeting will take place next May.

Review Meetings of Contracting Parties, however, are not the sole territory of the Joint Convention. They also occur in the Convention on Nuclear Safety (the CNS). The third Review Meeting of Contracting Parties (55 States and one regional organization) took place in April this year.

India’s ratification earlier this year of the CNS - which entered into force some five years earlier than its “sister” convention, the Joint Convention - means that every country with operating nuclear power plants is now a party to the Convention.

The CNS’s primary objective is to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international co-operation. Through its Review Meetings, the CNS is fast becoming a forum for increasingly substantive discussions on safety issues.

It is pleasing to note that after ten years and three Review Meetings, Contracting Parties have agreed (at the third Review Meeting held in May) to further improve the transparency with which the CNS is implemented. The aim is to make it more open and transparent, as well as more effective and efficient.

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1 EURATOM acceded to the Joint Convention on 4 October 2005. In accordance with paragraph 2 of Article 40 of the Convention, the Convention will enter into force for EURATOM on 2 January 2006.
By definition, “incentive” Conventions, like the Joint Convention and the CNS, are meant to support Contracting Parties in improving their performance. The Review Meetings, which take place approximately every three years, provide the mechanism for a peer review of the nuclear safety status or the radioactive waste management status of each Contracting Party. The focus is on the steps and measures already taken and the progress made in implementing the respective Convention’s obligations.

National reports are the tools that allow States to reach this goal. They serve two purposes: First, although being a major task, they allow the respective national authority to systematically review all national activities in the respective field and to draw conclusions on measures that may have to be taken. It represents, therefore, a useful national instrument. Secondly, they allow for a free exchange of information between Contracting Parties, so that all may see for themselves where they could further improve their own performance.

States, however, have not only been active in their participation in these two conventions but also in the revision of existing and, the development of new, international legal instruments, namely: the Code of Conduct on the Safety and Security of Radioactive Sources (the Code on Sources), and the Code of Conduct on the Safety of Research Reactors (the Code on Research Reactors).

Both Codes are international legal instruments of a non-binding nature that provide guidance for the development and harmonization of national policies, laws, and regulations and set forth the desirable attributes for the management of research reactor safety.

In September 2003, the IAEA Board of Governors (the Board) approved and the IAEA General Conference (the General Conference) endorsed the revised Code on Sources. Supplementary Guidance on the Import and Export of Radioactive Sources was also approved and endorsed last year.

Although a legal instrument of a non-binding nature, the Code has considerable support. In a relatively short period, some 76 States have expressed their political commitment to the Director General that they are working toward following the guidance contained therein.

The Code on Research Reactors was adopted by the Board at its March 2004 Session and endorsed that September by the General Conference.

The Code’s objective is to achieve and maintain a high level of nuclear safety in research reactors worldwide through the enhancement of national measures and international co-operation, including where appropriate, safety related technical co-operation. It provides guidance for the State, the national regulatory body and the operating organization and applies to the safety of research reactors at all stages of their lives from siting to decommissioning.

While the 2004 General Conference encouraged Member States to apply the guidance in the Code, it should be noted that it did not, unlike the Code on Sources encourage States to make voluntary political commitments to the Director General that they will apply the guidance contained therein.

In recent years, the safe transport of radioactive material has become a matter of particular interest to Member States. The contribution of the IAEA to worldwide efforts to ensure that radioactive material is transported safely includes safety standards and review and service missions. The Board has adopted Regulations for the Safe Transport of Radioactive Material, in consultation and collaboration with Member States’ competent authorities and relevant international organizations. These Regulations are generally recognized as the international authoritative standards for both the national and the international transport of radioactive materials. They were most recently published this year.

In September 2004, the General Conference welcomed the approval of the Action Plan on the Safety of Transport of Radioactive Materials by the Board, in March that year. The Plan is based on the results of the July 2003 International Conference on the Safety of
Transport of Radioactive Material (the 2003 Transport Conference) and the request of the September 2003 General Conference for its development.

Recent measures to facilitate cooperation among parties to the 1986 Convention on Early Notification of a Nuclear Accident and the 1986 Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency have helped to improve international preparedness for and response to nuclear accidents and radiological emergencies. Whilst each of these Conventions only provides general frameworks, they are in fact the key elements of the international legal framework for international co-operation and co-ordination in the event of a nuclear accident or radiological emergency. Under this framework the Agency has a long history of co-operation with its Member States and relevant international organizations on establishing practical arrangements and the operations carried out thereunder, which are the established mechanisms for notifying and reacting to international nuclear or radiological emergencies.

In addition, over the past years, the competent authorities of the States Parties to these Conventions and Member States of the IAEA have been working towards strengthening the international emergency preparedness and response system. Also, in June 2004, the Board approved an International Action Plan for Strengthening the International Preparedness and Response System for Nuclear and Radiological Emergencies. In July this year, the IAEA Secretariat convened the third meeting of competent authorities under these Conventions. The meeting called for enhancements to the emergency exercise regime to ensure that all regions were well rehearsed in actions to respond to both nuclear accidents and radiological emergencies, including those resulting from malicious acts.

Liability for Nuclear Damage has long been considered the cause of migraines amongst nuclear lawyers. Reasons attributed to this condition range from the apparent complexity of the nuclear liability regime and the difference that exist therein.

As you are aware, Chernobyl not only brought into sharp focus the inadequacies of existing safety measures but also the inadequacy of the regime to provide for compensation for nuclear damage. It resulted in the revision of existing and, the adoption of new international instruments (and safety standards), not only concerning safety (such as the aforementioned Conventions on emergency preparedness and response) but also liability for nuclear damage (e.g. the 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention, the 1997 Protocol to Amend the Vienna Convention and the 1997 Convention on Supplementary Compensation for Nuclear Damage). However, concerns still remain with regard to the comprehensive liability regime, particularly from States that are close to the paths of ships transporting radioactive or nuclear material - the so called “coastal states”. Indeed there is some uncertainty and debate related to the implementation of the regime to deal with the legal liability resulting from an accident during the transport of radioactive material.

In response to the call of the 2003 Transport Conference, the Director General established the same year an advisory Group - the International Expert Group on Nuclear Liability (INLEX).

Among the tasks INLEX has accomplished so far, and pursuant to the Conference’s call, is the finalization of the explanatory texts on the nuclear liability instruments adopted under Agency auspices. These texts constitute a comprehensive study of the Agency’s nuclear liability regime in order to aid the understanding and authoritative interpretation of that regime. They are currently being translated into all the official languages of the Agency and will be published in the IAEA Legal Series.

In addition, INLEX has also discussed possible gaps and ambiguities in the scope and coverage of the existing nuclear liability regime, and the disadvantages of not adhering to a
global nuclear liability regime, in particular, with regard to the possible difficulties of obtaining compensation outside the regime.

Also, the Group is now engaged in a number of outreach activities, such as the development of standard training material in the area of nuclear liability and the organization of regional workshops in Asia and the Pacific and, the Latin America regions (scheduled for November 2005 and early 2006 respectively) in order to provide a platform for both fostering adherence to the international nuclear liability regime and to provide for open discussions on questions and concerns coastal states may have with the regime.

The positive statements by Member States at the Board and in the relevant resolutions of the General Conference, both held last month, reflects the achievements INLEX has made to date. However, INLEX’ work is still ongoing.

2.2 NUCLEAR SECURITY

Nuclear security has taken on heightened significance in recent years. While the Agency has been active in the field for many years, dating back to the 1970s, it was the events of September 2001 that propelled a rapid and dramatic re-evaluation of the risks of terrorism in all its forms, including the threat of nuclear and radiological terrorism.

The “lesson of Chernobyl” in the safety sphere has been applied to nuclear security in the sense that nuclear security should be urgently strengthened, without waiting for a "watershed" event to provide the impetus for security upgrades and expanded international co-operation. In this respect, the IAEA’s work has three main points of focus: prevention, detection and response.

Accordinly, since 2002 the Agency has taken a holistic and comprehensive approach to helping to strengthen nuclear security. This approach integrated the Agency’s nuclear security related activities into a three-year Nuclear Security Plan of Activities (encompassing eight Activity Areas). These activities are funded voluntarily by Member States through the Nuclear Security Fund (NSF). A new Nuclear Security Plan for 2006-2009 was adopted by the Board and endorsed by the General Conference last month.

Several international legal instruments, some of which are of a binding nature and some that are of a non-binding nature, underpin the Agency’s Nuclear Security Programme.

The importance of some of these instruments is recognized in the UN Security Council Resolution 1540, adopted in April 2004. Many governments have already responded to this resolution which, inter alia, calls on all States to develop and maintain effective border controls and law enforcement efforts to detect and combat illicit trafficking, and to refrain from providing any form of support to non-State actors that attempt to develop, acquire, use or transfer nuclear, chemical or biological weapons or their delivery systems.

Also, following the UN General Assembly’s adoption in April, after seven years of negotiation, of the International Convention for the Suppression of Acts of Nuclear Terrorism (the Terrorism Convention), the Amendment to the Convention on the Physical Protection of Nuclear Material (the CPPNM) is another milestone in international efforts to improve nuclear security and reduce the vulnerability of States parties to nuclear terrorism.

Most importantly for the Agency, however, in July, delegates representing 88 States Parties and EURATOM in the “Vienna spirit” agreed on an Amendment of significant changes to strengthen one of these international legal instruments - the CPPNM, adopted in 1979. I will go into more detail on the substance of these changes in a later presentation. But for now, I note that these changes strengthen its existing provisions and expand its scope - they make it legally binding for States Parties to physically protect nuclear facilities and material in peaceful domestic use, storage and transport. They also provide for expanded
cooperation among States on measures to recover stolen or smuggled nuclear material, to mitigate the consequences of sabotage and to prevent and combat related offences.

The agreement represents a culmination of work that had been progressing for a number of years. It is a major achievement. The Amendment will come into effect once it is ratified by two-thirds of the Parties to the CPPNM. The September meeting of the Board and session of the General Conference both welcomed the changes introduced by the Amendment and encouraged all Parties to express their consent to be bound to it and, in the meantime, to act in accordance with its object and purposes pending its entry into force.

During the past years, the Agency has strengthened its co-operation in nuclear security issues with other regional and international organizations, including the European Commission, the UN and its specialized agencies, Interpol, Europol, the Universal Postal Union, the OSCE and the World Customs Organization.

There are a number of international and regional initiatives that are directly relevant to the Agency’s Nuclear Security Programme. I would like to mention two. First, the United States’ 2004 Global Threat Reduction Initiative, which has been working in collaboration with the Agency to systematically address threats, posed by high-risk nuclear and other radioactive material.

Second, the 2003 EU Strategy against the Proliferation of Weapons of Mass Destruction. In May 2004, the European Council adopted in the implementation of this Strategy, a Joint Action on support for IAEA activities under the Agency’s Nuclear Security Programme. In July of this year, the Council also adopted, in this framework, a new Joint Action on support for Agency activities not only in the area of nuclear security, but also in the area of verification.

The purpose of one of the projects in the latter Joint Action is to strengthen national legislative frameworks for the implementation of States’ obligations under IAEA safeguards agreements and additional protocols, a subject which I shall mention a little later. This is to be achieved by the provision of IAEA legislative assistance to target countries in the drafting and/or revision of national legislation.

2.3 NUCLEAR SAFEGUARDS

The third pillar of the IAEA’s activities, nuclear verification, has for a number of years been very much in the public spotlight. As with the other two pillars of the Agency’s work, times have changed. Progress has been made on some fronts but as the Director General has commented, the world has perhaps regressed on others.

Since the discovery of Iraq’s clandestine nuclear weapons programme in the early 1990s, the Agency has devoted extensive effort to strengthening the nuclear verification regime in order to provide credible assurance to the international community that nuclear material and facilities are being used exclusively for peaceful purposes.

The Agency’s resumption of inspections in Iraq, the termination of inspections in the Democratic People’s Republic of Korea (the DPRK), our investigation of clandestine nuclear programmes in the Libya and Iran, the discovery of illicit nuclear procurement networks and the lack of agreement at the 2005 Conference on the Review of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) have put the spotlight on an array of challenges to the non-proliferation and arms control regime.

First let me mention that the number of States with comprehensive safeguards agreements (CSAs) and additional protocols (APs) in force continues to grow. To-date CSAs have been brought into force for 147 States. APs are in force, or otherwise applied in 71 States. While these are positive developments, the fact remains that despite the Agency’s extensive outreach programmes, more than 35 States party to the NPT have not yet fulfilled
their legal obligation to conclude a CSA with the Agency and over 100 States - including 28 with significant nuclear activities - have yet to bring APs into force.

Priority is being given by the Agency to the implementation of integrated safeguards, which involves integrating traditional nuclear material verification activities with the new strengthening measures of the AP. Integrated safeguards have been recognized as offering the best opportunity for increasing the effectiveness and cost efficiency of verification activities.

To date, integrated safeguards are being implemented in nine States - including Japan, the country with the largest nuclear programme under safeguards, and Canada, - the country in which the Agency’s verification effort is the second largest. It is expected that during 2006, the Agency will be able to implement integrated safeguards in more States.

There have been and still remain issues concerning safeguards implementation. Most recently, in Iraq, Libya and Iran, we have been able to demonstrate how effective Agency verification can be, even under difficult conditions, provided that we are granted the required authority and access to relevant information.

Since 1993, the Agency has been unable to implement fully its NPT safeguards agreement with the DPRK. In December 2002, the DPRK asked Agency inspectors to leave the country and, a few weeks later, declared its withdrawal from the NPT. Since that time, the Agency has not been permitted to perform any verification activities in the DPRK, and therefore cannot provide any assurance about the DPRK’s nuclear activities.

The agreement reached last month in Beijing at the six-party talks - after two years of complex negotiations - on the principles that should govern a comprehensive settlement of the DPRK issue is a significant step forward. It is particularly welcome that the DPRK has expressed its commitment “to abandon all nuclear weapons and existing nuclear programmes and [to return], at an early date, to the Treaty on the Non-Proliferation of Nuclear Weapons and to IAEA safeguards.” I note also that “the DPRK stated that it has the right to peaceful uses of nuclear energy” and that the other parties to the six-party talks “expressed their respect and agreed to discuss, at an appropriate time, the subject of the provision of light water reactor to the DPRK.” As concluded by the Board last month, a successfully negotiated settlement of this longstanding issue, maintaining the essential verification role of the IAEA, would be a significant accomplishment for international peace and security.

After an interruption of nearly four years, the Agency resumed its verification activities in Iraq in November 2002, following the adoption by the Security Council of resolution 1441 (2002). As of the time we ceased our verification activities in March 2003, we had found no indication of Iraq’s revival of prohibited nuclear activities - a finding that has since been substantiated.

The Agency’s mandate in Iraq under Security Council resolution 687 (1991) and other related resolutions remains in effect. In Security Council resolution 1546 (2004), the Council, inter alia, reaffirmed its intention to revisit the mandate of the Agency in Iraq. It has not yet done so.

For the past two and a half years, the Agency has been investigating the nature and extent of Iran’s nuclear programme with a view to providing assurances that all nuclear material and activities in the country are under Agency safeguards.

Agency verification activities have revealed Iran’s failure, in a number of instances over an extended period of time, to meet its obligations under its Safeguards Agreement with respect to the reporting of nuclear material, its processing and its use, as well as the declaration of facilities where such material had been processed and stored.

Since October 2003, however, Iran has made good progress in correcting its past breaches and the Agency has been able to verify certain aspects of Iran’s nuclear programme. As a result, some aspects of that programme - such as those related to uranium conversion,
laser enrichment, fuel fabrication and heavy water - are now being followed up as routine safeguards implementation matters.

Since last November, verification efforts have focused primarily on two aspects of Iran’s centrifuge enrichment activities. Regarding the origin of uranium particle contamination found at various locations in Iran, we have made good progress, with the active cooperation of Pakistan. Regarding the chronology of Iran’s centrifuge activities, there are still a number of unanswered questions, and repeated requests have been made to Iran for additional information and access.

In November 2003, Iran signed an AP to its Safeguards Agreement, and agreed to apply the provisions of its AP pending its entry into force. Iran has continued to fulfill its obligations under its Safeguards Agreement and Additional Protocol by providing timely access to nuclear material, facilities and other locations.

This is, however, a special verification case that requires additional transparency measures as a prerequisite for the Agency to be able to reconstruct the history and nature of all aspects of Iran’s past nuclear activities, and to compensate for the confidence deficit created by its past concealment efforts. By promptly responding to these Agency requests, Iran would well serve both its interests and those of the international community. The more thoroughly we are able to clarify all of Iran’s past nuclear activities, the better position we will be in to understand and confirm the nature of that programme.

As a further confidence building measure, the Board has also, in a number of resolutions beginning in December 2003, urged Iran to maintain a voluntary suspension of all its enrichment related and reprocessing activities — and has asked the Agency to continue to monitor Iran’s suspension of such activities. In early August 2005, Iran announced its intention to resume, under Agency verification, uranium conversion activities at the Uranium Conversion Facility at Esfahan. Other aspects of Iran’s suspension, however, still remain intact.

The Board has continued to devote considerable attention to the implementation of Iran’s Safeguards Agreement. Last month, the Board adopted a resolution that, inter alia, found Iran to be in non-compliance with its Agreement and urged Iran to implement the transparency measures to which I have referred. The Board decided, however, not to report such non-compliance to the Security Council at this time.

In a broader safeguards context, the implementation of safeguards in Iran and Libya has led to the discovery of extensive, clandestine networks for the supply of sensitive nuclear technology and information. This has given rise to increasing emphasis on the need to ensure that Agency verification activities change with these changing demands.

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called on the States with existing SQPs to conclude an exchange of letters with the Agency that would give effect to the approved modifications, and to do so as soon as possible.

As you are probably aware States Party to the NPT, at the 2005 Review Conference held earlier this year, failed to agree on how to strengthen the implementation of the Treaty. The lack of substantive agreement is disheartening, given the urgent challenges we face, and the opportunity afforded by the Conference. In addition, there was no agreement on nuclear non-proliferation and disarmament at the UN World Summit last month. Despite these outcomes, the challenges remain and must be addressed.

3. CHALLENGES AND VISION

3.1 SAFETY

Nuclear safety has frequently been described as a “national responsibility.” However, the cross-border implications of nuclear risks makes clear that nuclear safety - including the safety of nuclear installations, radioactive sources, waste and materials in transport - is in fact a matter of international concern. Accordingly, it has been recognised that the Agency must continue to promote a global nuclear safety regime.

In this respect, while there is recognition of the growing support for the universal application of IAEA safety standards, there is still a need to have broader participation in the international safety conventions, in particular, the Joint Convention.

As concerns the Codes of Conduct that I have mentioned, it should be noted that such Codes are not new to international law or to the Agency. Back in 1990, Member States had the vision to agree, in the absence of an agreement for a legally binding instrument, a Code of Practice on the International Transboundary Movement of Radioactive Waste. Some seven years later, the provisions of this Code were condensed and subsumed into Article 27 of the previously mentioned, legally binding Joint Convention.

Our understanding of such Codes is that once approved by the IAEA Board and endorsed by the General Conference, they are international legal instruments of a non-binding nature, offering guidance to States for the development and harmonization of policies, laws and regulations.

During the revision of the Code on Sources and the preparatory work on the Code on Research Reactors questions were raised concerning the legal status of a Code of Conduct and discussions took place as to whether to include reporting mechanisms on national implementation by States to the Agency, and the IAEA Secretariat to the Board.

As with any international legal instrument, but even more so with a Code of Conduct, proper implementation is key to its effectiveness. Implementation can be encouraged through the incorporation of such mechanisms. As I have already mentioned, similar mechanisms can be found in the legally binding CNS and Joint Convention. However, Member States decided against their inclusion in the Codes of Conduct adopted to-date.

Notwithstanding their non-inclusion, pursuant to the endorsing resolution of the General Conference, a significant number of States have still made voluntary political commitments to the Code on Sources (as noted above, the resolution of the Code on Research Reactors did not contain such an encouragement). In addition, it is interesting to note that the recent International Conference on the Safety and Security of Radioactive Sources (the 2005 Bordeaux Conference), held in Bordeaux, encouraged the IAEA Secretariat to undertake consultations with Member States with a view to establishing a formalized review process, albeit voluntary, for a periodic exchange of information, lessons learned and evaluation of process made by Member States in implementing the Code. This encouragement
was also recognized in the relevant resolution of the September General Conference, which requested the Secretariat to undertake such consultations.

It will be interesting to see over time, whether, following such consultations, States wish to take the necessary steps leading to the adoption of such a formalized process. Should States choose to do so, it will illustrate a new and interesting development of nuclear normative rule making at the IAEA: a mechanism for hardening what is in fact “soft law”. However, while such a mechanism will have obvious benefits, as can be seen from the practice of the CNS and Joint Convention, States should be selective and should recognize that such a mechanism should only be an interim measure.

3.2 SECURITY

The challenge of increasing the nuclear security of Member States has taken place at an exceptionally fast pace on multiple fronts. Indeed, few areas of activity have undergone such fundamental change in so short a period. Through the implementation of the Plan of Activities, the Agency has made progress in the identification and awareness of nuclear security risks and vulnerabilities.

These efforts have been focused, by necessity, on helping States identify and address vulnerabilities, upgrading the physical protection of nuclear facilities, improving national detection and response capabilities, securing high priority radioactive sources and developing standards and guidance.

However as I have already mentioned, following the UN General Assembly’s adoption in April, after seven years of negotiation, of the Terrorism Convention, we have now altogether 13 instruments legal instruments that address terrorism. The challenge therefore clearly is to analyse the different instruments that have been adopted in various fora, to explore their interrelation and synergies and, most importantly, to assist States in their implementation.

3.3 NUCLEAR SAFEGUARDS

There are a number of actions that are of immediate priority in this area: universalization of the AP; expanding the implementation of integrated safeguards; normalizing safeguards in Iraq; bringing the DPRK back to the NPT regime; providing the required assurances about Iran’s nuclear programme; continuing to investigate the nature and extent of the covert nuclear procurement network; enhancing mechanisms for dealing with non-compliance; and accelerating progress towards nuclear disarmament.

In addition to these objectives, it has been recognized that a key to strengthening the nuclear non-proliferation regime lies in tightening controls over, and limiting the dissemination of, proliferation sensitive aspects of the nuclear fuel cycle (while ensuring of the supply of nuclear fuel).

In August 2004, the Director General convened an Expert Group on Multilateral Approaches to Nuclear Fuel Cycle to explore options and develop proposals for improved controls, including possible multilateral oversight arrangements, for the front- and back-ends of the nuclear fuel cycle.

The Group’s report, finalized earlier this year, identifies a number of approaches with the objective of increasing non-proliferation assurances associated with the civilian nuclear fuel cycle while preserving assurances of supply and services. These approaches merit further elaboration and were the subject of discussion at a conference, held in Moscow in July. It will be interesting to see further developments in this challenging area and the legal implications that they may have.
It is clear that a prerequisite for international security is to take steps to eliminate both access to and production of material for nuclear weapons. Negotiation at the Conference on Disarmament of a non-discriminatory and internationally verifiable global treaty to ban the production of material for nuclear weapons, referred to as the Fissile Material (Cut-off) Treaty (FMCT), would be a welcome step in this regard.

The Agency’s verification system has fortunately shown great resilience in dealing with many of these challenges. We have been able to initiate rapid and intensive verification efforts in a number of countries and to make good progress with the investigation of the covert procurement network.

In dealing with these verification challenges, the Agency has maintained its objectivity and independence, and thereby strengthened its credibility. In short, the past few years have continued to underscore the central importance of the Agency’s role in combating nuclear proliferation.

4. SYNERGETIC APPROACH TO SAFETY, SECURITY AND SAFEGUARDS

Ladies and gentlemen, distinguished colleagues, let me make one concluding final remark. I have spoken about safety, security and safeguards. I have also referred you to the challenges that lie ahead. However, there is one more challenge that is particularly important for you as lawyers: how to bring safety, security and safeguards together so that they can be readily incorporated into national legislation.

This is a big challenge as the interrelationship as well as the areas of overlap and of diversity must be identified, rationalised and given effect in the national legislation. Past experience shows that this is not often achieved. The interrelationship between safety and security and the effect that a well-developed regulatory safety system in a given country has on ensuring the security of radioactive material is easily recognized and is now found more and more in Agency documentation.

I plan for this approach to be reflected in the Agency's legislative assistance activities in the future. First efforts in this regard are already under way. We are in the process of developing comprehensive model laws covering these three subject areas for countries with "small" and "medium to high-end" nuclear programmes, carrying further this “3S” concept.

5. CONCLUSION

Let me close, ladies and gentlemen, these opening remarks, by thanking the Host Country, INLA and the ICJT (and the sponsoring organizations) for organising this Conference in Portorož. I shall be looking forward during my stay here this week to an interesting and challenging exchange of views with you as my nuclear law colleagues.

ooOoo
OPENING SPEECH

Peter Grilc, Ph.D
INLA President,
Chairman of the Organizing Committee

Ladies and Gentlemen, dear Colleagues, dear INLA Members, dear Professor Marko Pavliha, vice-president of the Parliament, also our professional colleague and former nuclear lawyer, dear Mr. Starman, State Secretary at the Ministery for Environment, dear Mr. Žebeljan, Director General, in charge for Energy at the Ministery of Economics, dear Guests!

I am pleased and honoured to extent to you my warm welcome as a President of the International Nuclear Law Association and in the name of the Organizing Committee and Programme Committee. I feel greatly honoured by the decision of the INLA to give the Slovenia Branch the opportunity to organize the congress and to address this audience of highly qualified experts, scientists, the people from industry, the representatives of the State and people who simply care for responsible use of nuclear energy. The Congress offers a very rich programme. Just a little statistics: we have altogether 43 presentations in the following sessions: Session 1: Safety and Regulation (Chaired by Mr. Mario Cumo, Report of Working Group I + 7 presentations), Session 2: Nuclear Liability and Insurance - allow me to say, that Norbert Pelzer, OUR Norbert, should’ve chaired the session, unfortunately all we can do is to wish him a quick recovery after medical treatment. The session will be chaired by professor Vanda Lamm who kindly accepted the challenge instead (5 presentations + Discussion on activities of WG II), Session 3: Radiological Protection and Isotopes (Chaired by Miss Blanca Andrés Ordax (also from the European Commission, Reports of Working Group VI & IV + 4 presentations), Special Session 4: Nuclear Law in the New Millennium (Chaired by Mr. Patrick Reyners, 7 presentations), Session 5: International Nuclear Trade (Chaired by Mr. Juhani Santaholma, we will have opportunity to have 7 presentations), Session 6: Nuclear Waste Management and Decommissioning (Chaired by Mr. Pierre Strohl, Report of Working Group V + 6 presentations).

I would like to express my gratitude to experts who have undertaken to give individual presentations and those who will take part in discussions. The presentations are usually, and this congress is not an exception, the consequence of a hard work before the event and the result of efforts of those who have created the programme. In this respect the central role has been played by both Committees and the INLA Board of Management. Twenty five persons form both Committees and from the Board worked really hard during last two years to offer you a good congress, both professionally and socially. The success of the Congress will be to their credit, first of all.
I would like to point out that the Portorož Congress is the inaugural Congress for two prizes, namely INLA will announce the winner of the INLA Prize and the Organizing Committee will announce the winner of the Award for Young Authors.

I will not speak in technical or legal or economic manner of congress topics and programme, but it is necessary to point out that each and every INLA event is being held having in mind that the objectives should be, on an international or national level, to arrange for and promote studies and the knowledge of legal problems related to the peaceful utilisation of nuclear energy under the special aspects of the protection of mankind and his environment, to help promote the exchange of information among its members and to cooperate on a scientific basis.

The key words of this congress can be revealed from its topics. Even though it is classical in shape and form, its fille rouge or Leitmotiv or slogan could be marked as "Nuclear Law in the new Millennium: Evolution, Redefinition, Fundamental Changes or Status Quo?" The classical approach reveals that international conventions, bilateral agreements, soft international law legal sources. All have the common denominator which is >think and act respecting the rule of law<, are indispensable tools that guarantee the safe application of nuclear energy and radioactive substances all over the world. The conference will analyze classic approaches and try to open space for possible new methods, institutes or phenomena. It is not heretic to open the boundaries for human mind, it is heretic not at least try to open them.

The title of the conference has a clear rationale: a lot remains to be done in the areas of nuclear security for the improvement of trust, ethics, regulation and legal perception at both national and the international level. Way of thinking in a global, responsible and international manner extents to all: to industry, science, education, public perception, government cooperation, associations and organisations in civil sphere.

The title of the conference has another strict rationale as well. Nuclear law is thanks to internationalization and globalization different than many other parts of law. Many other parts of law differ in several respects considerably from law established or rooted in national type of identity. National identities locate their legitimacy in deeply rooted histories, cultures and territories. It is needless to emphasize that nuclear law is not past oriented and it is not strictly national filled with national identity; its main features are that it is international oriented since problems are global. One must add its accent is future orientation.

In view of the fear and anxieties connected to responsible use of nuclear energy, it is worth to point out the priorities for establishing and maintaining rules based on the principle of rule of law. It is important to act responsible, always having in mind that our parents left the world to us only for the purpose of administering it responsibly and than leaving it to our children and grandchildren. It is important that while having in mind the legacy and responsibility, we always act within the sphere of the most precious moral norms and last but not least it is important to act legally.

Ladies and Gentlemen, dear Colleagues, I would like to conclude by wishing you a very successful congress, your creative work, success in your discussion and hope that you can meet the challenges ahead. At the end, please let me wish a pleasant stay in Portorož, which is in translation the Port of Roses.
CHAIRMAN’S ADDRESS
SESSION 1

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Good morning Ladies and Gentlemen,

Being here today is a particular pleasure to me, since I have been involved (as an engineer) for many decades in the nuclear sector, of which I can still appreciate the importance despite the many vicissitudes through which nuclear energy has had and yet has to go.

We should always bear in mind that its applications are manifold and that there are several areas covered by nuclear law, ranging from nuclear safety and radiation protection, to nuclear third party liability, to safeguards for non-proliferation purposes, to waste management and so on. The number of instruments and acts governing nuclear energy is always becoming more and more extensive, and we can easily say that nuclear law is one of the richest area in the legal world.

Having been asked to chair this session, I find it quite rewarding to deal with nuclear safety which is basically the area where I have for years performed (and I still do) my academic activity. In addition, I would like to recall some fairly recent events in which I was involved, like for example chairing the Atomic Questions Group of the European Council during the Italian presidency of the European Union. This experience has provided a chance to address and to become fully aware of the very many issues of different nature and of great relevance in the nuclear arena. One of them was (and still is) the so called “nuclear package”, of which nuclear safety is so a pertinent part to this session and indeed to the Conference as a whole. Again, we must not forget that in the world there are several hundreds of nuclear installations in operation, and with the increase of oil prices, many more are very likely to follow.

Focussing on European Union nuclear issues, let me shortly underline a few points in which a clear juridical assessment is in my view essential.

Italy, often by the action carried out by Dr. Fabrizio Nocera in his capacity of Italian delegate, has constantly supported all initiatives for the setting up of an efficient European nuclear regulatory system as, for instance, the two proposals of the European Commission pertaining to nuclear safety and radioactive wastes and spent fuel. In this field common rules are necessary for a sound competition among nuclear operators following a liberalized electricity market.

Another important legal issue dealt with in the Paris and Brussels conventions is civil nuclear liability. The problem concerns damage from ionising radiation during normal
operation of nuclear power plants, and fuel transport within the threshold values allowed by national legislation.

This extrapolation of the concept of incident generates important consequences very difficult to deal with and an increased litigation with very difficult solutions to find, which undoubtedly penalize heavily the nuclear sector operators.

The related pathologies are certainly possible in statistical terms but, below the levels currently allowed by nuclear legislation, it is impossible to determine if other noxious agents have been the real source of the pathologies themselves. People's trust in the national protection standards against ionising radiation might be unduly affected.

Financial implications would be derived also in the clauses of the insurance agreements where industrial operators are not usually protected from damage deriving from the normal plant operation.

Another important juridical issue is an accurate setting up of the European rules to make the process of funds accumulation transparent in view of the final decommissioning of nuclear installations. Present rules refer to the Euratom Treaty and other EU legislation which are somewhat limited: industrial operators and Member States may autonomously behave with little transparency in the funds management. This situation presents the risk that some Member States, in the end, may turn on the European Community the costs of an inadequate funds accumulation.

A further relevant issue is a correct arrangement of the transport of radioactive wastes among EU Member States. Indeed some Member States hamper the transit on their territory towards the nuclear fuel cycle installations in other Member States. Is such limitation coherent with the rules of free movement of goods? Moreover, the radioactive waste itself may be considered a good from a legal point of view?

Of course now-a-days when we talk of nuclear safety and installations we evoke also the decommissioning issue, which however should not be regarded as a “declining” side of nuclear energy. There are many legal and technical problems attached to it, which need to be addressed with the same good will and effectiveness as the other relating to the governance of nuclear energy. And let me add that as a matter of fact this form of energy might have an increasing importance in our future.

With this positive message I open the first session and give the floor to Dr. Herbert Schattke, Chairman of INLA WG 1-Safety and Regulation.
COMPARISON OF NINE DIFFERENT NATIONAL STATES CONCERNING DECOMMISSIONING AND DISMANTLING

Dr. Herbert Schattke
Chairman of INLA WG I

INLA WG I has got reports of nine national states about their situations concerning decommissioning and dismantling of nuclear installations: Argentina, Belgium, Canada, Finland, Germany, Italy, Spain, Switzerland and United Kingdom. In the following the essentials of these reports are described and summarized:

1 LEGAL AND POLICY FRAMEWORK:

1.1 Argentina:

Looking to Argentina nuclear development has a long tradition. Already in 1950 the National Atomic Energy Commission (CNEA) was created. The aim of this development was directed to peaceful use of nuclear energy. In addition the National Law of Nuclear Activity created a National Regulatory Authority (ARN) and established regulatory and surveillance duties in respect of nuclear and radiological safety, physical protection and control of the international safeguards. At the same time the Radioactive Waste Management Regime established the specific responsibilities for the matters within the scope of CNEA and created the Responsible Organization for Radioactive Waste Management (RWMRO).

CNEA has developed a Radioactive Waste Management Strategic Plan (PEGRR). This plan outlines the goals for safe management of spent fuel and radioactive waste. The main goals are listed in the following manner:

- Determination of the manner for decommissioning. Determination for managing radioactive waste.
- Proposal for a proper procedure to get and manage necessary financial resources in order to comply with legal obligations.

At the end of its operational life of nuclear installations or Nuclear Power Plants (NPP) the regulatory body ARN approves the decommissioning plan and will grant a decommissioning license. But at the moment none of the nuclear installations or NPPs is undergoing decommissioning.

1.2 Belgium:

In Belgium SYNATOM as a private company is the owner of the fuel loaded and unloaded in the Belgian nuclear power plants (NPPs). The state has recognized the exclusivity
of this company to regard the management of the nuclear fuel cycle including the management of spent fuel.

Since 1985 Belgian utilities are setting up provisions for decommissioning their NPP's. In 2003 a new law was published concerning the establishment and management of financial provisions for ultimate decommissioning of nuclear power plants including the management of spent fuel of NPP's. The provisions for both will be centralized at SYNATOM. A surveillance committee is controlling the establishment and management of SYNA TOM financial provisions concerning the settlement of the provisions, the investment policy and the refunding of the invested funds. The advice of the committee is binding for SYNATOM. On the other hand the committee has to follow the unanimous opinion of NIRAS/ONDRAF.

But nevertheless SYNATOM is legally responsible for decommissioning including the management of nuclear fuel.

1.3 Canada:

Three principles for radioactive waste management are defined:

a) The federal government has to ensure that radioactive waste disposal is carried out in a safe, environmentally sound, comprehensive, cost-effective and integrated manner.

b) The federal government has the responsibility to develop policy, to regulate and to oversee producers and owners to ensure that they comply with legal requirements.

c) The waste producers and owners are responsible in accordance with the principle of "polluter pay" for funding, organization, management and operation of disposal and other facilities required for their wastes.

According to the Nuclear Safety and Control Act (NSC Act) the Canadian Nuclear Safety Commission (CNSC) may include conditions in a license relating to financial guarantees and managing nuclear fuel cycle and low and intermediate radioactive waste and decommissioning nuclear facilities.

Licensees have to provide to CNSC a decommissioning plan. For so-called class I nuclear facilities special regulations require that preliminary decommissioning plans must be a part of informations for applying a construction and/or operational license. For example the Ontario Power Generation Inc. (OPG) as owner and operator of 20 nuclear reactor units within the province of Ontario has submitted preliminary decommissioning plans.

1.4 Finland:

According to the Finnish Nuclear Energy Act of 1987 two basic principles do exist:

a) The licensees are responsible for all nuclear waste management and their appropriate preparation including their costs.

b) Nuclear waste shall refer to radioactive waste in the form of spent nuclear fuel or in another form generated in connection with or as a result of the use of nuclear energy. Materials, objects and structures which having become radioactive in connection with or as a result of the use of nuclear energy require special measures because of danger arising from their radioactivity.

The Ministry of trade and industry (MTI) is allowed to decide the principles as to the basis for nuclear waste management. This includes the manner and final time-table for decommissioning and dismantling.
It seems to be a potential legal gray area between operation and commencing decommissioning and dismantling. The operator has the choice whether the final outcome is a green-field site or something less green.

No specific license for decommissioning and dismantling does exist. Instead of that each measure is a subject to a license. A special license for decommissioning and dismantling has been discussed. But till now no decision was taken. But the operator is obliged to formulate an annual report on the foreseen method and the time-table for decommissioning and dismantling. This report has to be completely rewritten every five years.

1.5 Germany:

The Atomic Act was thoroughly revised in 2002 to the effect that the life-time of German NPP's is regulated instead of being indefinite.

The operators have the following options:
- prompt decommissioning,
- safe enclosure,
- complete dismantling or
- any combination of these measures.

According to German law a so-called decommissioning license is necessary and even useful for the operator in order to reduce monitoring systems, technical inventory and staff.

According to German constitution the Land ministries are responsible for granting the licences under the legal and technical supervision of the federal government.

1.6 Italy:

Based on government policies the nuclear sector is now limited to the closure of previous ENEL activities for electric energy. Existing facilities for fuel cycle are nowadays no more in operation and their decommissioning is scheduled. Nuclear research plants of ENEA are now committed to S.O.G.I.N for decommissioning.

Starting-point is the ED Council Directive 96/92 with the aim of ongoing liberalization process. This directive was sanctioned in Italy by legislative decree no. 79 of 16th March 1999. As a consequence the utility ENEL S.p.A. has been splitted into different companies within ENEL holding. A capacity of about 15.000 MW shall be put on the market to independent producers. But the management of the transmission grid has been assigned to a new company whose stock is now a property of the Ministry for Treasure.

According to the decree no. 79 of 1999 all ENEL's liabilities and assets connected to nuclear power have been assigned to a newly established company named S.O.G.I.N. This firm is operating since November 1st. 1999. The mission of S.O.G.I.N. covers:
- Decommissioning of Italian NPP's. All nuclear power plants now are definitely shut-down.
- Management of the back end of the related fuel cycle.
- Valorization of the assets such as sites, components, resources.
- Providing engineering services in the nuclear field with domestic and international markets.
- Planning a final repository for low and intermediate level radioactive waste.

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more in operation and their decommissioning is scheduled. Nuclear research plants of ENE A are now committed to S.O.G.I.N for decommissioning.

1.7 Spain:

Euratom directives, a royal decree of 2005 and the nuclear act of 1964 are regulating the activities for decommissioning nuclear installations. According to national law decommissioning is not compulsory. But safe keeping of nuclear installations is required by the above mentioned nuclear act of 1964. On the other hand, the General Radioactive Waste Plan (GRWP) issued by the government forecasts decommissioning to the status of "green-field" for all NPP's very soon after completing their operational life-time within approximately 40 years.

ENRESA, the national enterprise (Agency), is in charge of radioactive waste management. This is the only one who is responsible for technical activities leading to decommissioning. Its tasks are supervised by the Ministry of Industry, Tourism and Trade on administrative concerns and by the Nuclear Security Council as the official regulatory body on those matters relating to nuclear safety and radiological protection. In case of final shutdown the Ministry of Industry, Tourism and Trade provides the rules for transferring the plant to ENRESA. So the Agency becomes the new operator of the plant.

1.8 Switzerland:

The former Atomic Energy Act of 1959 determined a decommissioning fund in order to ensure the financing of decommissioning and dismantling nuclear installations. This act was replaced by a new act on Nuclear Energy in 2003. It came into force on 1st January 2005. This new act fixed an additional separate waste management fund in order to cover waste management costs arising after operational life-time of nuclear installations.

The safety aspects and the procedure for decommissioning are regulated in the new ordinance on nuclear energy issued by the government in December 2004 and entered into force on 1st January 2005.

1.9 United Kingdom (UK):

The following background is important:

UK was the first "nuclear state" outside the Soviet Union in Europe. UK has inherited a collection of numerous nuclear sites and facilities dating back to the 1940's years. They were designed and constructed for research and exploitation of nuclear energy. At the beginning there was no consideration of the possible need to decommission such facilities and to manage the resultant radioactive waste.

The present decommissioning policy comprises the progressive dismantling of contaminated buildings and materials as well as the management of radioactive waste and the remediation of land. UK policy is to decommission as soon as reasonably practicable including a safe storage of material on site or elsewhere pending disposal. Site licensees must draw up decommissioning strategies for their sites. They are subject to five year reviews by the government. The key objective is to remove hazards progressively, giving due regard to environmental and security objectives. The long-term objective is to remediate either to "green" or "brown" status depending upon the best practicable environmental option for remediation and waste storage.

Now a new law is in force which has transferred overall responsibility for decommissioning the UK's civil nuclear sites and possibly military nuclear sites to a new
public body named as Nuclear Decommissioning Authority ("NDA"). This regulatory body shall be responsible for overseeing BNFL and UKAEA.

1.10 Conclusions:

All states are aware of the importance of decommissioning and dismantling nuclear installations or NPP's. Therefore many new legal developments are occurring. The radioactive waste management is an inherent factor to decommission and to dismantle.

But the responsibilities for decommissioning and/or dismantling differ a little bit. Mostly private companies are responsible for decommissioning and dismantling. State authorities are competent for granting licenses and for supervising. Exceptions do exist in Argentina, Italy, Spain and United Kingdom:

In Argentina the National Atomic Energy Commission (CNEA) is responsible for decommissioning NPP's at the end of their life-time.

In Italy the original private utility ENEL now is a property of the Ministry for Treasure and therefore it is - at least indirectly - a public firm. ENEL is now replaced by S.O.G.I.N.

In Spain the national enterprise (Agency) ENRESA is in charge of radioactive waste management, decommissioning and dismantling.

In UK a new law was created for transferring overall responsibilities for decommissioning and dismantling to a new public body named as NDA.

In general national regulatory bodies are competent for granting licenses and supervising the taken measures for decommissioning and dismantling as well as for radioactive waste management plans or strategies.

2 STRATEGIES FOR DECOMMISSIONING, DISMANTLING AND RADIOACTIVE WASTE MANAGEMENT:

2.1 Argentina:

The National Atomic Energy Commission (CNEA) established a program for decommissioning and dismantling nuclear installations. The activities have to include the following matters:

- Planning and controlling of dismantling and decommissioning management activities of major nuclear installations,
- Coordination of the development of specific technologies in said area,
- Training of personnel on the subject,
- Promotion of international agreements on the matter,
- Development of a quality management system,
- Definition of dismantling and decommissioning alternatives for Argentine research reactors.

The radioactive waste management policy is specified in the following main statements:

- Determination to manage radioactive waste originated from domestic nuclear energy applications including waste from decommissioning,
- Determining the manner in which NPP's and any other radioactive facility shall be decommissioned,
- Managing waste originated from state or private nuclear activity including waste generated from decommissioning of the facilities.
2.2 Belgium:

SYNATOM has taken over the legal responsibility for decommissioning and managing the nuclear fuel cycle. Therefore SYNATOM has to conserve at any time sufficient cash for financing all expenditures for decommissioning and dismantling NPP T S or other nuclear installations during the next three years. If the accumulated financial provisions are not sufficient, the utilities have to provide the outstanding balance to SYNATOM.

2.3 Canada:

The strategy for decommissioning and dismantling includes a list of activities described in the work packages in the decommissioning plan. Some Examples: labor and equipment, disposal of both conventional and radioactive wastes and other equipments.

The owners of nuclear installations are responsible - in accordance with the so-called polluter-pay principle - for organization, management and operation of disposal and other facilities required for their wastes recognizing that arrangements may be different for nuclear fuel waste, low-level radioactive waste and uranium mine and mill tailings.

2.4 Finland:

The NPP's are decommissioned after an operating life of about 40 to 60 years. Structures that have been exposed to radiation during operation are dismantled and taken into the final disposal facility. The dismantling can be implemented fairly soon after decommissioning, but a delay of a few decades considerably reduces the radiation level and thus facilitates the handling of the structures. After dismantling the plant site can be used for different operations or as a site for a new power plant.

There does not exist a specified license for decommissioning and dismantling. But each and every measure as such is subject to a license.

The low-level and intermediate-level waste is at first stored at the plant after treatment. After interim storage the waste is transferred to a small repository for low- and intermediate-level waste at the plant site. In Olkiluoto disposal of waste in the final repository began in 1992. In Loviisa it began in 1997.

The repositories for low- and intermediate-level waste are located in the bedrock at a depth of 60 to 100 meters. Once all the waste has been disposed of, the tunnels and shafts leading to the repositories will be filled and sealed.

Above the network of tunnels - on the ground surface - an encapsulation plant will be built. There the spent fuel rod assemblies are packed into water- and airtight double-layered metal canisters. The encapsulation plant is built above the repository so that the canisters can be lowered into the tunnels of the repository by a lift directly from the plant. After placing the last canister in the repository the encapsulation plant will be dismantled. The tunnels of the repository will be filled with a mixture of betonite, sand and crushed rock. The shafts leading to the repository are closed. The underground repository will require no monitoring after it has been closed. Then the aboveground structures will be dismantled. The land area can be used for any purpose considered suitable.

According to a decision of the Finnish government there must be a possibility for retrieving nuclear waste in the repository back above ground. This is possible at any stage of the final disposal process.
2.5 Germany:

This country has experiences in decommissioning and dismantling\textsuperscript{1} deriving from Russian reactor types and from western reactor types.

Usually the owners of NPP's choose after final shut-down the prompt decommissioning combined with dismantling parts of components and other structures of the nuclear installations. This strategy saves money and uses the knowledge of the operational staff.

The nuclear waste will be stored in an interim storage at the site. Later on some materials can be released into the economic cycle if the radioactive contamination has become very little below legal limits. If the contamination lies above legal limits, the waste finally has to be stored in a final repository which does not exist at the moment. The present federal government plans a final repository to be built in 2030.

2.6 Italy:

The referendum of 1987 was originally technically limited to specific aspects of sitting NPP’s. But its outcome resulted into the phasing - out of nuclear energy for electricity production purposes although it is commonly referred to as a "moratorium".

In 1999 the government, especially the Ministry of Industry, outlined strategic choices and plans for managing the problems connected with the closure of all nuclear activities in the country. Since that time the Ministry outlines three main goals:

- Replacing the former strategy based on "deferred decommissioning" and "safe enclosure stage" until 2010 but now changing into "prompt decommissioning" with complete dismantling in order to achieve site release until 2020 without radiological constraints,
- Treatment and conditioning of all liquid and solid radioactive waste within a period of 10 years; on site interim storage and subsequent transport to a final national repository,
- Site selection and construction of a final national repository for low and intermediate radioactive level waste also within 10 years.

Till now a final repository for low and intermediate level radioactive waste is not available. The responsibility for constructing and building the final national repository is committed to S.O.G.I.N. by a Parliament Act of 2004.

2.7 Spain:

Zorita NPP will be definitely shutdown in 2006. Decommissioning of this plant will start around the year 2010. There is a former experience of decommissioning and dismantling of a NPP (500 MW) to level2 (IAEA - definition).

The alternative considered for the purposes of calculation and planning for the other Spanish nuclear plants currently in operation is total dismantling (level 3 according to IAEA -definition). This shall be initiated years after definitive shutdown of the reactors and following removal of the spent fuel from their pools.

\textsuperscript{1} In this context the terms of "decommissioning" and "dismantling" have to be clarified: According to IAEA -definition decommissioning includes each phase after the operational phase, e.g. shutdown, safe enclosure, removal of radioactive materials and dismantling pipelines, engines and buildings up to the green field. According to German legal regulations the term "decommissioning" is used in a narrow sense of shutdown. The remainder of the post-operation activities (undertaken after the station has been shutdown) have been termed "dismantling".

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
In the past there existed three milling facilities for uranium mining used to convert raw materials into U3O8. The plants were closed in the past 20 years and meanwhile decommissioned. The same is applicable to two former research reactors. In short term there will also be decommissioning activities in some old parts of the main National Nuclear Research Center (CIEMAT). Low and intermediate level waste arising from decommissioning activities will be disposed of in EL CABRIL repository. The management of decommissioning activities and disposal waste is the responsibility of ENERESA.

2.8 Switzerland:

The main issues of Swiss strategy for decommissioning and dismantling concern their costs and their financing. These items will be presented in the last chapter.

2.9 United Kingdom (UK):

UK government is planning to accelerate the process of decommissioning and dismantling from approximately 100 years down to 60 or even 40 years in order to reduce costs. As a consequence decommissioning is defined in a manner to comprise the progressive dismantling of contaminated buildings and materials, the management of radioactive wastes and the remediation of land. UK policy is to decommission as soon as it is reasonably practicable, with safe storage of materials on site.

Great Britain has a lot of experience in decommissioning and dismantling because UKAEA has now fully decommissioned thirteen research reactors, with nine research reactors presently in care and maintenance whilst activity levels decrease. Under present plans all major hazards will have been removed by 2025. Decommissioning will be completed by the year 2047. The objective is to return the entire site to a "green field" site.

The need to manage safety, security and even environmental protection will continue until each site is decommissioned. But one "hot" issue associated with decommissioning is still open: Which manner is the best practicable environmental option? Is it to store waste on a site which is undergoing decommissioning or is it to transport the waste to a final national repository?

2.10 Conclusions:

The strategies for decommissioning and dismantling (D/D) are very similar. The states feel responsible for planning and controlling D/D. After operational life decommissioning should begin. There is a tendency to accelerate the process of decommissioning. For example the former strategy of a so-called deferred decommissioning and "safe enclosure stage" often is replaced by a prompt decommissioning combined with dismantling parts of components of nuclear installations. Therefore it may be summarized that after final shut - down of a NPP the process of D/D is starting as soon as it is reasonably practicable.

Another common item is an effective nuclear waste management. Each state emphasizes that such a management is necessary. Mostly the low-level and the intermediate-level radioactive waste is at first treated and later on stored in an interim storage on the site of the plant. At the end of the process the waste should be brought to a final repository. But at the moment most states do not have a repository for radioactive wastes.

But Finland and Spain are good exceptions. In Finland do exist final repositories for low- and intermediate-level wastes at the plant sites. They are located in bedrocks at a depth of 60 to 100 meters. In Spain exists a final repository for low- and intermediate waste above the earth. (EL CABRIL)
Another exception is UK on the opposite side of the scale. Politicians are discussing whether it is useful to store nuclear waste on site or whether it is better to transport radioactive waste to a later final national repository.

3 FINANCING DECOMMISSIONING AND DISMANTLING:

Decommissioning, dismantling and radioactive waste management are very expensive. Therefore a lot of money is needed. The nine mentioned states have solved this problem in different manners:

3.1 Argentina:

According to a decree of 1998 a trust fund was created in order to finance decommissioning expenses of each NPP. Funding is financed by contributions of the utilities operating their plants.

Said decree also establishes that the contributions shall begin as of the privatization of the company that operates the nuclear power plants.

3.2 Belgium:

This state has created a decommissioning fund, owned by a private company SYNATOM, which is a 100 % subsidiary of ELECT RABEL, the operator of the seven commercial nuclear reactors in Belgium. In 2003 a new law was published concerning the establishment and management of financial provisions for ultimate decommissioning of seven NPP's including the management of spent fuel from these power plants.

Also a surveillance committee was founded as a legal entity which is entrusted to control the establishment and the management of the financial provisions relating to methodology of the settlement, the investment policy and the refunding (loans) of the invested funds. The advice formulated by this committee is binding for the concerned utility. If the accumulated financial provisions are not sufficient, the utilities have to provide the outstanding balance to the facility needed for decommissioning and dismantling (mostly SYNATOM). SYNATOM has to conserve at any time sufficient assets for financing all expenditures during the following three years.

The principles of management of backend of the nuclear fuel cycle in Belgium include:

- the responsibility of the nuclear operators for dismantling, management of irradiated fissile material and waste management,
- provisions established by the nuclear operators to finance these activities and centralization of these provisions within SYNATOM,
- control terms established by the Belgian State regarding the constitution, justification, sufficiency and availability of these provisions,
- a golden share of the State in SYNATOM with specific rights enabling to block certain decisions,
- the right of SYNATOM to lend to ELECTRABEL a maximum of 75 % of the provisions,
- report of SYNATOM to a follow-up committee composed of civil representatives.
3.3 Canada:

The Ontario Power Generation Inc. (OPG) is the owner and/or operator of 20 nuclear reactor units and associated waste facilities in the province of Ontario. OPG has submitted preliminary decommissioning plans and related cost estimates with respect to the so-called Class I nuclear facilities. The standard methods specify how the estimates are to be prepared based on site-specific cost data. These data include the following items:

- costs for labour and equipment,
- costs for disposal of both conventional and radioactive wastes,
- capital costs of equipment and
- other cost-related data.

The cost of disposal or long-term management of low and intermediate level wastes is calculated during operation of all generating stations which OPG owns and operates. These costs are included for decommissioning each of those facilities.

The province of Ontario is the sole shareholder of Ontario Power Generation (OPO). Therefore OPO and the province of Ontario entered into negotiations respecting the Ontario Nuclear Funds Agreement (ONFA) in 1999 to establish and maintain segregated funds for the costs of long-term decommissioning OPO facilities. Now these funds have a value of approximately 4.9 billion Canadian Dollars.

The segregated funds are not expected to be sufficient to cover the entire present value of the estimated decommissioning costs during the period between now and the end of 2007. Therefore OPG obtained a guarantee from the Province of Ontario to cover the difference between the value of the funds and the total estimated costs. This guarantee is unconditional and irrevocable. The guarantee expires at the end of 2007. A review and revision of the decommissioning plans and cost estimates must be performed no later than six months prior to the expire date of the provincial guarantee in order to allow a new guarantee arrangement to be put in place if necessary.

In addition OPG is required to contribute specified amounts to a trust fund named as NFW A fund. This fund was created to pay the costs for long-term management of spent fuel. OPG has contributed 500 million Canadian Dollar to this NFW A fund. The annual contribution is fixed to 100 million Canadian Dollars.

3.4 Finland:

The producers of nuclear waste are fully responsible for its management and costs in accordance to the principle of "polluter pays". The cost of nuclear waste management also includes that of decommissioning and dismantling. Thus the price of electricity generated by nuclear power producers also includes the cost of nuclear waste management. If a plant is operated for 40 years, the total cost of nuclear waste management will be about € 1.7 billion.

In order to follow the "polluter pays" principle, the National Nuclear Waste Management Fund collects contributions from the producers of nuclear waste on an annual basis to ensure that the necessary actions can be carried out in the future and under all circumstances. This fund has been accumulated gradually. Its present holdings now cover some € 1.3 billion.

Germany:

According to commercial law the operators have to accumulate sufficient reserves for the costs of decommissioning, dismantling and nuclear waste management. Each operator of a NPP has accumulated sufficient assets. Usually the amount is about € 500 million per reactor unit.
3.5 Italy:

According to the Italian point of view waste management costs shall be the most important components of total decommissioning costs. It strongly depends on the costs which are required for disposal in a final repository. Although it does not exist a precise figure, it is estimated that 7 to 10 Kilo€ is needed for one cubic meter radioactive waste.

In the 1980's ENEL has created a special fund for plants entering into decommissioning and a different fund for irradiated fuel management. The first mentioned fund has accumulated € 750 million. This amount was deemed to be adequate for decommissioning activities within: the safe store strategy.

In 2000 a decree of the Ministry of Industry has stipulated that extra costs caused by different economic conditions like e.g. changing the strategy of decommissioning shall be financed on a levy on the price of the sold kWh. The same procedure is foreseen for additional costs for dismantling nuclear related installations.

Now with reference to final waste disposal a Parliament Act of 2004 provides that the construction of the national repository will be financed by S.O.GJ.N. through prices or rates of wastes.

3.6 Spain:

There is a fund for financing the activities of the General Radioactive Waste Plan (GRWP) for dismantling NPP's to the status of "green - field" soon after they have completed their operational life-time (estimated for planning purposes in 40 years). The fund is dedicated for paying all expenses due to the management of radioactive waste and to decommissioning of nuclear and radioactive installations foreseen in the above mentioned plan. The fund started collecting money in 1983 by means of a levy on all electricity sales. Financial yields are accumulated into the fund. Income to the fund is estimated in such a way that at the end of the management period the total amount in it will be enough to pay the expenditures due to radioactive waste management and dismantling.

From 1st April 2005, income to the fund is splitted into following categories:

- A fee on all electricity sales for those costs attributable to NPP's waste and decommissioning and dismantling generated before the aforementioned date.
- A monthly contribution from the NPP's corresponding to the cost of waste management and decommissioning and dismantling attributable to electricity generated after 1st April 2005.
- Direct payments by waste producers out of the nuclear fuel cycle.
- Payments in advance to cover the cost of waste management and decommissioning of facilities for fuel and manufacturing.

The financial management of the fund is undertaken by ENRESA. The law sets three main criteria to select financial assets: security, profitability and liquidity.

A tracking and controlling committee is established by law in order to track ENRESA's financial activity. The committee has to report to the Ministry of Industry, Tourism and Trade.
3.7 Switzerland:

The ordinance on the Decommissioning Fund for nuclear facilities issued by the government in 1983 regulates the following matters in particular:
1) contributions have to be made by owners of the facilities and
2) organization of the fund.

This ordinance empowers the Federal Department of Environment, Transport, Energy and Communication (DETEC) with the competence to determine detailed aspects of the decommissioning fund. These regulations issued in 1985 are regarding special items like:
- calculation of decommissioning costs,
- annual contributions to be paid by the owners during operation,
- repayments and additional payments to be made by the owners and
- investment policy.

The decommissioning fund was established on 1st January 1984 as a public law entity with domicile in Bern. As executive bodies are existing the Management Committee and the Secretariat.

The general investment policy of the Management Committee is determined by the following main principle: Assets must be invested in such a manner as to ensure an optimal balance between risk and return. Therefore investments in companies associated with legally obliged contributors to the funds are not allowed. In addition it is prohibited to invest in companies which have invested the majority of their assets in nuclear facilities.

Contributions are mandatory for proprietors of NPP's as well as for owners of interim storage facilities for spent fuel elements and radioactive waste. At present this concerns five NPP's like Beznau I and II, Mühleberg, Gösgen, Leibstadt and the Würenlingen interim storage facility.

The objective of the fund is to accumulate - during the period of operation of the nuclear facilities - all necessary financial resources to cover the costs of decommissioning. These estimated costs for the five NPP's in operation including the interim storage facility mentioned above amount to almost 1.9 billion Swiss francs. But the total assets of the decommissioning fund amounted in 2003 only to 971 million Swiss franc. Thus a gap of nearly 1 billion Swiss francs does exist at the moment.

In order to prevent the state from having to pay decommissioning costs, an element of solidarity was introduced. For each individual facility an annual contribution has to be paid. The amount thus accumulated is principally at the disposition of this specific facility for decommissioning and dismantling costs. In case of insufficiency the capital of other facilities concerned can be seized for this purpose. This is combined with obligations on the part of remaining facility owners to pay supplementary contributions. This obligation represents a secondary, though joint and unlimited responsibility for the entire decommissioning and dismantling costs of a facility.

3.8 United Kingdom:

In Great Britain the costs of decommissioning and dismantling are extensive. The UK government proposes to underwrite the future costs of nuclear decommissioning through a "Nuclear Decommissioning Funding Account" as a special public account. The operational work shall be carried out by public and private sector organizations through a series of legal relationships between the government, BNFL, UKAEA and private sector organizations.
Therefore it can be said that in the UK a funding system for financing decommissioning and dismantling nuclear installations including NPP's is planned but till now not created.

At the moment the taxpayer must finance the costs of decommissioning the "nuclear legacy" from the UK's civil and military nuclear research and production programs as well as managing the resultant radioactive wastes at an estimated current cost of some € 70 billion for civil nuclear facilities and wastes alone.

3.9 Conclusions:

Most of the investigated nine states have a funding system for financing decommissioning and/or dismantling nuclear installations including NPP's. The contents and the methods differ a little bit. One state (UK) is planning a funding system.

According to the British point of view it is a little bit ironic that as much money is needed to be expended in closing down a nuclear facility as it was required to construct it in the first place.

According to German commercial law each owner or operator of a NPP has accumulated a lot of money for later decommissioning and/or dismantling.

4 GENERAL RESULTS:

Summarizing our investigation of nine national regulations concerning decommissioning and dismantling nuclear installations including NPP's we can underline six statements:

1) In the investigated nine countries the regime for decommissioning and dismantling is based on the principle of 'polluter pays'.

2) Many efforts are taken for present or future decommissioning nuclear installations and/or NPP's. Each state regards a nuclear waste management as very important.

3) Mostly the utilities have to develop their plans or measures for decommissioning and/or dismantling. In some countries the technical responsibility of decommissioning and dismantling is on the side of national implemented organizations: Argentina, Italy, Spain and United Kingdom (UK).

4) The strategies for decommissioning and dismantling (D/D) are very similar. There is a general tendency to accelerate the process of decommissioning. The former strategy of a deferred decommissioning or a "safe enclosure stage" often is replaced by a prompt decommissioning after final shut-down combined with dismantling parts of components as soon as reasonably practicable.

5) An effective radioactive waste management seems to be necessary. Low-level, intermediate-level and high-level radioactive waste and nuclear spent fuel usually are stored in an interim storage on site of the plant.

6) Most states have funding systems for financing decommissioning and/or dismantling nuclear installations including NPP's. But the objectives, the contents, the methods and the kinds of these funds differ quite a lot.
THE FOUR CORNERSTONES OF AN EFFICIENT NUCLEAR REGULATORY AUTHORITY

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1. INTRODUCTION

The question what constitutes an effective regulatory body is very complex and can – in principle – never be answered in a manner that on the same time is straightforward, subtle and profound. Particularly in a short paper like this it is necessary to generalize and make certain simplifications. On the other hand, the subject is much too interesting and important to leave un-discussed and one have to believe that every serious attempt to contribute, will add to the assembled knowledge and wisdom in the field. It goes without saying, that many of the factors that effects the functioning of regulatory bodies in general is also of importance in the field of nuclear activities. Still, the nuclear area holds certain characteristics that make some aspects especially interesting to discuss. It has often been stated that nuclear energy requires special legal arrangements in order to ensure proper management. This, as we shall see, is by no means a less valid point when dealing with the question of pointing out conditions necessary for an effective regulatory authority.

The purpose of this article is to discuss certain factors that are key elements in forming an efficient national regulatory authority in the nuclear field. For this purpose it is of course essential to define – or at least have some sort of idea of – what is understood as “efficiency” in this context. Without a relatively distinct view of what is the aim for the authority, it would be fruitless to discuss the means of getting there. Even though evidently much could be said in this matter, a working definition of efficiency could be derived from studying article 8 in the Convention on Nuclear Safety. According to this article a regulatory body should be provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities. From this quite clear and straightforward provision, one can derive that the efficiency of a regulatory authority must be measured against the authorities’ specific tasks and responsibilities. Irrespective of how simplistic this may seem, it is very important to stress that regulatory authorities in different countries may have been assigned responsibilities that differs from each other. In my view a regulatory authority in the nuclear field should have as its primary and all-embracing task to ensure that nuclear activities are conducted in a satisfactorily safe manner. Thus, with this perspective at hand, the efficiency in a regulatory body would basically be measured in terms of absence or presence of risks and accidents. Even though – as mentioned – there could be slight differences in the responsibilities and duties of the existing national authorities, one can without doubt assume that the overriding goal for the majority of regulatory bodies would be to enhance and promote the concept of Nuclear Safety.

1 Carlton Stoiber et. al., Handbook on Nuclear Law, p.4 (Vienna 2003).
In order to enhance the understanding of circumstances and factors that helps the improvement of the regulatory authority’s efficiency, I have identified four aspects that I consider to be fundamental. These aspects could be described as the most essential cornerstones in the project of building an on the same time efficient and durable regulatory body.

In the subsequent chapters I will describe and elaborate upon these four identified cornerstones and their fundamental importance for the regulatory body in specific, as well as for the nuclear safety in general.

2. THE CONSTRUCTION OF AN EFFICIENT NATIONAL REGULATORY AUTHORITY

With the same logic that states that a complete building cannot consist solely of its cornerstones, a regulatory authority certainly consists of several more and diversified parameters than those I will focus on and discuss in the following pages. For instance, I believe that few would question the importance – and this holds true for any organization or operation founded on knowledge – of having skilled and competent personnel, or the advantages of having established a developed and adapted policy for decision-making. Of course there are numerous of aspects and factors that added together make up the functioning of any organization. Even so, the impact and importance of these factors tend to vary and not least from a legal point of view there are some aspects that stand out as being of more crucial importance. It is a widely accepted truth that different states are subject to different prerequisites and due to this may have different set of needs in terms of structuring a regulatory body. Nevertheless, from a legal point of view there are some factors that simply cannot be compromised.

The four factors, or Cornerstones, that I believe are the most crucial for ensuring an efficient functioning of a regulatory authority in the nuclear field are:

1. the existence of a distinct legislative framework,
2. the independence and separation of regulatory functions,
3. a suiting strategy for inspection and control, and
4. a set of effective enforcement powers

2.1 The existence of a distinct and comprehensive legislative framework

It is natural to begin by discussing the factor that in many respects must be regarded as the most fundamental of all; the existence of a distinct legal framework. It is through the law-making process that essentially all government and control is managed and deviances in the lawmaking or the legislative framework will inevitably lead to corresponding problems and deviances in other respects.

At least in democratic states, the mandate to legislate stems from some sort of elected representatives, normally through a parliament or some equivalent institution. Regardless the degree of detail in the legislation on this level, it is important that the legal framework from the beginning consists of clear and undisputable provisions. Normally, the parliament will not take part in drafting detailed provisions concerning nuclear safety and related questions. Rather, the most frequent practice seems to be that the parliament authorises the government or some other public authority to issue more detailed provisions. Either way, it is very important that the legal framework consists of clear provisions that will cause only a

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3 The legal framework of the member countries of the OECD-NEA is quite easily compared thanks to the comprehensive material assembled in the organizations different editions of the Nuclear Law Bulletin.
minimum of room and need for interpretation. In the end of the day, unclear provisions will not only cause tremendous trouble in steering the nuclear companies in the desired direction, it will (or at least should) also make it very difficult to impose sanctions and penalties upon operators that in the opinion of the supervisory authority have failed to comply.

Of course the strive for making provisions in the legislation clear and distinct is not the only one that needs to be upheld. Naturally it is also of great importance that the actual provisions are constructed in a way that balance the different interests involved. The creation of law consists to a great extent of the delicate exercise of balancing different interests. In the field of nuclear law one specific difficulty is to establish a balance between the need of avoiding nuclear accidents and the costs for different protective measures. Some nuclear activities, as for instance the operation of a nuclear power plant, involves potentially high risks and consequently need to put a relatively high degree of effort and resources in protective measures.

How then, does the regulatory framework actually effect the functioning of the regulatory authority? In short, the regulatory body need a clear and undisputable mandate to a) issue new regulations (or other conditions for operation) and b) perform supervision of the operators and their observance and compliance with the law. As we shall return to in chapter 2.4, it is absolutely essential that the supervisory authority is equipped with effective tools for enforcement. Highly simplified one could say that if the regulatory framework is unclear, it can lead to one of two possible scenarios.

In the first scenario the regulatory body ignores that its constitutional mandate is unclear and perhaps even doubtful. The regulatory body will perhaps issue conditions that they are not allowed to, or they will make decisions upon sanctions that they have no support for in the law. If the country has a functioning judicial system, these kinds of actions would of course be disqualified upon appeal in a court of law. However, there are no guarantees that the operators would actually appeal in such a case and even if they do – if the mandate is only vague and not obviously non-existing, the outcome of an judicial process is never evident.

Concerning the effects of scenarios like this, one must assume that it will eventually lead to an unfavourable development for the nuclear safety. Even if the specific decisions would in fact be good and just, the use of power in this way will lead to a deteriorating and unhealthy climate between the authority and the operators. A prerequisite for establishing a fruitful and effective relation is that there is a mutual apprehension of respect and acceptance for the other party. Use of power with an unclear mandate can very rarely be combined with legitimacy, and eventually the operators will turn suspicious and even hostile towards the authority. In most democratic states there is a very strong tradition to accept even what is regarded as unwise decisions, if only the decision has been made according to a legitimate procedure. If the notion is that the authority repeatedly goes beyond its mandate, it would be quite understandable if the reaction is the opposite; even the most wise decision would probably be disregarded if it had been established through an unacceptable form.

In the second scenario, the regulatory authority will recognise that their mandate is vague and as a reaction to this turn passive. For the sake of nuclear safety this is perhaps an even worse situation than in the first scenario. Even if most of the operators in the nuclear field are serious and responsible, there will always be some operators that eventually will find a hurdle a little too high and take measures that will potentially cause unacceptable risks.

If an effective regulatory authority is recognized by its ability to enhance nuclear safety and reduce the different risks involved, it is essential to create a legal framework that supports this aim. Thus, the legislation establishing the regulatory authority and its mandate and powers need to be clear. Likewise, the legislation and other conditions decided by the

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4 On the contrary, one can rather easily think of reasons for why a mistreated operator would choose not to appeal.
regulatory authority need to be clear, relevant and well-founded in order to gain the necessary respect.

In order to reach that highly desired state where entities that operates nuclear facilities fully understands the meaning and will of the legislator, an successful way can often be to involve the operators in the law-making process. By doing this the regulatory body will not only ensure that they have access to the skills and knowledge that is in the industry, but they will also improve the chances of firmly establishing an understanding by the recipients for the meaning of the different provisions. Different schools debate whether the industry should be involved at all, but it is also interesting to discuss at what stage such involvement should take place. Of course one cannot answer such questions with simple generally applicable answers. Different legal and political environments call for there own individual solutions. In some states such involvement is a natural part of the law making process, while in others the participating of the industry is relatively insignificant.\(^5\) According to the personal empirical experience I have gained from the law-making process in Sweden, there are possible advantages to reap by allowing the industry to express views at an early stage in the law-making-process. In Sweden the regulatory authority – the Swedish Nuclear Power Inspectorate – generally involves the industry at a relatively early stage in the process, and has a continuous procedure with “refer for consideration”. Naturally the regulatory authority must always be in charge of the process and the authority must of course have a clear view of what aim to achieve with regulations. As will be discussed further in chapter 2.2.1 below, it is essential with an awareness of the concept of “regulatory capture”. The regulatory authority must never lose the initiative.

There are many things to consider when a complex territory such as the nuclear field is to be regulated. One very early decision that has to be made is if the rules should be of detailed nature, or if they shall be drafted in a more general way. The advantage of the latter is that the legislation puts a greater responsibility on the operators to think for themselves and come up with individually adapted solutions to various problems. This way of regulate also have the advantage of being flexible and suited to manage a context where technical progress is frequent and rapid. The advantage with the former type of legislation is, consequently, that the detailed provisions are very easy to determine and easier to inspect against. Of course it can often be of value if the regulatory authority uses legislation to codify best known practice. Regardless of whether a certain method is generally preferred, I would argue that there is a need for having provisions of both kinds.

As already indicated, the legal framework should – and generally do – consist of both the basic provisions governing the right to issue binding regulations and the actual provisions concerning the operation of nuclear facilities.

2.2 Independence and separation of regulatory functions.

It is an understatement to say that a regulatory body need to be organized in a way that guarantees independence. It is close to self-evident that an well functioning authority need to be capable of making judgements and decisions irrespective of different stakeholders interests. However, the issue of independence is pluralistic. The first thing that comes to mind when raising the issue of regulatory authorities independence is probably the relationship between the supervisor and the entities that are being subject to the supervision. Plausibly, this is also the relationship that is of the greatest importance. The related expression “capture of the regulator” has for a long time been used to describe one of the most difficult phenomenons’s to avoid. This dimension of independence is not the only one that deserves

attention, though. One may well argue that it is of equal, or near equal, importance that the regulatory body is independent from – or at least not too closely linked to – the political level. In the following I will discuss these two aspects of regulatory independence, starting with the independence towards the supervised entities.

2.2.1 “The capture of the regulator”

The capture of the regulator is an expression used to describe the phenomenon when bureaucrats or politicians, that are supposed to be acting in the public interest, end up systematically favouring particular vested interests. In political science, the so called public choice theory holds that capture is inevitable, because vested interests have a concentrated financial stake in the outcomes of decisions, thus ensuring that they will find means – direct or indirect – to capture decision makers. While this inevitabilist application of rational actor theory appears to be excessively pessimistic about government, the fact remains that capture is a commonly observable phenomenon.

Of course a regulatory capture is something that can occur in any field of law-making and supervision. It is plausible however, that in the nuclear field the risks for occurrence of such a phenomenon is relatively larger than in many other sectors. First of all, it is unavoidable to take note of that the nuclear field have a quite particular character. In the same manner, and for the same reasons, that we sometimes talk about the uniqueness of nuclear law, the use of nuclear technology is an often very heavily debated politically issue. This fact may affect the relationship between the regulatory authority and the operating companies – not necessarily in a “capture-direction”, but not unlikely either.

Secondly, one must be aware of the fact that nuclear industry has a highly specialized character and that many of the persons involved in the business – regardless of which side they operate in for the moment – share the same educational, and often professional, background. From this community of interests may arise bonds that are working in the direction of capturing the regulator. At least in theory the risks for a regulatory capture due to such “loyalty towards the collegians”, would be especially high in smaller countries, where the people working in the nuclear field is necessarily fewer and the links between persons closer.

The concrete risks associated with a ”capture” is that the regulatory authority, for different reasons, will not make unbiased decisions based solely upon what is considered valid reasons. What one could fear is that inappropriate considerations will be taken to factors that should not be considered. As regards the specific act of capturing, the most obvious one is when it stems from personal relations between people from opposite sides of the fence. These bonds most commonly arise due to the substantial level of contacts that inevitably has to be taken between the officials (in the role of law maker or inspector) and the industry. Despite of all the good that will most certainly come from this kind of bonding – and surely in most cases enhances the nuclear safety – they may also make it more difficult for the official in a regulatory authority to take actions that could be received as negative. One example is of course when the authority need to make decisions on different sorts of sanctions. Penal sanctions normally strike physical individuals and naturally these cases are more sensitive than if it is just a question of deciding an administrative sanction. It is a clear risk that an infrastructure of personal bonds will develop into a culture of “turning the face away” when offences towards the regulations are made. Particularly the risks for negligence are high in

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Public choice theory is a social science that studies the decision-making behaviours of voters, politicians and officials from the perspective of economic theory. Its most noted advocate is James M. Buchanan who won The Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel for his work on public choice theory. A noted detractor of this theory, and also a winner of the same prize, is Amartya Sen.
cases of minor offences, since it is of course easier for the inspector/official to overlook in such cases.\footnote{That a single offence is minor does not mean, however, that it isn’t serious if the authority doesn’t take action. It is plausible that repeated negligence will eventually lead to a deteriorated safety culture and thus risks of more serious offences.}

Perhaps not quite as obvious, but certainly important is the kind of capture that may evolve from the general community of interests that were already mentioned above. It is hard to deny that it lies in the professional interest of both sides to promote the image of competence and safety. If the organisational and technical solutions in operating a nuclear facility appear to be safe, all involved – both from the regulatory and the operating side – will appear to have made a decent job. As was stated above, the use of nuclear technology have from times been under intense criticism from different groups holding the view that the operation in not safe. In situations where the industry and the supervisory regulatory authority share the view that the operation is safe, one can imagine that some sort of bond will arise that could – in certain circumstances – develop into a situation where the regulatory authority appears to be biased.

Combating capture

Naturally, it is very important to construct the regulatory body in order to avoid or diminish the risks of “capture”. The importance is not solely depending on the need for avoiding actual capture, but also for avoiding the public opinion to suspect that capture has occurred. Even the most independent and unbiased regulatory authority would suffer if its credibility were questioned in the public opinion. There are numerous ways of combating capture – as well as suspicion of capture; in the following I will briefly comment on those I consider to be most fundamental.

One classical measure in order to avoid conflict of interests is to adopt clear and distinct rules for representation. This means that the regulatory authority need to stipulate provisions that defines the limits and conditions under which the personnel can be treated by the industry. For instance it should never be allowed for the authority officials to let the company or unit they perform inspection on, buy lunches, dinners or other fringe benefits. In this context it is necessary that the authority lives by the old saying that there are no free lunches. It is almost inevitable that to some extent allow for small gestures of courtesy. However, there must be clearly indicated where the boundaries are, and it is important that the amount of value that could be accepted is low. Even if it is not equally important the other way around – the authority treats the industry – it is highly recommend adopting standards concerning this as well. Not least in the eyes of the public opinion it would look rather improper if the regulatory authority spent the tax-payers money on extensive representation, treating representatives of the industry. It could easily make the impression of club-members scratching each others backs. By adopting clear and strict rules for representation, a lot is won in preventing capture or impression of capture.

Another important instrument in the battle against capture is to implement regular personnel rotation. Even if it can be difficult to achieve, it is desirable that the authority from time to time let inspectors and others in sensitive positions shift places in the organisation. One can easily comprehend that a person that works for several years towards one and the same licence-holder, eventually may develop close personal relations with the persons on the other side. By letting the personnel rotate in different intervals one would at least decrease the risks of capture in this regard. Of course one also has to consider the advantages that come with experience and knowledge of a certain establishment. As is often the case, one needs to balance between extremes in order to achieve the best result.
There are also a lot to gain from setting up adopted decision-making procedures. It is recommended to avoid organising in such a manner that individuals are allowed to make important decisions completely by themselves. There are a lot of advantages – not just in this regard – to gain from setting up provisions on decision-making. One solution, that may sometimes not be very practical, is to have a collective decision-making. The advantages of having a group of people standing behind the decision does not always balance the disadvantage of slowing up the decision-making process. Another – and perhaps more functional – way of organising the decision-making in sensitive areas, is to have one actual/formal decision-maker and one executive Administrative officer that handles the matter and make the proposal. In this way there will at least be a two-instance routine, which will decrease the risk of making biased decisions.\footnote{Another positive effect of setting up decision-making procedures that requires involvement of more than one person is of course that there will be room for discussion concerning the adequacy of the decision.}

2.2.2 “Politics and the winds of change”

In the same way that it is of importance to establish an independence in the regulatory authority towards the supervised industry, there are potential advantages in avoiding that the regulator becomes too closely linked with the political level. Although one can never completely abolish the connection between politicians and civil servants – the bureaucrats must of course enjoy the Governments confidence – it is highly recommended not to make the leash to tight. There are different reasons for separating the political and the administrative powers when it comes to supervision and safety issues. An efficient regulatory authority must be able to focus fully on the task of enhancing safety in nuclear activities. Obviously a central Government cannot focus solely on this task, but must simultaneously handle, for instance, questions about power-supply. If the powers of the regulatory body is not effectively separated from the central government, conflicts of interest may arise that has a negative effect on the nuclear safety.

Article 8 in the Convention on Nuclear Safety states that each Contracting Party shall take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body concerned with the promotion or utilization of nuclear energy.\footnote{Cf. IAEA INFCIRC/449, 5 July 1994} The reason for the separation of powers in this regard is to avoid that the need for increased power-supply, will have effect on the valuation and decision in safety issues.

An aspect that could be added in this context is the, in politics, embedded character of sensibility to the public opinion. We are all aware of the fact that the winds can shift rapidly in politics – environmental-protection and energy are no exceptions. In order to avoid that politicians under heavy political pressure makes decisions that may effect the nuclear safety in an unfavourable manner, one can see advantages with establishing relatively self-governed or independent regulatory authorities. Of course the independence must stay within clearly defined limits, and should reasonably not reach further than to evaluate the nuclear safety in existing establishments.

2.3 A suiting strategy for inspection and control

It would make little sense to adapt legislation upon nuclear safety and establish a regulatory body if there was no means of determine whether the operators comply with the legislation.\footnote{Cf. Stoiber et.al., Handbook on Nuclear Law, p.30 (Vienna 2003)} Thus, a functioning regulatory body must have access to the sites and facilities...
where nuclear activities are undertaken. Furthermore the authority needs to be empowered to require that the operator supplies all relevant documents and other information. This, however, is not enough. The efficient functioning of a regulatory body requires that a strategy for inspection and control is developed and implemented. Naturally the strategy needs to be adapted to the circumstances and conditions at hand. It is important to stress that different states and cultures may demand different approaches in this regard. Thus, one cannot simply rely on that a strategy developed in one state will automatically function in another. In principle one can say that there are two basic paths to choose between when selecting a strategy; one based on own-control and one based on public-control. None of these alternative strategies are pure, in the sense that they exclude the other altogether. Rather, one can say that the two approaches tend to focus on the one over the other.

An inspection strategy based upon own-control, means that the regulator puts a general duty on the operators to implement sufficient quality systems and self-inspection structures. This means that the supervisory authority may shift from focusing on details to focus more on system-auditing practices. Of course this doesn’t mean – as the term own-control implies – that the operators of nuclear facilities will supervise themselves. It merely means a shift in the focus and emphasizes more the operators’ responsibility and ability to find ways to comply with the requirements in the legislation.

An inspection strategy based upon public-control can be described as the more traditional way of undertaking supervision. Of course the responsibility to comply with the provisions in the legislation rests with the operator, but with a system based on public-control the efforts of the supervisory authority will be somewhat different. Since the operators are not to the same extent required to implement self-inspection structures, the authority’s inspection teams will have to perform a control that is much more “hands-on”.

One can of course argue what kind of strategy is the most efficient. Regardless of which strategy is chosen, the aim with supervision is the same; to ensure that the licensees operate the facilities in a safe and secure manner. If the supervision shows that there are deviances towards requirements in the legislation, the authority will either demand that the operator make corrections or will revoke the license to operate. This is not the context to make statements whether one or the other form of strategy is the most efficient. As was stated above, certain circumstances in the different countries may make one strategy more suitable then another. The most important thing is that a serious evaluation is carried out. If, despite this, something normative is to be said, I would argue that the strategy based on own-control has the potential of being more efficient in financial terms (man-hours). If the operators are required to develop an own system for inspection and if the requirements on documentation are substantial, there would be better opportunities for the public inspectors to find weaknesses in the operation and to focus on these. Instead of spending a lot of time “randomly turning rocks” in search of a problem, time can be spent on a more substantial analysis of imperfections in the license-holders organization.

2.4 Effective enforcement powers

In Administrative-law literature the importance of effective enforcement powers is often stressed as one of the most important links in the supervisory chain. It is not only important that the authority has access to a set of suiting, adapted measures of enforcing the legislation. It is of equal importance that the supervisor has the will, skill and courage to actually use them. It goes without saying that even the most excellent legislation falls short if there is no effective way of ensuring compliance. All of the previously discussed cornerstones – a distinct legislative framework, an independent authority and a suiting strategy for inspection – are decisive for the regulatory authority’s enforcement powers.
The most important part of the enforcement powers are the different sanctions for infringements. Normally the sanction-system consists of both penal and administrative sanctions. One cannot say that it is absolutely necessary for the efficient functioning of the regulatory body that the system comprise administrative as well as penal sanctions, but I would definitely recommend it. In the Convention on Nuclear Safety there are no detailed provisions on what the sanctions should consist of. Article 7 just states that the legislative and regulatory framework shall provide for the enforcement of applicable regulations and of the terms of licenses, including suspension, modification or revocation.

The administrative sanctions need to cover certain instruments. One very basic sanction is the right for the authority to revoke issued licenses if the license-holder fails to comply with important and fundamental provisions in the regulations or in individual license-conditions. Another commonly used administrative sanction is the authority for the supervisor to issue injunctions and prohibitions of different kinds. Normally this is formulated as a right to issue injunctions or prohibitions that are needed in order to ensure compliance with the legislation. This gives the authority a necessarily open mandate to adapt a suiting measure to potential situations. In the legal framework of many countries the regulatory authorities have the right to combine injunctions and prohibitions with stipulated fines. This means that an operator that has not complied with the injunction or prohibition will automatically have to pay the specified amount. The advantage of fines is that the cost of incompliance will be visible for the operator prior to the offence, and thus function preventive.

The penal sanctions are usually straightforward. They simply stipulate that certain breaches of the nuclear law are considered criminal offences. Penal sanctions are effective as a complement to the administrative sanctions, since they include a moral standpoint from society. It also becomes a more personal incitement for persons in leading positions to make sure that the operation is in conformity with the law.

I hold the view that administrative and penal sanctions are inevitable instruments in the regulatory authority’s toolbox. Even though the operators in the nuclear business in general tend to be highly sensitive to the opinions of the regulatory bodies, one cannot count on that this is always the case.

3. SUMMARY AND CONCLUSIONS

This article has focused on four important aspects of what constitutes an effective nuclear regulatory authority. I have discussed the importance of a distinct legislative framework, the need for regulatory independence and avoidance of capture, the use of a suiting strategy for inspection and control, and the indispensability of effective enforcement powers.

My argument has been that despite they are all individually very important, none of these cornerstones alone would be enough. The different aspects contain parts that are not only separately demanded, but also highly interlinked. Furthermore, I have stressed that the optimization of these cornerstones are not enough. An effective regulatory authority needs to optimize a whole set of other factors as well. Factors that in some cases is even more complicated to succeed with, then the basic foundations I have discussed above.

I would like to conclude by saying that it is very important to remember that an efficient – or well functioning – regulatory authority need to be perceived as competent and fair by the entities undertaking nuclear activities (the license-holders). If there is a lack of confidence in this regard, it will be very difficult to influence the safety issues at the establishments. Therefore, one of the all-embracing tasks of the authority is to establish and maintain a fruitful dialogue with the operators.
THE NUCLEAR PACKAGE
GENESIS AND PERSPECTIVE

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In an enlarged European Union with 25 Member States, of which 13 have been generating nuclear power for half a century and where many more countries consume nuclear electricity, there are no binding regulations or directives dealing with nuclear safety or waste management on EU level. Nuclear safety is currently the responsibility of the individual Member States. Basically, with a view to the EU enlargement, the European Commission felt impelled to take legislative action on that field. On 6 November 2002, it launched directives which are known as the “nuclear package” [1]. The package included different legislative proposals, amongst others:

- a draft Proposal for a framework Directive defining the basic obligations and general principles concerning the safety of nuclear installations during operating and decommissioning and
- a draft Proposal for a Directive on spent nuclear fuel and radioactive waste.

1 EUROPEAN LEGISLATION

With regard to our non-European audience, please allow me to give a short introduction to the European legal framework before going into details of the nuclear package history. European law is made up of three major sources, namely primary legislation, secondary legislation and case law.

Primary legislation consists of the fundamental treaties on which the European Union and the European Communities are founded. Those are negotiated at intergovernmental level by the Member States. Secondary legislation takes several forms: there are regulations which are directly applicable and binding in all Member States without the need for any national implementing legislation. Directives, on the other hand, set legislative objectives, with a time limit for Member States. It is up to the individual States to decide how those will be implemented in national law; they are binding in the result to be achieved, but the members may choose the form and methods for adaptation into their national legal systems. Decisions are binding on those to whom they are addressed. Finally, recommendations and opinions belong to secondary legislation and are not legally binding at all. The nuclear package has been submitted as a directive. It sets objectives binding for Member States, not for individuals. The draft fixes time limits within which the objectives should be implemented in national law. The third major source of European law is made up of Case law which includes rulings of the European Court of Justice and the European Court of First Instance. A
European Court of Justice ruling of 10 December 2002 deals with the Communities’ competencies with regard to the safety of nuclear facilities.

The legislative process leading to a directive involves three major European institutions: The Commission is the European Union’s executive body which formulates policy and proposes legislation, the Parliament as the people’s representative assembly of the EU, and the Council consisting of ministers and heads of government. In most areas only the Commission has the right to draft and propose legislation, but only the Parliament and the Council have the right to amend and adopt it. The legislation process begins with Commission proposals for directives or regulations. The further legal procedure depends on the legal basis of the Commission initiative; it determines which procedure applies. According to Title II, Chapter 3, Article 31 of the Euratom Treaty, basic standards for the protection of the health of workers and the general public against the dangers arising from ionising radiations are subject to the so-called consulting process. This means the European Parliament has to be consulted before the Council of Ministers can adopt a legislative proposal. Neither the Commission nor the Council is obliged to accept the amendments contained in the Parliament's opinion. Once the opinion has been produced, the Council can adopt the proposal with or without the amendments.

2 STATUS QUO

In accordance with the above-mentioned consultation process (Art. 31 of the Euratom Treaty), the European Commission adopted the proposals on 30 January 2003. After the European Economic and Social Committee gave its opinion, both proposals were forwarded to the Council on 2 May 2003 which requested the opinion of the European Parliament. The discussion was carried out in the Parliament’s Industry, External Trade, Research and Energy Committee and in the Councils Atomic Questions Group under the Italian and Irish Presidencies. The debate in the Council resulted in a deadlock between the pro- and anti-directive countries, so that on 26 November 2003 representatives of the European Union’s – at that time – 15 Member States postponed consideration of the package until the next year. In May 2004 the Council stated again there was no majority to agree on binding nuclear directives and later adopted so-called conclusions [2], which were limited to a political message: they stated the commitment of Member States to a high level of nuclear safety and the safe management of radioactive waste in the European Union and fixed the commitment to engage in a wide-ranging consultation process to further improve nuclear safety and the safety of the management of spent nuclear fuel and radioactive waste.

The conclusions express that instruments in the field of nuclear safety and the safety of the management of spent nuclear fuel and radioactive waste should be developed following extensive consultations with stakeholders. Member States together with the Commission were urged to avail themselves in particular of the possibilities offered by the review meetings under the Convention on Nuclear Safety [3] and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management [4] in 2005 and 2006 respectively. They are to assess the results achieved under these Conventions, including those of previous Conferences of the Parties, and take stock of the outcome of the work conducted by national nuclear regulatory authorities in multinational fora. On this basis the Member States were held to engage in a wide ranging consultation process facilitating the choice of instruments, within the framework of the European Treaty that can contribute more effectively to achieving nuclear safety and the safe management of spent fuel and radioactive waste without excluding any instrument.
3 BACKGROUND

So the question emerges: What were the reasons for the failure of the nuclear package at the first attempt and what can we expect at the end of the wide-ranging consultation process demanded by the Council?

The nuclear package was initiated as a measure to cover the future use of nuclear energy in the enlarged European Union. It aimed at an EU-wide legislation for safety, decommissioning funds and radioactive waste management and hence covered the entire life cycle of the installations [5]. In its memorandum for the nuclear package, the Commission states that it is no longer possible to consider nuclear safety from a purely national perspective. It says that only a common approach can guarantee that high safety standards will be maintained in an enlarged Union [6].

Another driving force behind the directive was the question of security of energy supply with regard to the close connection between energy production and climate change. The commission argued that nuclear energy produces only a negligible quantity of greenhouse gases and therefore helps to meet the increasing demand for electricity and the Kyoto Commitments. As the Commission strongly supports developing further nuclear technology and is convinced that in Europe we have to keep the choice of the nuclear option, it also concluded that nuclear energy cannot develop without a consensus that gives it a long enough period of stability. That, according to the Commission, will only be the case if a satisfactory solution to the waste issue with maximum transparency is found [7]. Referring to public opinion surveys on the subject of radioactive waste [9], the Commission believes that a solution to the waste issue will lead to public acceptance.

To attain those goals the Commission added rules to the package on very important but rather sensitive issues, which led to strong opposition and finally to a revision of the draft. The first was the issue of decommissioning funds: these were demanded to be set up and managed in a way that sufficient funds would be available when needed for the safe decommissioning of all nuclear power plants, including the management of waste. The funds were not to be used for any other purpose than decommissioning; they needed to be independent from the regular accounts of the licensees and specifically earmarked for the decommissioning of their nuclear installations. The second issue was the timetable in terms of nuclear fuel and radioactive waste: the proposal, known as the “Waste Directive”, required Member States to define programmes including deadlines for the long-term management of all their radioactive waste. In the Commission’s opinion progress on the area of the long-term management and disposal of high-level waste was too slow [8]. To accelerate this process there were a number of deadlines for licences for the development and operation of waste repositories. A third contentious point of the package was that it specified deep geological waste disposal as a legal requirement.

Especially those elements of the package ran into firm opposition from a coalition of Member States that rejected the idea of binding legislation. The above-mentioned issues concerning the timetable and the decommissioning funds were extensively criticised by other European Institutions, Member States, and the nuclear industry.

4 OPINIONS

When it comes to a statement on the nuclear package I should stress that I am not speaking to you as a representative of the German Government. So what my speech can provide is an outside view of the positions expressed. Germany - besides Britain, Finland and Sweden - is one of the countries which strongly opposed the package. The German view on this issue was especially articulated in a letter Chancellor Gerhard Schröder and British Prime
Minister Tony Blair set out to the then Commission President Romano Prodi on 29 September 2003. In this letter the heads of states expressed their serious concerns about the proposal and urged the Commission to be flexible in its approach as to how the concerns might be overcome. Their position was marked very clearly through the statement that:

“...the draft directives submitted by the Commission do not represent a suitable approach. On the one hand, they cannot be expected to produce any actual improvement in the safety of European nuclear installations and, on the other hand, they contain detailed rules on the management of decommissioning funds that appear inappropriate for legislation in the field of nuclear safety and are incompatible with the principle of subsidiarity”.

A fundamental reason for their objection is that the proposals are an unwarranted extension of EU powers. Focusing on the legal empowerment of the nuclear package I have to explain that any new European legislation must have a legal base in one of the Treaties establishing the Community. The Euratom Treaty does not contain a title relating to installations for the production of nuclear energy. Title II, Chapter 3 of the Euratom Treaty deals with Health and Security.

In this context a decision of the European Court of Justice is often referred to, which deals with the accession of the Community to the Convention on Nuclear Safety [10]:

On 15 September 1994, the Commission submitted to the Council a proposal for a decision approving the Community’s accession to the Convention on Nuclear Safety. The Convention is open for signature or accession by regional organisations. However, according to Art. 30 (4) (iii) of the Nuclear Safety Convention, a declaration has to be communicated to the Depositary, the Director General of the Agency, indicating inter alia which articles of the Convention shall apply to the organisation as well as the extent of its competence in the field covered by those articles. On 7 December 1998, the Council adopted a decision on this issue but claimed that Euratom had no specific competencies for nuclear safety and therefore restricted the Community only to the radiation protection parts of the Convention. The European Court of Justice was involved in the issue and decided on 10 December 2002 that it is not appropriate to draw an artificial distinction between the protection of the health of the general public and the safety of sources of ionising radiation. By an extensive interpretation of the provisions in Title II, Chapter 3 of the Euratom Treaty – dealing with Health and Security – the Court largely confirmed the Commission’s position that the restriction by the Council infringed Community law in that it did not refer to all competencies of the Community. However, the Court’s findings do not fully support the Commission’s stand on its legislative competencies. Analysing it, account has to be taken that the question before the Court was whether any Community competence existed in the fields covered by the respective articles of the Convention on Nuclear Safety. Consequently, for the Commission’s claim it was sufficient for the Court to assert some such competences, e. g. issuing non-binding recommendations. Finally the Community has to bear in mind that the competencies are not without limits as the purpose of the legislative act must be to give effect to the provisions in the Euratom Treaty on the health and safety of workers and the general public. Also, the Community legislation adopted on the basis of Articles 30 to 32 of the Euratom Treaty cannot be so detailed as to leave no scope for implementation by Member States [11].

Another reason for rejecting the package was that the opposition views it as an unnecessary addition to the existing international framework and proclaims that it fails to include any substantial measure to increase nuclear safety. Considering the directives’ content, the similarity to the conventions negotiated under the auspices of the IAEA is undeniable. Both directives were very much inspired by the Convention on Nuclear Safety and the Joint Convention. Almost all EU Member States [12] and the European Atomic
Energy Community are Parties to these Conventions or are about to become one. In addition, the more detailed IAEA Safety Standards are widely applied throughout the Community.

To complete the opinions expressed on the old and new nuclear package launched by the European Commission. It is remarkable that other than the mentioned Member States, the European Parliament, the industry and NGO’s - as far as I could see - unanimously have expressed at least concerns about the draft legislation.

The European Parliament [13] supported in principle the idea of setting up such directives but on the condition of several amendments. It clarifies in its report that the responsibility for the safety of nuclear installations should remain with the national safety authorities. Moreover, the Parliament suggests to establish a “Regulatory Authorities Committee” in which national regulatory bodies would be represented to carry out reviews and horizontal control in accordance with the proposed directive. On the management of spent nuclear fuel and radioactive waste, the Parliament has underlined that certain methods of disposal of radioactive waste should be excluded for environmental reasons, including dumping at sea, disposal in under-sea repositories, and disposal in space. While Members of the European Parliament have welcomed the idea of setting up deep geological disposals as an effective solution for high-level and long-lived radioactive waste, they disagree with the Commission’s proposal for a single timetable due to the different situations in Member States.

The nuclear package has met a hostile reception from both pro- and anti-nuclear groups.

The nuclear industry, whose position is expressed by a FORATOM position paper, says that a European directive would only lead to an additional burden on the industry without any benefits in terms of public safety. In their view, further harmonisation could be achieved by encouraging national authorities to base their legislation on IAEA standards and by encouraging safety authorities and operators to exchange information and co-operation to implement best practices. The industry also points out that any new legislation should reaffirm that primary responsibility for nuclear safety lies with the plant operators. On the issue of nuclear waste, FORATOM stresses that all radioactive waste is currently safely managed under independent regulatory control, but it welcomes the Commission’s proposal for permanent solutions as the key to public confidence in the long-term future of nuclear energy in the European Union [14].

Looking at environmental, anti nuclear organisations we can find stronger criticism, but of course for different reasons: Greenpeace described it as a "nuclear survival package" and reacted with disappointment, saying that the proposals are misleading [15]. Friends of the Earth also called for a suspension of the nuclear package, saying that it represents a coordinated effort to prepare the ground for the further development of atomic power in an enlarged European Union [16].

5 PERSPECTIVE

In response to the Member States’ criticism and concerns and in hope of seeing the legislation approved before the end of her term in office at the end of October 2004, Commissioner Loyola de Palacio proposed a new draft for the nuclear package, known as the “new package”, on 8 September 2004 [17]. It is a watered-down version under which the Commission would take a much less powerful role on nuclear safety issues than initially intended. The new proposal responds to concerns and contains the following changes:

The Nuclear Safety Directive (Council Directive (Euratom) laying down basic obligations and general principles on the safety of nuclear installations)
states that the responsibility for nuclear safety rests with the national authorities and the operators.

- obliges the Member States to ensure that adequate financial resources are available from the regulatory body and the operators to support the safety of nuclear installations throughout their life instead of requiring decommissioning funds.

- proposes to set up a so-called “Committee of Regulatory Authorities” composed of national regulatory bodies. The committee should amongst others encourage the exchange of best practices among regulatory authorities and advise the Commission on all matters concerning nuclear safety and define guidelines for national reports and assess them.


- no longer specifies deep geological waste disposal as a legal requirement, but requires Member States to give priority to this treatment if possible.

- requires Member States to draft long-term national management programmes for radioactive waste. The original approach of a firm timetable has been abandoned.

- establishes a “Committee of Experts” composed of experts designated by each Member State to handle the national reports and summary reports submitted by Member States every three years.

However, the directives would still be binding for Member States.

Let me finally try to draw a perspective of the nuclear package. This obviously is not easy with regard to the fact that Member States are still deeply divided over the Commission’s proposals and a clear majority which might prevail cannot be identified.

One of the main objections concerning the nuclear package - I would say the most striking point - was that the Commission worked without any kind of consultation or participation of the parties impacted by such a proposal. The European Commission is still being criticised for taking the initiative on such a sensitive subject without prior dialogue with the stakeholders. This is now being compensated by a broad consultation process in several working groups under the auspices of the Council and with participation of all committed Member States and the Commission.

Such a broad consultation process makes sense because even the opposition countries support “the Commission’s aim to ensure that high standards for the safe operation of nuclear installations are established and maintained in an enlarged European Union” (Schröder-Blair letter). The point of dispute is therefore not the aim but the way how to attain the commonly accepted goals. The opposition finds it essential that the Council should consider an alternative to the proposed nuclear package as binding directives since according to this position a “better option would be a voluntary, non-binding harmonisation process which respects the national responsibility of the Member States for nuclear safety and takes into account existing international co-operation” (Schröder-Blair letter).

The instrument of implementation of the results of the extensive consultation process has not yet been decided, and the most controversial question will remain whether the framework will be issued as binding or non-binding legislation. The discussion between the Member States and the Commission will therefore remain exciting as the positions seem to be deadlocked and a compromise in this point is barred: the European Commission refuses to consider anything short of binding legislation while a crucial number of Member States are insisting that both drafts should be downgraded into non-binding instruments.

Since the consultation process is still carried out in the Council’s Working Party on Nuclear Safety and its three subgroups, I would just like to point out the controversial issues they try to balance. On the one hand, they have to consider that the European Union is the
world’s leading nuclear generator - the enlarged European Union operates more than 150 reactors that produce 32 per cent of its electricity - so high standards for the safe operation of nuclear installations are necessary in an enlarged European Union. Having said that, the experts of the Council’s Working Party have to consider that every nuclear-power-plant-operating country has generated its own safety culture, that the attitudes towards nuclear energy vary from country to country [18], and that effective supervision of nuclear power plants needs clear responsibilities. Finally, they have to consider that we already have an international framework, like the provisions of the Nuclear Safety Convention, the IAEA safety standards (which ensure nuclear safety on a world-wide basis), and WENRA reference levels, so that the European Commission’s proposals need to provide an additional security system.

I hope I have aroused your interest as we all follow the further path of the nuclear package. The results of the Council’s consulting process will be given in a report to the Council at the end of 2006. However, in the environment of European politics, the outcome of the Commission’s initiative seems to be unpredictable.

Thank you for your kind attention.

REFERENCES

[12] Malta and Estonia are not Member States of CNS; Portugal, Malta and Cyprus are not Member States of the Joint Convention while Estonia and Italy have not ratified the Joint Convention yet.
[16] Friends of Earth Europe, Call to suspend new European “Nuclear Package”, press release, 5 November 2002
[18] While France and Finland are considering or building new reactors, Germany, Sweden, Belgium, Netherlands and Spain are planning to shut down their existing reactor programmes.
THE RUSSIAN APPROACH TO NUCLEAR LIABILITY

Alexander A. Matveev

1 INTRODUCTION

Nuclear Energy has always been a priority avenue of scientific and industrial development in Russia. Risks associated with that development were obvious. Their legal regulation, both in national acts and international treaties, however, for a considerable time could not keep pace with the rapid progress in this sphere.

In 1986, the Chernobyl disaster raised a serious question for the USSR and its neighbours and partners. Due to State sovereign immunity it had not been possible for foreign nationals to claim in third jurisdictions any compensation for damages resulting from a nuclear incident, which occurred on the territory of the Soviet Union.

The accident itself was considered as a disaster because it was deemed to have occurred independently of the will of the responsible bodies and personnel and thus not giving rise to civil proceedings. “Liability” issues were settled in Russia through a special legislation to this effect, which had the form of State assistance to victims. Not surprisingly, in the international arena the USSR put forward issues of early notification and assistance in respect of nuclear incidents, never admitting any liability (no treaty = no liability).

The Chernobyl accident gave rise to a long debate over prospects of nuclear energy development and voices were heard to impose restrictions, if not a total halt, to the construction of further nuclear facilities. Yet the predominant opinion remains largely in favour of the extension of atomic energy use. The public is motivated by the following analysis drawn on the calculations of existing traditional energy reserves (Russia being one of leading oil exporting countries adds to fears of their early exhaustion) and comparable advantages of cheap and clean nuclear electricity.

2 NO REAL ALTERNATIVE WORLDWIDE FOR NUCLEAR ENERGY

Energy is a vital element of economy and, intermediately, one of the key factors of human progress. The drawbacks of traditional energetics are growing more obvious by the day. Forecasts indicate that rapid growth of Earth population and high rates of economic development in a number of regions in Asia, Africa and Latin America will lead to a substantial increase of demand for energy. As an expectation and an illustration for this, prices of crude oil in world markets have reached unprecedented records high and do not show any inclination to stabilise. On the background of this trend there can already be observed a decrease in increment rates of natural energy resources surveyed in relation to their extraction.
At the same time the share of organic fuel, fired in thermoelectric power stations to produce energy, in the structure of global production has reached 60-65% and is expected to increase in the near future, according to some estimations – up to 80% and more. For Russia this share is already 91% and this is a reason for anxiety.

The consequences of this development are diverse – from political destabilisation and economic crisis caused by depletion of cheap resources of hydrocarbon fuel, to environmental traumas pursuant to excess of atmosphere discharge limits of chemical burn products.

There is a long history of alternatives to organic fuel being presented – the “inexhaustible” energy sources. However, their major scale implementation has protracted, and not without a good reason – apart from technological complications and geographic inconveniences, their wide application is fraught with economic and other problems. For instance, ordinary hydro energy can seriously upset natural balance (like in the basin of Volga as a result of series of artificial seas); solar panels require colossal space; wind turbines distort airflow, which can lead to soil deterioration. And all alternative energy sources are very onerous. Consequently, only the richest nations can afford them to some noteworthy degree.

The only real answer to demands of mankind is nuclear energy. Its benefits are immense. These include low energy costs and therefore low power rates; mutual proximity of production and consumption sites; minimization of transport dependency attributable to low intensity of fuel supply; fuel efficiency increase through waste reuse, cut-down of noxious atmosphere discharges.

There are, of course, interrogations and uncertainties with respect to nuclear energy use. However, answers to many questions have already been provided. Scientific and technological advance is called in to devise new ways of dealing with difficulties: in 2000 IAEA had started the International innovative reactors and fuel cycles project (INPRO), in the line of an initiative which the President of the Russian Federation V. V. Putin put forward for complex solution of political, economic and environmental problems connected with the energy needs of mankind through full utilization of scientific and industrial potentials.

But the main obstacle on the road of nuclear energy development seems to be the apprehension of harm that can be caused by a nuclear incident. While the Chernobyl disaster remains the best known and most massive, it is by far not the only nuclear incident. The U.S., despite huge energy demand, has not launched a new nuclear power plant ever since the 1979 “Three Mile Island” reactor breakdown. Rather recently, on September 30, 1999, there was the “Tokai-Mura” nuclear works incident in Japan. All this served to steadily form the image of nuclear energy as prone to disasters inflicting damage of transboundary character.

Naturally, countering of such damage cannot be limited to scientific and technological means only. There is always a question of just compensation for the harm suffered. Happily enough, unique character of public perceptions of nuclear risks and associated fears conditioned an early development of sophisticated legal regulation. For once nuclear lawyers proved to be creative and far-looking, offering a range of solutions. And the dilemma faced by most countries of the globe today is whether to remain dependant on national regulation and small-scale general treaties, or adhere to a major instrument designed to solve the specific issues of civil liability for nuclear damage.

In Russia both avenues were explored in depth and the basic determination was to move forward along both of them. However, the velocity was not high and interdependency between those paths further decreased it. Still in such a hazardous area deep and thorough thinking is an asset. And in any event the absence of a special regime of nuclear liability meant that the general regulation of Russian civil law would apply in this sphere with all its positive and far-reaching resources open to victims (like no limitation of liability and favourable prescription periods).
3 REQUIREMENTS OF INTERNATIONAL CO-OPERATION

Before any substantial legal solutions were introduced in respect of material and procedural regulation of nuclear liability, Russia had to provide certain clarifications and guarantees at international level, especially at the time when she became swiftly and deeply involved in major partnerships in nuclear sphere made possible consequently to new strategic co-operation with the U.S. and Western European States.

Patience was not the strength of Russian partners insisting on the necessity of legal solutions in respect of nuclear liability to perform international projects of exclusive magnitude, especially in the realm of security. That is how in the nineties series of international treaties with unobserved remedies saw the light. Their meaning was to provide not for a regime of nuclear liability, but for guarantees to the Russian partners that they cannot be the objects of claims by victims of nuclear incidents (without any reassurance to the victims themselves).

The first international instrument concerning nuclear liability entered into by Russia was the Agreement between the Russian Federation and the United States of America concerning the safe and secure transportation, storage and destruction of weapons and the prevention of weapons proliferation, signed on 17th June, 1992. Where damage to property of the Russian Federation, death or injury to Russian personnel, arising out of activities of U.S. contractors and personnel pursuant to the Agreement (and not just “nuclear damage” per se) was concerned, in respect to any liability to the Russian Party, except contractual claims, the U.S. and their personnel were held harmless, even for premeditated actions. Russia took up responsibility for claims of third parties arising from any acts or omissions of any employees of the U.S. or U.S. contractors done in the performance of their official duty, which caused claims by third parties. These obligations of the Russian Party were to continue to apply without respect to time, unless otherwise agreed in writing by the Parties.

Thus, a regime was created where the operator assumed truly absolute liability, exonerating the other Party from virtually every possible claim. Needless to say, it faced severe difficulties if not in implementation, then in public perception of its goals and contents. The public opinion assimilated this careless solution (with no exception in respect of premeditated crimes) to an invitation to commit such crimes. Although the indemnification mechanism has never been tested in practice and consequently those perceptions alike, a Protocol extending the application of the 1992 Agreement for seven years, which was signed in 1999, although applied provisionally from the date of the signature, in August 2005 was still not ratified by the Russian Party. At one moment strong was the impression in Russia, that the U.S. made the ratification of this Protocol a precondition to further co-operation with the Russian Federation while clearly insisting on the reproduction of its liability provisions in any new bilateral agreement in nuclear field. Fortunately, today the clarity seems to have been brought sufficiently and the parties appear to share a rational and balanced approach towards further co-operation in its framework for the benefit of increased nuclear security.

The extraordinary precedent in the 1992 Agreement never repeated itself in other treaties. Little more than a year later a new treaty between the Russian Federation and the United States was adopted - the Agreement between the Government of the Russian Federation and the Government of the United States of America concerning operational safety enhancements, risk reduction measures and nuclear safety regulation for civil nuclear facilities in the Russian Federation, signed on 16th December 1993. It embodied a different approach to the matter of nuclear liability.

The Russian Party still waived rights of claim for indirect, direct or consequential damage to property owned by the Russian Federation, and agreed to provide for defence, indemnify and bring no claims against the U.S. Party or its personnel and contractors in...
connection with third party claims in any court or forum. However, the term “hold harmless” was never used; the definition of damage was limited to that stemming from a nuclear incident within Russian borders, and did not include death or injury to Russian personnel; and finally, a very important exclusion was introduced: now, claims for damage or injury against individuals arising from their premeditated action, fell outside the scope of exoneration.


4 CURRENT INDEMNIFICATION STANDARD

A new standard of indemnification was established on May 21st 2003, when as a result of negotiations between Russia and several OECD States a Framework Agreement on a Multilateral Nuclear Environment Programme in the Russian Federation (MNEPR) was adopted together with a Protocol thereto on Claims, Legal Proceedings and Indemnification. The separation of the main Agreement from the Protocol on liability was necessitated by a particular position of the U.S.

The MNEPR Protocol was designed to become the foundation of a regime, which would compensate Russia’s lack of effective internal legislation and her non-participation in international liability regimes. As kind of incentive, the Protocol affirms that the application of its central provision on indemnification (the Russian obligation) may be terminated between Russia and any other Party to the Protocol by such other Party, if both Russia and such other Party become parties to the Vienna Convention on Civil Liability for Nuclear Damage of 21 May 1963 (or – for such other Party - the Paris Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960) and the Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention of 21 September 1988. To make it possible the Russian Federation and such other Party shall each inform the other in writing of the dates upon which such instruments come into force in their respective territories.

\[1\] In series of later negotiations this unacceptable term appeared to acquire exceptional significance in the eyes of Russian representatives who never agreed to its introduction in further treaties, while their counterparts were extremely eager, yet unsuccessful, to preserve it wherever possible.

\[2\] A slightly different approach is evident in the Agreement between the Government of the Russian Federation and Government of the Federal Republic of Germany on Nuclear Liability in connection with Deliveries from the Federal Republic of Germany for Nuclear installations in the Russian Federation of June 8th, 1998, and a similar agreement with the French Republic of June 20th, 2000. The only real difference, though, lies in an extra exception provision (the Russian Party does not offer exoneration if the other Party failed to inform of a claim in due time), and in the temporal scope of the obligations (they are to remain in force until Russia ratifies the Vienna Convention and the Joint Protocol, or joins some other international nuclear liability regime.

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In elaborating the MNEPR liability provisions an impressive effort was made to ensure that the Protocol is even more accurate to the Convention than all previous similar agreements, including those concluded with the United States. The definition of damages, for instance, is given in a separate Article (Art.1) and for the most part directly cites the Convention’s Article I.1-k:

“2. For the purposes of this Protocol, the following terms shall have the following meanings:

Nuclear Incident:
Any occurrence or series of occurrences having the same origin which causes Nuclear Damage.

Nuclear Damage:
(i) loss of life, any personal injury or any loss of, or damage to, property which arises out of or results from the radioactive properties or a combination of radioactive properties with toxic, explosive or other hazardous properties of nuclear fuel or radioactive products or waste in, or of nuclear material coming from, originating in, or sent to, a nuclear installation;(ii) any other loss or damage so arising or resulting if and to the extent that the law of the competent court so provides; and(iii) if the law of the State in which the nuclear installation of the liable operator is situated so provides, loss of life, any personal injury or any loss of, or damage to, property which arises out of or results from other ionising radiation emitted by any other source of radiation inside a nuclear installation.

3. For the purposes of this Protocol, whenever both Nuclear Damage and damage other than Nuclear Damage have been caused by a Nuclear Incident, or jointly by a Nuclear Incident and one or more other occurrences, such other damage shall, to the extent that it is not reasonably separable from the Nuclear Damage, be deemed, for the purposes of this Protocol, to be Nuclear Damage caused by that Nuclear Incident”.

Where the Protocol deviates from the Convention, it does so in order to improve it – at least, from the standpoint of the Contributor. As can be seen, the above definition offers a synergy between the norms of the Convention and the Russian Federal Act on Use of Atomic Energy – the Convention definition is taken as a basis and then expanded via paragraph 3, giving the term “nuclear damage” (and thus the scope of liability) significantly greater range.

That is by far not the only instance of the Protocol actually giving much more favour to the claimant than the Convention.

In the next Article, actual indemnification norms are set:

“Article 2

1. With the exception of claims for injury or damage against individuals arising from omissions or acts of such individuals done with intent to cause injury or damage, the Russian Party shall bring no claims or legal proceedings of any kind against the Contributors and their personnel or contractors, subcontractors, consultants, suppliers or subsuppliers of equipment, goods or services at any tier and their personnel, for any loss or damage of whatsoever nature, including but not limited to personal injury, loss of life, direct, indirect and consequential damage to property owned by the Russian Federation arising from activities undertaken pursuant to the Agreement. This paragraph shall not apply to the enforcement of the express provisions of a contract.

2. With the exception of claims for Nuclear Damage against individuals arising from omissions or acts of such individuals done with intent to cause damage, the Russian Party
shall provide for the adequate legal defence of and indemnify, and shall bring no claims or legal proceedings against the Contributors and their personnel, or any contractors, subcontractors, consultants, suppliers, or subsuppliers of equipment, goods or services at any tier and their personnel in connection with third-party claims, in any court or forum, arising from activities undertaken pursuant to the Agreement, for Nuclear Damage occurring within or outside the territory of the Russian Federation, that results from a Nuclear Incident occurring within the territory of the Russian Federation”.

There is neither a temporal limit for claims in respect of which indemnification and defence are to be provided, nor a financial limit to the amount of damage subject to compensation.

The Protocol also does not directly exonerate the operator from liability in cases of natural disasters, acts of war and civil unrest. This is regulated through applicable material law.

The real meaning of the important term “indemnification” can be determined in the light of the wording used in the Russian authentic text where we find for that purpose “release from any material liability”; one might question whether material liability to third parties can be discharged (as such an action seems to have no legal basis). A logical conclusion would be that the Russian Party discharges its counterpart from liability to the Russian Party itself, and no material obligation towards claims of third parties is present. On the other hand, Article 2.5 of the Protocol states: “any payments related to the indemnification in paragraph 2 of this Article shall be made promptly and shall be freely transferable to the beneficiary in its national currency”. This points towards the Parties’ intention to view indemnification as compensation by the Russian Party of the Contributor’s expenses in regard to third party claims.

What remains outside the scope of the MNEPR Protocol is the procedure for third party claims. But that was never the intention of the drafters. Claims should be processed in the light of applicable law. It is still worth mentioning that in accordance with Article 2.8 of the Protocol, nothing in the indemnity provisions shall be construed as waiving the immunities of the Parties. Thus, foreign nationals are reminded of the prospect of confronting State sovereign immunity, if it is not prevented by the law of the competent court (which would be normally the case in the Russian court), when attempting to claim compensation for nuclear damage.

There are several examples of positive cooperation on the basis of the MNEPR system. For instance, on June 9th, 2004, within the framework of the G8 Sea Island conference, a treaty had been signed between the Government of the Russian Federation and the Government of Canada on cooperation in the realm of dismantling of chemical weapons and nuclear powered submarines withdrawn from the Navy’s service, calculation, control, and physical protection of nuclear material and radioactive substances. This treaty is a vital step in Russian-Canadian relationship and stems directly from the 1992 bilateral Treaty on concordance and cooperation. It creates a legal foundation for launching full-scale cooperation on two prime vectors of the Global partnership set by G8 leaders on the 2002 Kannanasquis summit.

The preceding summary of the indemnification treaties shows that while they made it possible to allow for extensive international co-operation in the sphere of nuclear security, the material solution for possible claims was provided elsewhere. And first the answer should be looked for in national legislation. In Russia that was done both through the application of general civil law that can be sufficient in many instances and the elaboration of specialised legislation, which is not yet finalised.
5 RUSSIAN GENERAL CIVIL LAW

Compensation of any kind of damages may commonly be claimed on the basis of general civil law – namely, Article 1064 of the Civil Code of the Russian Federation, according to which damage inflicted upon a person or his property is to be fully compensated by the person who inflicted it, unless he is able to prove that the occurrence of damage was not due to his fault. Damage caused by legitimate actions, however, is only subject to compensation if the law expressly provides for it.

Foreign nationals enjoy all of the above rights (the Constitution of the Russian Federation in clause 3 of Article 62 extends the rights and obligations of Russian citizens to foreign nationals within the Russian Federation, unless a Russian federal law or international agreement provides otherwise), and can apply for damage compensation by filing claims to competent Russian courts in accordance with civil procedure requirements.

It should be noted here that, according to Article 1219 of the Civil Code, the law of the State of the damage-causing incident is to be applied to obligations stemming from infliction of damages. If damage actually occurred in a different State, the law of that State may be applied if the person to cause damage had (or should have) anticipated its occurrence. Furthermore, if damage had occurred abroad (in respect to the Russian Federation), and if all parties are nationals of a single foreign State, or have residence there, the law of that State should apply.

After the occurrence of the incident, which caused damage, the parties may agree to apply lex fori to the resulting obligation (clause 3 of Article 1219 of the Civil Code).

Obviously, as far as nuclear damage is concerned, the approach of general civil law is not fully consistent with the principle of absolute liability of the operator and thus is not adapted enough to the interests of the victims. That became absolutely clear in the aftermaths of the Chernobyl disaster, which prompted, however not immediately, the elaboration of a special nuclear legislation.

6 NUCLEAR LEGISLATION

On the 21st November 1995, the Federal Act on Atomic Energy use was adopted (henceforth the Act). Among its provisions, it contained a framework regulating liability for losses and injury inflicted by radiation upon legal and natural persons, and the health of citizens (Part XII, Articles 53 – 60). To date it remains the most important regulation in the realm of domestic nuclear law. Its drafters took great care to adapt it to then existing international legal realities. That is why to a very large extent it is consistent with the Vienna Convention on Civil Liability for Nuclear Damage. In certain instances, however, the Act is more flexible and generous to the victims whose rights were the primary considerations of the legislators.

The following is the summary of the main elements of the Act in this respect.

6.1 Basic definitions: operator, nuclear installations and nuclear damage

The term operator is rendered in the Act as an exploiting organization, which is an organization, created in accordance with the Russian Federation legislation, and acknowledged as fit for managing a nuclear facility, radiation source or warehouse, and conduct on its own or with external assistance activities on locating, projecting, constructing, exploiting and dismantling a nuclear facility, radiation source or warehouse, as well as handling nuclear materials and radioactive substances. The exploiting organization must
possess valid state licenses for conducting the abovementioned activities, as well as due competence, financial, material and other resources required.\footnote{Federal Act #170-FZ of 21 November 1995 on atomic energy use, Article 34.}

The exploiting organization itself is not limited to a public body or government corporation; under Article 34 of the Act on Nuclear Energy Use, any organization established in compliance with the legislation of the Russian Federation can be eligible for operating a nuclear installation; the appropriate license is issued by the body managing nuclear energy use (currently the Federal Agency on Atomic Energy) upon satisfaction of necessary criteria.

This norm, though considerably liberal, does impose a few limitations; for instance, since the operator should have been established under Russian legislation, foreign companies seem to be precluded from directly entering the nuclear energy production market.

Nothing is openly said in the Act about foreign investments; however, according to Article 2 of the 1999 Federal Act on Foreign Investments in the Russian Federation, investments are only allowed in objects of civil rights, which are not excluded from civil transactions. Free realization of uranium, other fissile materials, products thereof, and nuclear waste had been prohibited by the Presidential Decree #179 of February 22, 1992; this restriction, however, was partially superseded by the Act’s amendment done on the 11th of November, 2003.

According to the new wording of the Act’s Article 5, all nuclear materials, nuclear waste containing them, military radiation sources, military nuclear installations and storage facilities are Federal property only. Non-military installations and storage facilities are Federal property unless expressly stated otherwise by the law. Non-military nuclear materials, nuclear waste containing them, and radiation sources, may be Federal property, property of Federation Subjects (administrative-territorial units of the Russian Federation), municipal property, and private property (but only in respect of legal persons). Property rights on the latter object group are transferred in accordance with general civil law; to perform these transactions, however, legal persons are required to obtain license for operation in the realm of nuclear energy use. Once the legal person has a license, though, it can even obtain nuclear materials, normally Federal property only, by entering a contract with a competent authority.

In the new structure of the Federal executive branch\footnote{See Government regulation # 164 of 6 April 2004, Article 3.} such contracting is the domain of the Federal Agency on atomic energy,\footnote{There is no specific act detailing this body’s competence yet; nonetheless, since it is a recent amalgamation of two distinct bodies, one of which was the Federal Service on atomic supervision, and the latter had been the licensing authority (see Government regulation #192 of 7 April 2004, Art.1), it is justified to assume that the new Service will be the licensing authority as of now.} whereas the authority in charge of licensing is the Federal Agency on ecological, technological and atomic supervision.\footnote{The Code of Trade Navigation of the Russian Federation #81-FZ of 30 April 1999, in full compliance with the 1996 Convention on liability and compensation of damages in connection with transport of dangerous and harmful substances by sea, excludes nuclear damage from the scope of its liability provisions (Article 326, clause 2.2; Article 356), leaving this matter for special nuclear liability instruments to resolve.}

Another term defined in the Act is nuclear installations - structures and complexes containing nuclear reactors, including nuclear power plants, ships and other flotation devices,\footnote{Ibid., Article 3.} space and aircraft, other transportation and transportable devices; structures and complexes containing industrial, experimental and research nuclear reactors, critical and subcritical nuclear stands; structures, complexes, testing grounds, installations and devices with nuclear charges for employment in peaceful purposes; other structures, complexes and devices, which contain nuclear material, for purposes of production, utilization, recycling and transportation of nuclear fuel and nuclear materials.\footnote{Ibid., Article 3.}
More significant is the definition of **nuclear damage**.

The Act prescribes to compensate *losses and injury suffered by legal and natural persons, caused by radioactive properties during activities in the field of nuclear energy use*. Injury includes loss of life, personal injury and damage to the health of citizens, which is caused by radiation or a combination of radioactive properties with toxic, explosive or other hazardous properties.\(^9\) If alongside with losses caused by radioactive properties other losses occur, which cannot be reasonably separated from those, caused by radiation, these are also subject to compensation.\(^10\)

This definition, though utilizes terms and phrases of the 1963 Vienna Convention on Civil Liability for Nuclear Damage Article I.1-k, is in fact a bit different. It does not limit the damage to only that which results from properties of nuclear fuel or radioactive material or waste in, or of nuclear material coming from, originating in, or sent to, a nuclear installation.

Further on, as opposed to the Act, the Convention, even when giving national courts leeway in determining the scope of liability, never fails to mention that only damage resulting from ionising radiation or hazardous properties of nuclear fuel or material can be deemed “nuclear damage” and thus subject to compensation under the Convention.

According to Article 15 of the Civil Code of the Russian Federation, losses include:

- *expenses, carried (or which will have to be carried) by the person whose right has been violated, in order to reinstate the latter right*;
- *loss of revenue which the person would have otherwise received in common conditions of civil turnover*.

Concerning environmental damage, the Act in its Article 59 refers to other legislation, in particular the Federal Act #7-FZ on Environmental Protection, adopted on the 10\(^{th}\) of January 2002. Damage to the environment, according to Article 1 of the latter, is a *negative alteration of the environment as a result of its pollution, which caused degradation of natural ecologic systems and depletion of natural resources*. Also, Article 79 speaks of damage to natural and legal persons caused by negative influence of the environment as a result of natural and legal persons' activities. Persons who caused such damage are obliged to provide full compensation, which usually includes covering the costs of reinstatement and loss of revenue.

As for costs of preventive measures, Article 984 of the Civil Code acknowledges that necessary costs of measures undertaken by a person to avoid or lessen damage to another person or his property, fulfilment of his obligations, or actions in his other legitimate interests, are to be compensated by this latter person (unless measures have been undertook with prior knowledge of that person's disapproval).

### 6.2 Principles of liability

According to Article 53 of the Act, the operating organization (operator) bears the civil liability in accordance with the legislation of the Russian Federation for inflicting damages, regardless of whether it was at fault or not. This corresponds to the principle of absolute liability as enshrined in the Vienna Convention.

However, exoneration from liability occurs if damages were caused by an Act of God, military activities, armed conflicts or the premeditated actions of the victim himself. The burden of proof lies with the operator.

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\(^10\) Federal Act #170-FZ of 21 November 1995 on atomic energy use, Article 53.
The range of exceptions here is somewhat less defined than those settled in Article IV of the Vienna Convention. For instance, the latter offers exoneration not just from any Act of God (which, according to the Civil Code of the Russian Federation, is an extreme and unforeseeable set of circumstances), but rather in cases limited to those enumerated therein: grave natural disasters, armed conflict, hostilities, civil war or insurrection. It would be up to the competent court to decide whether it may wish to go beyond that enumeration and grant exoneration to the operator in other cases.

It should be noted that the Act does not contain a provision similar to the Convention’s Article IV.5 – namely, operator’s exoneration from liability for damage to the nuclear installation or any property used in connection with it, as well as to the means of transport upon which the nuclear material involved was at the time of the incident.

Although the operator is the only liable person openly mentioned in the Act, it does not impose a limit upon the operator’s right of recourse against any other person under applicable law, as opposed to the Convention’s Article X.

The general rule of civil law concerning right of recourse in torts would be Article 1081 of the Civil Code of the Russian Federation, which stipulates the following: a person, having compensated damage caused by another person (an employee during performance of his duties, a vehicle driver, etc.), has a right of recourse to this latter person in the amount of compensation paid, if a different amount is not set by law. An inflictor of damage, having compensated damage inflicted jointly, has a right to demand reimbursement from every other inflictor – a part of the amount of compensation paid, proportionate to the other inflictor’s level of fault (if the level is indeterminable, parts are considered equal).

Therefore, after the operator has duly satisfied the victim’s claims, he may bring recourse claims against others responsible for the incident.

The forms and financial limits of liability under the Act’s Article 55 are regulated by the legislation of the Russian Federation; the Act itself does not contain these norms, with one exception: maximum liability limits cannot exceed those stipulated in Russia’s international agreements. None of these agreements, including the Vienna Convention on Civil Liability for Nuclear Damage, entered into force for Russia in August 2005, actually set a fixed limit yet, though, therefore liability can be treated as unlimited.

According to Article 1064 of the Civil Code of the Russian Federation, damage inflicted upon a person or his property is to be fully compensated by the person who inflicted it. Further it is stated that damage caused by legitimate actions is only compensated if the law expressly provides it, but the Act contains such a provision (namely, the absolute liability provision).

If damages caused by radioactive properties exceed the limit imposed by the Act, the Government of the Russian Federation takes upon itself an obligation to compensate the excess amount (Article 57). This correlates completely with the Convention’s Article VII.1.

Contrary to Article VI of the Convention, the Act does not impose a temporal limit upon rights of compensation stemming from loss of life and injury to personal health. Regarding claims of compensating damage done to property or environment, the Act stipulates a period of three years from the day when the person had (or should have had) knowledge of the violation of their rights (Article 58).

According to Article 78 of the Federal Act on Environment Protection, actions regarding compensation of damage to the environment in violation of the environment protection laws can be brought within twenty years.

Article 56 of the Act sets a requirement for every operator to maintain financial security sufficient to cover the liability in the limits of Article 55. However, actual limits have not yet been settled by the Russian legislation.
The form of security is specified further in Article 56. It may include State or other warranty, insurance contracts and personal financial assets. Meeting the security requirements is necessary to obtain a license for operation of a nuclear facility.

Other norms concerning security mirror their Convention provisions (such as Article VII.4).

Currently, the security amounts remain unestablished – and it seems that no actual insurance is required for obtaining a license to operate a nuclear installation. Therefore, from purely legal point of view financial security remains optional – until the required legislation is finally adopted. However, the Russian atomic industry has already developed a comprehensive system of self-insurance.

7 SPECIFIC NUCLEAR LIABILITY LEGISLATION

The Draft Federal Act on Civil Liability for Inflicting Nuclear Damage and its Financial Security, submitted to State Duma, was aimed, in particular, to provide basis for the implementation of the obligations deriving from the Vienna Convention. That is why for many years when it was scrutinised in the parliament, the ratification of the Vienna Convention was postponed. Despite all efforts this draft failed to be finalised for too long (from 1998 to 2004) and that prompted the decision to disassociate this draft from the ratification of the Vienna Convention. As a result the Vienna Convention was ratified by Russia and entered into force for her on 13 August 2005.

That development brought again the draft act into the focus of attention. Parliamentary committees resumed its consideration and directed its restructuring by the governmental agencies. It is expected that the parliament would revert to the draft by the yearend.

The draft as presented to Duma, uses largely the same liability formulas as the Act on Use of Atomic Energy, but attempts to narrow them down and introduce precision, taking in mind the Vienna Convention. For example, nuclear damage is limited to that which took place as a result of a nuclear incident (“an occurrence or series of occurrences having the same origins on a nuclear installation or beside a nuclear installation, an occurrence or series of occurrences during transporting of nuclear materials, combustible assemblages, irradiated combustible assemblages and radioactive waste, during which radioactive properties exceed the limits set by federal rules and regulations in the field of atomic energy use”).

“Nuclear object” combines “nuclear installation”, “nuclear material”, “radiation source”, “radioactive products or waste” and “combustible assemblages” as defined by the Federal Act on atomic energy use. This widens the scope of the Draft Act in comparison with the Convention, but it is necessary to ensure liability coverage of all atomic energy relationships in the Russian Federation. Such an approach, relying heavily on other internal legislation, is expressly allowed by the Convention’s Article I.1(k)(ii) and (iii).

In general, definitions offered by the draft act are somewhat different from those set in the Vienna Convention, but are compliant with its system as a whole. The crucial term - nuclear damage, is considered to be loss of life, personal injury or damage to property of nationals and legal persons, or to the environment, which results from radioactive effects or a combination of radioactive effects with toxic, explosive or other hazardous effects taking place as a result of a nuclear incident. The latter in turn is defined as “an occurrence or series of occurrences having the same origins on a nuclear object or beside a nuclear object, an occurrence or series of occurrences during transporting of nuclear materials, combustible assemblages, irradiated combustible assemblages and radioactive waste, during which radioactive properties exceed the limits set by federal rules and regulations in the field of atomic energy use”.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
There is a special Article in the draft concerning the period of limitation; it corresponds to the Convention’s Article VI by establishing a general extinction period of three years from the date on which the person suffering nuclear damage had knowledge of the damage, provided that the claim is brought no more than ten years after the nuclear incident occurred. This seems to be less lenient on the victims than the Convention’s own general rule in para.1 of Article VI. However, the draft does contain a provision new to the system of Article VI – it does not apply the extinction period to actions for loss of life or personal injury; the latter can thus be brought up over an indefinite period of time. This rule complies with the Civil Code of the Russian Federation, which in Article 208 stipulates that periods of limitation do not apply to loss of life and personal injury claims. However, the Civil Code further provides that when such claims are advanced after three years have passed since the right to compensation had been acquired, they would only be satisfied as to the period of three years prior to their advancement. This particular limitation, probably, would not apply to nuclear liability, since the draft act establishes itself as *lex specialis* in relation to general civil law.

The draft act establishes a rather thorough system of financial security designed to guarantee compensation of nuclear damage. Its main feature is the introduction of a new contract type – the nuclear insurance contract, which is supposed to be regulated differently from other types of insurance. There is a provision for establishment of nuclear insurance pools by insurers, including international pools, to achieve maximum merging of assets and thus ensure the availability of amounts necessary for compensation of nuclear damage. Article 19 of the draft act stipulates that the government of the Russian Federation takes upon itself an obligation to compensate nuclear damage above the limit imposed on the operator’s civil liability, and even including the liability amount when the operator is exempt from liability or cannot fulfil its obligations due to bankruptcy, or when environmental damage is to be compensated. This would be done through state guarantees (insurance arrangements) set in the budget.

If budget funding happens to be inadequate a State Fund for compensation of nuclear damage may be established.

As the authors of the draft reason, this system, incorporating elements of insurance, State complementation, and an extrafiscal pooling/funding mechanism, would come cheaper in the long run than establishing a permanent government body for the purpose of providing compensation. The State budget will indirectly bear the costs of insurance (amounting at the most to $1,5 million annually per reactor, with the insurance sum of $150 million, which should cover liability for as many as three incidents, given the $50 million estimate for each of them; the costs may be lessened via utilizing mutual insurance schemes).

Summing up, it can be said that the Draft Act indeed sets to minimize security costs – by minimizing the liability amount to be insured and shifting the burden of compensation of the remaining damages to the State, which would provide compensation either through the budget, or, in extreme cases, through an ad hoc pooling mechanism.

It is to be noted here in respect of transboundary nuclear damage: Article 21 of the draft act stipulates that this kind of damage is to be compensated in accordance with appropriate international treaties, and in the absence thereof – in accordance with the draft act, but then only when full reciprocity (including compensation type and amount) is available.

The draft does not contain special provisions on jurisdiction; therefore, the Civil Procedure Code of the Russian Federation comes here into play. In Articles 27 and 29 it stipulates that generally the court of the defendant’s place of residence (or location, if a legal entity) has jurisdiction; however, claims for compensation of damages arising from personal injury or death of a supporting person can be brought, at the plaintiff’s disposition, to his local court.
The Arbitration Proceedings Code of the Russian Federation, which deals with commercial cases, stipulates in Article 247 that, when a claim stems from damage to property which occurred on the Russian territory, or was caused by an incident within that territory, the state arbitration courts of the Russian Federation shall have jurisdiction over the case even if a foreign national is a party.

The Vienna Convention, on the other hand, in Article XI provides that jurisdiction lies with the courts of the Party within whose territory the nuclear incident occurred; if it occurred outside the territory of any Party, or when the place cannot be determined with certainty, jurisdiction is attributed to the courts of the Installation State of the operator liable.

In the draft, there is no provision concerning recognition of foreign judgments in cases of nuclear liability. Consequently, the general regime of judicial assistance and judgment recognition should be used, which is established by bilateral and multilateral international agreements.

Another important aspect is the determination of applicable law, which would be done outside the framework of the draft act.

Article 1219 of the Civil Code of the Russian Federation states, *inter alia*, that claims arising from infliction of injury should be applied by the law of the country where the action or event, which served as the basis for the claim, occurred. If the injury took place in another country, its law can be applied if the inflictor of the injury had known or should have known that injury can occur in that country.

The Convention, refers to the “law of the competent court”. However, the Convention does impose a requirement upon national legislation and judiciary: the Convention itself and the national law applicable thereunder should be applied without any discrimination based upon nationality, domicile or residence (Art.XIII). This is a safeguard to ensure that victims in States other than the State whose court possesses jurisdiction are not discriminated against.

The draft act on civil liability for inflicting nuclear damage is currently under review and the outcome of the long debate over it will become clear in 2006.

Still it cannot alter the main “acquis” in this sphere – the ratification of the Vienna Convention, which would be a point of departure for any additional regulation.

### 7.1 The Vienna Convention

On the 8\(^{th}\) May 1996, in Vienna, the Russian Federation signed the 1963 Vienna Convention on Civil Liability for Nuclear Damage. Shortly thereafter, a bill to ratify the Convention was introduced by the President, yet after much deliberation the State Duma didn’t approve it then – due primarily to the high minimum level of liability, which in today’s money is worth up to fifty million U.S. dollars. Plans were devised to enter the Convention “through a back door”, establishing a transition period of ten years before the full scope of liability under the Convention is achieved (resembling the mechanism employed by the 1997 Vienna Convention and the Convention on Supplementary Compensation for Nuclear Damage). However, the respective bill, prepared in November 2000, could not pass hearings as well.

The situation changed in 2004 when due, inter alia, to insistence of the Ministry of Foreign Affairs, consensus was reached within the Government on the necessity to move forward in respect of the Convention. Speedy economic development in Russia in recent years and resulting financial stability created favourable conditions for the consideration of a treaty with possibly onerous obligations. Another element is the active Russian participation in the IAEA, the central role of which is constantly emphasized by Russia. The initiative of the President V.V.Putin mentioned at the beginning, underlines the role of the IAEA in solving...
energy problem for mankind. Within the initiative, research and development was aimed to fulfil the basic principles and user requirements set by IAEA; disposing protection in depth, increasing level independence and lowering the impact of human factor should serve to achieve the ultimate goal – the ability to cope with any nuclear accident without the necessity of populace evacuation from the area.

In 2004 the Russian Federation granted a sum of one million dollars to the IAEA innovative nuclear reactors and fuel cycles project. This line of work is considered vital for the future of mankind, and worthy of devoting scientific and financial resources.

Again this background it becomes even more evident that Russia had to accede to the Vienna Convention and to put it to its full effect domestically. Fortunately, it is not cumbersome: according to the Constitution of the Russian Federation, international treaties are part of the legal system of the Russian Federation, therefore the Convention would apply directly wherever its provisions so permit and would prevail in case of collision with Russian laws and regulations.

7.2 The current system of government bodies

The administrative reform of 2004, which completely changed the system and structure of federal government, had also influenced the atomic energy sector. The reform’s main principle was to disjoin regulative and service/property management functions, attributing the former to the Ministries and the latter to their subordinate Agencies. The Ministry of atomic energy was transformed into the Federal agency of atomic energy. It is not made subordinate to any Ministry (although the Ministry of industry and energy briefly performed this role during a short transitional period in 2004) and reports directly to the President of the Government of the Russian Federation. This conveys to it the ability to directly introduce draft acts to the Government; it was empowered, among other things, to conclude international treaties through obtaining the Government’s required approval. Therefore, as of now, the Agency – Rosatom – is an independent, self-sufficient body running the atomic energy sector.

Rules and procedures established by Rosatom, as well as the independent supervisory authority (Rostechnadzor), play a very important role in daily atomic energy relations. For instance, an operator (exploiting organisation) is required to pass a licensing procedure set by Rostechnadzor, and Rosatom sets the rules of stock-taking of nuclear material and radioactive substances.

*     *     *

During last twenty years Russia has developed a coherent approach to issues of nuclear liability. After a lengthy and difficult debate Russia finally opted for serious and complex solution that embrace specialised national legislation (this work will be concluded by the adoption, as planned, of the Federal Act on civil liability for nuclear damage in 2006) and relevant international treaties, to begin with the Vienna Convention on Civil Liability for Nuclear Damage.

13 See Decree of the President of the Russian Federation #649 of 20 May 2004; Charter of the Federal Agency on atomic energy (approved by the Government of the Russian Federation through Regulation #316 of 28 June 2004).  
14 See, respectively: Art.23, 34 of the Act, subpar.5.3.2 of the Rostechnadzor Charter (approved by the Government of the Russian Federation through Regulation #401 of 30 July 2004); subpar.5.2 of the Rosatom Charter, par.2 of the Government Regulation #316 of 28 June 2004).
The Russian experience shows that an efficient solution of nuclear liability issues cannot be reached through internal means only. National remedies will always remain insufficient. And among international treaties that can provide solid basis and guarantees for the respect of legitimate rights and interests the Vienna Convention elaborated under the auspices of the IAEA comes first.
HARMONISATION OF SAFETY RULES:
CAN EXISTING PLANTS BE FORCED TO COMPLY WITH NEW REQUIREMENTS?

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1 INTRODUCTION

In all countries where nuclear power plants are in operation, there is a tendency to develop and raise safety requirements. This is natural when it comes to planning and constructing new plants. However, the question often arises whether new safety requirements can also be applied to existing plants. The answer to this question will often have practical consequences of considerable scale.

As is generally known, nuclear safety requirements are established by each country separately; there are no binding international technical standards on plant safety. Nevertheless, a revision of the existing national requirements is often prompted by a progressive international harmonisation of rules. Mostly the aim is to make the national standards meet at the highest of the existing levels (“best practice”). This harmonisation can be done by a state individually (for example by taking the IAEA standards as a benchmark), but also in a synchronised multinational approach based on a systematic comparison of standards (e.g. WENRA).

This development – revision of national regulations and standards according to international models – seems, at a first glance, justified in itself, and indeed it is a goal worthy of being pursued. It does, however, carry some legal problems with it.

It is often taken for granted that new standards can be implemented in national regulations and that the operators can be compelled to adapt and improve their installations accordingly. However, there are certain legal limits to the power of any state authority to impose new requirements on existing plants and to put a burden on operators which hold a valid licence and, so far, fully comply with it. These limits are defined by the national law of each country. And different national laws will provide different solutions and different limits. This will be the subject of this presentation. It is based on an enquiry which has lead the authors to examine the nuclear law and the regulatory practice in seven Western European countries and in the US [1].
2 THREE CATEGORIES OF NEW REQUIREMENTS FOR EXISTING PLANTS

There are different reasons why safety requirements for existing plants are changed. Accordingly, there are different types of new requirements. We have found that they can be classified in three categories.

In a first category, new findings show that there is a deficiency in safety which has hitherto not been detected.

Example: the Barsebäck incident of 1992 revealed that in a loss-of-coolant accident, the sump strainers could be clogged by insulation debris. This finding revealed a deficiency that had not been known before, at least to this extent. Authorities demanded – and operators developed – adequate solutions, for example enlarging the strainer surface.

The measures prompted by findings of this kind aim at “restoring” the safety level originally intended, not at raising it. Basically, they do not constitute a legal problem. At least in the countries we have had a look at, all players, including the operators, agree that safety relevant findings have to be addressed and that shortcomings in existing safety cases have to be remedied; and every national nuclear law empowers the authority to force the operator to take the necessary measures or else to shut down his plant. Of course there will always be technical discussions about details and about the question to which exact extent and by which precise means the pending safety issues have to be resolved, but, as a rule, an agreement is reached.

A real problem, by contrast, is raised by requirements of a second category. This comprises requirements which are based on technical or scientific developments that offer new possibilities without showing deficiencies or errors concerning the safety of the existing plant. To put it bluntly: Everything has been done right, but today you could do even better.

Example: let us presume that a new steel alloy has recently been developed for high pressure pipes, making them even more resistant against cracking; however, the steel alloy used 20 or 30 years ago for the existing plants has shown to be good enough for the purpose and periodic inspection has revealed no cracking. Nevertheless, the authority wants the operators of existing plants to replace the piping.

Another example: the results of a PSA might show that, in case of a core meltdown, a certain event sequence is a significant contributor to the probability of a release of radiation; the authority now asks the operator to install safety systems which deal with this. The question had not been addressed at the time the plant was built because the safety system is based on preventing a core meltdown in the first place. To make the point clear, let us presume that the PSA shows at the same time that the probability of a core meltdown is not higher than had been expected.

In both cases, it is not evident that the operators have to backfit their plants accordingly. The plants are exactly as safe as has been established in the licensing process. The new developments do not reveal a weakness of the existing safety systems but they rather show where you could do something if safety was to be further improved. The problem which has to be solved by law is whether the operator can be forced to make substantial investments for backfitting only to make the plant “even better”. This question could also be described as the antagonism between “maintaining” safety and “improving” safety. However, it has to be kept
in mind that these notions seem to be not very precise and that their interpretation can be different in different countries [2].

This problem is aggravated in those cases which belong to a third category. Here, the relevant authority simply changes its mind concerning the acceptable level of risk or of safety (its “safety philosophy”) and wants the safety level of the existing plants to be generally higher, without new findings or new technical developments supporting its decision. The requirement therefore is of a more political nature and there is a certain arbitrary character to it.

Example: According to the existing rules and standards of a country, a plant had to be designed so as to prevent a core meltdown. Now, a general requirement is added to the technical regulations that the operator has to make sure (as far as reasonably possible) that even in the case of a core meltdown any release of radioactivity is prevented.

Here, it is even more necessary to have a careful look at whether the operators can be forced to backfit their plants only to respond to this new attitude. Often, the “overall expectations of society concerning the nuclear risk” are given as a reason for requirements of this kind. In general, it must be stated that even if it is true that in the end society has to decide which risks it wants to take, it is equally true that it can always be readily argued that society wants the safety of nuclear power plants to be as high as possible at all times. However, once the nuclear power plants have been licenced according to the standards in existence at that time, it is a difficult legal question whether society can change its mind and require major backfitting without compensation – especially if the operators are private power generation companies whose assets are mainly formed by its reactors. This is a factor that is often omitted in the discussion.

In present-day discussions, yet another kind of requirements has captured widespread attention and shall be briefly mentioned here, although it belongs to the field of plant security, not plant safety (which is the subject of this presentation): requirements dealing with the risk of terrorist attacks, a risk which is generally seen to be increased in the wake of the 9/11-events. Of course the operators will have to enhance their security dispositions if this is necessary in order to cope with new risks. But do they also have to respond with backfitting measures to the possibility of a large-scale attack (involving, for example, the crash of a civil aircraft) against nuclear power plants? It seems that the clue to the answer is the fact that it is the duty of the State to prevent massive, war-like attacks on important infrastructure objects. In the end, operators might have to make their contribution by enhancing security controls and by rendering access to the plant more difficult but they are certainly not expected to make their plants proof against any large-scale weapon by reinforcing the structure of the whole building.

3 OVERVIEW OF NATIONAL LEGISLATIONS

So, it is a crucial question to find out how the law of different countries deals with new safety requirements for existing plants.

The problem of raising the safety level of existing plants by backfitting is for the most part not directly addressed in the Nuclear Act of each particular country, so the solution has to be developed taking into consideration the whole regulatory system. As it seems, there are two basically different approaches for defining the required safety level of any plant, existing or new:
In some countries the law does not contain any statement about what is “safe
enough”. An operating licence can be obtained if the plant complies with the
technical regulations and if the relevant authority is satisfied, its judgement
being based on the ALARP principle. There is no general obstacle to raising the
required safety standard during operation of the plant.

In other countries, there is a threshold for the safety level required from a
nuclear power plant which is fixed by law. This threshold is incorporated in the
licensing process and, in principle, it cannot easily be exchanged later on.

3.1 Legislations fixing a safety threshold

Two typical nuclear laws of the latter kind, fixing a safety threshold, are those of
Germany and the United States. In Germany, the 1959 Act on Peaceful Use of Nuclear
Energy says that a licence can only be granted if

\[
every\ precaution\ is\ taken\ that\ is\ necessary\ in\ the\ light\ of\ the\ state\ of\ the\ art
in\ science\ and\ technology\ to\ prevent\ damage\ resulting\ from\ the\ construction\ and
operation\ of\ the\ installation \[3\].
\]

The notion of “necessary precaution” imposes a very high safety level which is – and
this is very important – basically not dependent on technical possibilities. So, in case the
safety level considered to be necessary cannot be achieved by using the existing technical
means, the licence cannot be granted. On the other hand, not everything which is technically
possible necessarily belongs to the “necessary precaution”. This is very important especially
for existing plants. Even if the “state of the art” is in continuous progress, this does not
automatically mean that the necessary level of safety rises with it. There are precautionary
measures which are technically possible or which become so in time but which are not
necessary because the plant safety is acceptable without them.

Similarly, the US Atomic Energy Act requires that a nuclear installation provides for
“adequate protection” of public health and safety \[4\] or – the other way round – that it can be
operated “without undue risk” \[5\]. So it is possible to imagine protective measures that are
technically possible, but at the same time “more than adequate”, and which further reduce a
risk that already is tolerable (and thus “not undue”). Consequently, not everything which is
possible can automatically be required.

Both in Germany and in the US, the Act does not say more about what is safe enough
and only establishes the very general prerequisite quoted above. So, the yardstick of safety is
of a very theoretic or, so to say, virtual nature. It is, however, very high. In Germany, the
Bundesverwaltungsgericht (Supreme Administrative Court) has ruled that the notion of
“necessary precaution” goes far beyond the threshold of danger and also comprises more than
what is deemed sufficient by engineering experience; additionally, a region of mere
apprehension, of precaution against “theoretical” risks, has to be included \[6\]. It is the task of
the competent authority to define what is actually necessary to reach this threshold by way of
rulemaking and of imposing requirements in the licensing process. However, to say where the
threshold is exactly situated seems almost impossible. Consequently, regulations and
requirements will aim at a safety level which at any rate includes the “necessary precaution”
or the “adequate protection”, but additionally, just to make sure, they will go even a certain
measure beyond that, thus incorporating a certain margin. In these cases the regulator and the
operator want to keep aloof from the imaginary boundary line. The result is that if a
component degrades or a rule is not complied with or a dimensioning error becomes known,
of course corrective actions have to be taken, but in these cases you cannot always say that the
boundary line has been crossed. This is why some requirements within the US-NRC rules may be located “beyond adequate protection”. The same applies for Germany.

The important point that makes the difference compared to other countries is that the authority, by granting a licence to operate a plant, states that the plant safety is sufficient at least to reach the threshold fixed by law (and it may reach even somewhat beyond that). This is a strong word which cannot easily be taken back later on during operation of the plant.

If new findings show that this judgement was based on an error and the plant is not as safe as expected, backfitting can of course be required in order to reach the safety level originally intended. But if there is only a technical or a scientific development which leads to the possibility of making plant safety “even better” – does this mean that the statement that the plant is “safe enough” according to the standard established by law has ceased to be valid? Or does it even cease to be valid in case the authority simply changes its mind about the necessary level of safety? Obviously, it will be hard to find arguments to affirm this.

In Germany the 1959 Act does not say anything about this problem, but legal experts have developed, based on the German Constitution, the notion of protection of vested rights of licensees. This means that basically the licensee who has shown that his plant is safe enough for obtaining a licence may keep the licence as long as he maintains this safety level [7]. This issue has been controversially discussed; in practice, the German operators have nevertheless always performed all reasonable backfits. They have, however, based on their vested rights, always resisted requirements prompted merely by a political motivation instead of safety reasons (and so belonging to the third category presented above).

Also in the United States, there are limits for the NRC to seriously revise requirements for plants which are in possession of a valid licence and have thus shown to guarantee an “adequate protection”. The NRC backfitting rule 10 CFR 50.109, while allowing for the introduction of new requirements which ensure the compliance of the plants with the original standard, imposes very strict conditions on requirements aimed at squarely raising the safety level of existing plants. Those requirements must lead to a “substantial increase in the overall protection of the public health and safety” and they are only permissible if “the direct and indirect costs of implementation … are justified in view of this increased protection” (the so-called “50.109-evaluation”). As a consequence, backfitting requirements are for the most part limited to compliance backfits aimed at removing deficiencies and design weaknesses, not at generally raising the safety level.

### 3.2 Legislations based on ALARP instead of a safety threshold

In most other countries, the national Nuclear Energy Act does not fix any certain safety limit so the question of new safety standards for existing plants is more open. Either there is no statement at all about how safe a plant (even a new one) should be, or the law simply says that generally plant safety should be as high as reasonably practicable. This, of course, is the ALARP principle which is reflected, for example, in the wording of the British Health and Safety at Work etc. Act. In practice, it is applied also in those countries where it is not expressly stated in the law. Another notion that is sometimes employed in regulatory documents – not in laws – in connection with ALARP is the BAT (best available technique) principle.

The ALARP principle does not distinguish between new and existing plants and lends itself to an application to both. Thus, the operators of nuclear power plants are basically expected to develop safety and to perform backfits in order to comply with it. If there are measures which at the time of licensing were not reasonably practicable but become so later on, basically they could be imposed on an operator. So, an obligation to perform backfitting is – within certain limits – generally in line with the ALARP principle.
In two cases, we have found express provisions in the law dealing with this. In Finland, section 27 of the „General Regulations for the Safety of Nuclear Power Plants“ (government decision 395/1991) reads as follows:

Operating experience from nuclear power plants as well as results of safety research shall be systematically followed and assessed.

For further safety enhancement, actions shall be taken which can be regarded as justified considering operating experience and the results of safety research as well as the advancement of science and technology.

In Switzerland, section 22 paragraph 2 lit. g) of the 2003 Act on Nuclear Energy states that the operator

has to perform backfitting to the extent as this is necessary according to experience and the state of the art in backfitting, and beyond, if it contributes to a further reduction of risks and provided it is reasonable.

In the other countries of this group, it is regulatory practice that the operators are expected to do a certain amount of backfitting in order to reasonably raise the safety level, and this can be justified by using the ALARP principle.

However, it must be clearly stated that the ALARP principle for its application requires a test of reasonableness which includes an analysis of benefits and costs of a backfitting measure; there is a certain limit to the proportion of both. And this is exactly what will, in practice, often lead to new requirements being limited to new plants. For it is almost always more costly or even impossible to insert new technical features in the existing structure and concept of a plant, while it might be fairly easy to add them to the blueprints of a plant yet to be built. So, what is reasonably practicable for a new design might not be the same for an existing one. The same, in principle, applies to the BAT principle by virtue of the word “available” which also leads to considerations of cost and benefit.

This is also reflected in the wording of the two legal provisions quoted above. While the Finnish text uses the word “justified” which calls for an assessment of benefits and costs, the Swiss law does not plainly require the “state of the art”, as it does for new plants [8]; instead, it requires only the “state of the art in backfitting”. This means that any measures have to be adapted to the existing plant and that, in this process, many features of new plants may prove not to belong to the state of the art in backfitting because it is not reasonable to implement them in existing designs.

This is rather obvious: you simply cannot expect an old plant to be exactly like a new one. However, it has to be made sure that this principle of reasonableness is duly taken into consideration. Consequently, in those national laws that do not fix a threshold of safety, there are different requirements for the authority of establishing, for example, a cost-benefit-ratio or of performing an impact assessment before making new regulations. The authority will have to take into consideration the particular features of the existing plants. Therefore, it is essential that new requirements are the subject of technical discussions between the authority and the operators and that the operators’ comments are heard.

As a result, it seems that backfitting requirements normally do not aim at thorough changes in the existing plant design. Of course, when it comes to the exact scope of backfitting obligations, there will often be controversial discussions between authorities and operators, even if the operators are willing to do what they hold to be reasonable to improve plant safety. However, in practice in the most cases a consensus concerning backfitting is finally reached. Often both parties can agree on those measures which have been shown to be
reasonable by a periodic safety review conducted by the operator instead of being contrived by the authority and imposed on the operator [9]. As long as the authority follows a common sense approach and only adopts those new requirements which are more or less compatible with the existing plant designs, no legal problems will be raised (and in fact in many countries backfitting issues are not really considered to be the matter of lawyers).

Although the ALARP principle basically allows for backfitting requirements of the second as well as of the third category, as a rule only those requirements where a specific advantage can be demonstrated with technical or scientific means will pass the reasonability test, provided the costs for implementing them are proportionate to the benefits. Those requirements which are merely prompted by a change in safety philosophy and by a general decision to make plants even better – that is, those of the third category – will in any case have problems to pass the test. And this is a satisfactory result, taking into consideration the fact that the national Authority has awarded a license to a plant and that it would be rather arbitrary to withdraw the license – or, which is the same, to impose a strangulating backfitting burden on the operator – simply because it has changed its mind; this would clearly not afford a satisfactory protection to the property values established by the operator. It seems that in most countries this is taken for granted and requirements of this kind are not seriously put forward.

3.3 Consequences for harmonisation

So, when establishing new regulations, the national Authority will have to take all this into account. Basically, there are two consequences.

First, every national authority has to consider the limits which its own national legislation imposes on introducing new requirements for existing installations. This, of course, is valid regardless of the fact whether the new requirements are independently developed by the authority or whether they are derived from foreign or international models. In the latter case, the own national legal framework may prevent the authority from just taking over the solutions found in other countries.

Second, when the authority takes a look at foreign national standards, they in turn have to be regarded within their own framework which is constituted by the national law, the national peculiarities and the general system of requirements, in order to fully understand their scope and their meaning. Also, the regulatory practice is of great importance because it may lead to different results in implementation even if the wording of regulations is comparable.

All in all, the adaptation of national regulations to standards of other countries or to international standards is a very complicated question which cannot be solved by simply making a copy.

4 SUMMARY

Harmonisation of national safety standards and safety regulations has to take into consideration the specific law of nuclear installations of each country. Different laws may allow for different requirements.

Generally, three reasons can be distinguished for introducing new requirements to existing plants:

- new findings show that there is a deficiency hitherto undetected;
- a development in science or technology opens a possibility for making the plant even safer than before;
- the authority simply changes its mind about the necessary level of safety and wants the existing plants to become safer.
The first category of requirements is obviously justified. As to the others, the national laws provide for different limits, for example by establishing a fixed threshold for safety ("safe enough") or by imposing a test of reasonableness which is warranted by requirements of procedure on the relevant authority (cost-benefit-assessments, impact assessments etc.). In any case, it will be very difficult to impose requirements of the third category.

The exact limits for new requirements will depend on the national law. This will have to be considered by any authority that wants to establish new requirements for existing plants which are based on foreign or international models.

ACKNOWLEDGMENTS

The authors would like to thank all the representatives of regulatory authorities and of operators who have kindly welcomed them in their countries and have provided them with information and advice.

REFERENCES

[1] A report with the results of this inquiry will be published soon. The countries we had a look at are Belgium, Finland, France, Great Britain, Spain, Sweden, Switzerland and the United States; besides, of course, the report also includes the situation in Germany.


[3] Section 7 paragraph 2 no. 3 of the German Act on Peaceful Use of Nuclear Energy.


[8] See section 4 paragraph 3 of the Swiss Act on Nuclear Energy (Kernenergiegesetz).

[9] See the NEA paper “The Nuclear Regulatory Challenge of Judging Safety Backfits“, 2002, where it is stated on p. 8: “Operators generally have embraced PSRs because it allows potential backfit issues to be addressed in an integrated fashion and gives the operator the opportunity to put his safety case in an overall safety perspective”. The paper is available on the NEA website at http://www.nea.fr/html/general/policypapers.html.
CONVENTION ON NUCLEAR SAFETY – LESSONS LEARNED AFTER THE THIRD ROUND OF REVIEW MEETINGS

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1 BACKGROUND

As the formal starting point for the Convention the IAEA General Conference Resolution [GC/35/RES/553] of 1991 may be considered, which invited the Director General to prepare an outline of the possible elements of a nuclear safety convention. The Convention was drawn up during a series of expert level meetings (seven) from 1992 to 1994 and was the result of considerable work done by Governments, national nuclear safety authorities and the IAEA’s Secretariat. Meanwhile the 1993 General Conference Resolution [GC/37/RES/615] stresses desirability of a diplomatic Conference in 1994 on the basis of a comprehensive draft text worked out by the group of expert.

The Convention on Nuclear Safety was adopted in Vienna on 17 June 1994. Paragraph 1 of Article 31 (Entry into Force) states that the »Convention shall enter into force on the ninetieth day after the date of deposit with the Depository of the twenty-second instrument of ratification, acceptance or approval, including the instruments of seventeen States, each having at least one nuclear installation which has achieved criticality in a reactor core«. This precondition was met on 26 July 1996 and accordingly, the Convention entered into force on 24 October 1996.

Since the Convention was designed to be as widely adhered as possible the General Conference of the IAEA in a few subsequent years appealed by the resolutions [GC(39)/RES/13; (40)/RES/10; (41)/RES/10; (42)/RES/10] to “all Member States which had not yet done so to become Parties to the Convention”.

Since its entry into force the number of Contracting Parties to the Convention increased significantly and is now 56 (status as of 31 March 2005). All of the world's 441 nuclear power plants are operating in countries where the Nuclear Safety Convention is in place.

The IAEA is the Depository of the Convention and provides the Secretariat’s support to the Contracting Parties.
2 OBJECTIVES

The aim of the Convention is to legally commit participating States operating land-based nuclear power plants to maintain a high level of safety by setting international benchmarks to which States would subscribe.

The objectives of the Convention are stated in Article 1:

i. to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international co-operation including, where appropriate, safety-related technical co-operation;

ii. to establish and maintain effective defences in nuclear installations against potential radiological hazards in order to protect individuals, society and the environment from harmful effects of ionising radiation from such installations;

iii. to prevent accidents with radiological consequences and to mitigate such consequences should they occur.

The Convention is an incentive instrument. It is not designed to ensure fulfilment of obligations by Parties through control and sanction but is based on their common interest to achieve higher levels of safety.

The Chapter 2: »Obligations« is based to a large extent on the principles contained in the IAEA Safety Fundamentals "The Safety of Nuclear Installations".

Besides the set of obligations, as prescribed in Articles 7 to 19, the preparation of a national report on the measures taken by the Contracting Party to implement each of the obligations of the Convention (Article 5) and attendance at the periodic review meetings (Article 20) should also be considered as an obligation for the Contracting Parties. These last two obligations seem to be the main innovative and dynamic elements of the Convention.

3 OTHER FEATURES

After its entry into force the work has not been done yet. In accordance with Article 21 of the Convention a Preparatory Meeting of Contracting Parties was held in April 1997 and adopted three main supportive documents to the Convention:

- rules of procedures and financial rules (INFCIRC/573)
- guidelines regarding national reports (INFCIRC/572) and
- guidelines regarding review process (INFCIRC/571).

The above-stated rules and guidelines may be amended, pursuant to Article 22(2) of the Convention at any review meeting by consensus of the Contracting Parties. And indeed the Contracting Parties took the advantage of this provision and amended those documents so that at the 2005 Review meeting the revision 3 was adopted – except for the guidelines regarding national reports which was not amended this time.

Beside the meetings of the Contracting Parties envisaged by the Convention (Article 20 – review meetings; Article 21 – preparatory meeting and Article 23 – extraordinary meetings) there are also regular preparatory and organisational meetings, held pursuant to Rule 10 and 11 of the Rules of Procedure and Financial Rules as a beginning of the preparatory process for each of the review meetings.
4 GENERAL STATISTICS

In order to verify whether the Convention's Peer Review process shows certain progress in a sense of reaching desired goals and achieving main objectives (high level of nuclear safety; defence against potential radiological hazards, prevent accidents with radiological consequences) one may search for the answer in different ways.

One way could be (1) the official statements, given and released by the President in conjunction with each Review Meeting, (2) the IAEA Press Releases and Reports for its Board Meetings and General Conferences and, of course (3) the Report of the President as well as (4) a Summary Report of each of the Review Meeting.

The other way may be much less objective since possible conclusions would be drawn up from some statistics data and then interpreted; but on the other hand such approach may be more informative and less formal. Since the intention of this paper is not to play with a diplomatic language and try to find slight variations of expressions used in those »official« statements and reports, the second approach is found as a »better« solution. But to minimise an unavoidable subjectivity (or rather unobjectivity) the conclusions are drawn up mainly on that part of the statistics facts which are related to the Slovenian National Reports.

<table>
<thead>
<tr>
<th>4.1.1 Subject</th>
<th>First Review Meeting 1999</th>
<th>Second Review Meeting 2002</th>
<th>Third Review Meeting 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ratifications</td>
<td>42 50 States</td>
<td>53 States (+ Euratom)</td>
<td>56 States (+ Euratom)</td>
</tr>
<tr>
<td>Number of Contracting parties participated</td>
<td>45</td>
<td>46</td>
<td>50</td>
</tr>
<tr>
<td>Number of CPs which did not comply with the basic obligation - to submit a National Report</td>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>- to attend the Review Meeting</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Total number of questions</td>
<td>No data available</td>
<td>App. 2700</td>
<td>3831</td>
</tr>
<tr>
<td>Leading number of questions to different Articles (TOP 5)</td>
<td>No data available</td>
<td>No data available</td>
<td>Article 14 – 491 Article 8 – 400 Article 19 – 347 Article 6 – 341 Article 16 – 328</td>
</tr>
</tbody>
</table>

Although modestly, the number of Contracting Parties to the Convention on Nuclear Safety increased from the first to the third Review Meeting. But since all countries with operating nuclear power plants are Parties to the Convention (with India being the last country which deposited its instrument of ratification with the Depository on 31 March 2005) it may be understood that a milestone in the history of the Convention has been achieved. So the strong interest among States in adhering to the Convention is hardly to be expected although the General Conference of the IAEA each year in its corresponding Resolution urge the Member States to sign and accede to the Convention.
The trend regarding the number of Contracting Parties which did not comply with two basic obligations under the Convention may not be considered as very optimistic but can be easily overlooked as not alerting.

What can be of vital importance for the future of the Convention is the fact that statistically the Convention – with its National Reports, »questions and answers » exercises and Peer Reviews after the third round of Review Meetings still shows vitality and that Contracting Parties consider the above-stated mechanism as a proper, effective and efficient tool. The total number of questions which increased from the second to the third Review Meeting can not be interpreted only with the simultaneously increased number of Contracting Parties. Having in mind that the first Review Meeting offered the basic information on measures taken by the Contracting Parties to implement each of the obligations of the Convention and that the second and the third national Reports (according to the guidelines regarding national reports) may not need to repeat the facts from the previous one, all that can be considered as a sign, that the interest of Contracting Parties is now focused more on specific questions once the general overview has been obtained and that the »nuclear area« is part of the changing world which constantly impacts the nuclear industry, regulatory bodies, legislation and nuclear safety, as such.

In the absence of official statistics data regarding the »TOP 5« Articles to which questions were most frequently posed at the 1999 and 2002 Review Meetings it might be of some interest to see what were the observations on Article 8,14 and 16 at the first two Review Meetings which, as result, still lead to the fact that those three Articles were among most interesting ones (TOP 5) at the 2005 Review Meeting.

4.3 Article 8 : Regulatory body

Areas where the need for additional information to be provided in the next National Reports were identified by the Summary Report of the:

1999 Review Meeting :
• »De jure« and »de facto« status of regulatory bodies;
• Experience gained in implementing different regulatory strategies;
• Actions taken to monitor safety management;
• Implementation of modern quality assurance systems for regulatory activities;
• International co-operation on a bilateral and multilateral basis among regulatory bodies.

2002 Review Meeting :
Beside the same topics identified as »of special interest« in 1999, the 2002 Review Meeting stressed the following two areas:
• How the regulatory bodies which do not have TSOs of their own obtain adequate expertise without conflict of interest;
• Maintaining competence and motivation of staff (competitive job markets, retirement).

4.4 Article 14 : Assessment and verification of safety

Areas where the need for additional information in the next National Reports were identified by the Summary Report of the:

1999 Review Meeting :
• On results of more comprehensive safety analyses;
• On evaluation of the performance and efficiency of the confinement function at existing NPPs;
• On other topics: Probabilistic Safety Assessments (PSA), Periodic Safety Reviews and updating of safety analyses reports.

2002 Review Meeting:
• Further information on the use of PSA.

4.5 Article 16: Emergency preparedness

Areas where the need for additional information in the next National Reports were identified by the Summary Report of the:

1999 Review Meeting:
• On improvements made from results of national and international exercises.

2002 Review Meeting:
• Basically the same as in 1999.

Since the aforementioned three articles are among the highest ranking »TOP 5« articles at the 2005 Review Meeting, the following possible conclusions could be drawn up:
- the Contracting Parties did not do their homework correctly and a lot of questions from the previous two meetings were not addressed in the next National Reports in a satisfying way or
- the more information one has the more in-depth and specific questions may be posed.

Furthermore for Article 16 the reason for being of such interest might be as well in the fact that for several Contracting Parties without nuclear installations, the main focus of reporting was on emergency planning and on channels of communication with neighbouring countries operating nuclear installations and on active participation in international emergency exercises.

5 COUNTRY SPECIFIC STATISTICS

Once we have collected available statistics data on number of questions to all Contracting Parties in different CNS Review Meetings and on Articles to which questions were most frequently addressed it would be interesting to compare them with specific situation regarding the Slovenian National Reports.

<table>
<thead>
<tr>
<th>5.1 Subject</th>
<th>First Review Meeting 1999</th>
<th>Second Review Meeting 2002</th>
<th>Third Review Meeting 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of questions to the Slovenian National Report</td>
<td>96 (12 States)</td>
<td>69 (13 States)</td>
<td>95 (15 States)</td>
</tr>
<tr>
<td>Leading number of questions to different Articles to Slovenian</td>
<td>Article 8 – 13</td>
<td>Article 8 – 10</td>
<td>Article 6 – 10</td>
</tr>
<tr>
<td></td>
<td>Article 16 – 11</td>
<td>Article 6 – 9</td>
<td>Article 14 – 10</td>
</tr>
<tr>
<td></td>
<td>Article 14 – 10</td>
<td>Article 19 – 9</td>
<td>Article 16 – 10</td>
</tr>
</tbody>
</table>

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
The comparison shows that among most popular Articles (TOP 5) to which most questions were addressed in both cases (to all National Reports at the 2005 Review Meeting and to the Slovenian National Report at all three Review Meetings) Article 8 – Regulatory Body; Article 14 – Assessment and Verification of Safety; and Article 16 – Emergency Preparedness can be found.

<table>
<thead>
<tr>
<th>Article</th>
<th>First Review Meeting 1999</th>
<th>Second Review Meeting 2002</th>
<th>Third Review Meeting 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Art.6: Existing nuclear installations</strong></td>
<td>Not within TOP 5</td>
<td>Argentina – 2&lt;br&gt;Austria – 1&lt;br&gt;Croatia – 1&lt;br&gt;Finland – 2&lt;br&gt;Japan – 2</td>
<td>Argentina – 2&lt;br&gt;Australia – 1&lt;br&gt;Austria – 3&lt;br&gt;Germany – 1&lt;br&gt;Hungary – 2&lt;br&gt;Latvia – 1</td>
</tr>
<tr>
<td><strong>Art.7: Legislative and regulatory framework</strong></td>
<td>Brazil – 1&lt;br&gt;Italy – 2&lt;br&gt;Spain – 2&lt;br&gt;Russian Fed. – 3&lt;br&gt;Sweden – 1</td>
<td>Brazil – 1&lt;br&gt;Italy – 1&lt;br&gt;Spain – 3&lt;br&gt;Russian Fed. – 1&lt;br&gt;Sweden – 6&lt;br&gt;Hungary – 1</td>
<td>Brazil – 1&lt;br&gt;Italy – 1&lt;br&gt;Spain – 3&lt;br&gt;Russian Fed. – 1&lt;br&gt;Sweden – 6&lt;br&gt;Hungary – 1</td>
</tr>
<tr>
<td><strong>Art.8: Regulatory body</strong></td>
<td>Austria – 1&lt;br&gt;Croatia – 2&lt;br&gt;Finland – 1&lt;br&gt;France – 1&lt;br&gt;Japan – 3&lt;br&gt;U.S.A. – 2</td>
<td>Austria – 1&lt;br&gt;Croatia – 2&lt;br&gt;Finland – 1&lt;br&gt;France – 1&lt;br&gt;Japan – 3&lt;br&gt;U.S.A. – 2</td>
<td>Argentina – 1&lt;br&gt;Austria – 2&lt;br&gt;Croatia – 3&lt;br&gt;Hungary – 1&lt;br&gt;Pakistan – 2</td>
</tr>
<tr>
<td><strong>Art.11: Financial and human resources</strong></td>
<td>Austria – 1&lt;br&gt;Croatia – 1&lt;br&gt;Germany – 1&lt;br&gt;Japan – 1&lt;br&gt;Spain – 1&lt;br&gt;Sweden - 3</td>
<td>Austria – 1&lt;br&gt;Croatia – 1&lt;br&gt;Germany – 1&lt;br&gt;Japan – 1&lt;br&gt;Spain – 1&lt;br&gt;Sweden - 3</td>
<td>Austria – 1&lt;br&gt;Croatia – 1&lt;br&gt;Germany – 1&lt;br&gt;Japan – 1&lt;br&gt;Spain – 1&lt;br&gt;Sweden - 3</td>
</tr>
<tr>
<td><strong>Art.13: Quality assurance</strong></td>
<td>Not within TOP 5</td>
<td>Not within TOP 5</td>
<td>Argentina – 1&lt;br&gt;Australia – 1&lt;br&gt;Austria – 2&lt;br&gt;Croatia – 1&lt;br&gt;Germany – 1&lt;br&gt;Switzerland – 1&lt;br&gt;U.S.A. – 1</td>
</tr>
<tr>
<td><strong>Art.14: Assessment and verification of safety</strong></td>
<td>Austria – 1&lt;br&gt;Germany – 1&lt;br&gt;Brazil – 1&lt;br&gt;Croatia – 1&lt;br&gt;France – 1&lt;br&gt;Russian Fed. – 1&lt;br&gt;Spain – 3&lt;br&gt;Sweden – 1</td>
<td>Austria – 1&lt;br&gt;Germany – 1&lt;br&gt;Brazil – 1&lt;br&gt;Croatia – 1&lt;br&gt;France – 1&lt;br&gt;Russian Fed. – 1&lt;br&gt;Spain – 3&lt;br&gt;Sweden – 1</td>
<td>Croatia – 1&lt;br&gt;France – 2&lt;br&gt;Japan – 1&lt;br&gt;Romania – 1</td>
</tr>
<tr>
<td><strong>Art.16: Emergency</strong></td>
<td>Austria – 1</td>
<td>Croatia – 1</td>
<td>Argentina – 1</td>
</tr>
</tbody>
</table>
The statistics from the above table shows no specific pattern which would lead us to any affirmative conclusion. With some minor exemptions it can be concluded that those Contracting Parties which were among most inquisitive ones at each Review Meeting (see table below) are also well represented in the statistics on the questions posed to particular TOP 5 Articles at that particular Review Meeting.

<table>
<thead>
<tr>
<th>5.1.2 Subject</th>
<th>First Review Meeting 1999</th>
<th>Second Review Meeting 2002</th>
<th>Third Review Meeting 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>* indicates that the State has at least one nuclear installation which has achieved criticality in the reactor core</td>
<td>Sweden*</td>
<td>South Korea*</td>
<td>Germany*</td>
</tr>
<tr>
<td></td>
<td>Finland*</td>
<td>Finland*</td>
<td>Switzerland*</td>
</tr>
<tr>
<td></td>
<td>Mexico*</td>
<td>Argentina*</td>
<td>Argentina*</td>
</tr>
<tr>
<td></td>
<td>Slovenia*</td>
<td>Slovenia*</td>
<td>Slovenia*</td>
</tr>
<tr>
<td></td>
<td>Poland</td>
<td>Mali</td>
<td>Greece</td>
</tr>
<tr>
<td></td>
<td>Austria</td>
<td>Croatia</td>
<td>Latvia</td>
</tr>
<tr>
<td></td>
<td>Lebanon</td>
<td>Bangla Desh</td>
<td>Australia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peru</td>
<td>Singapore</td>
</tr>
<tr>
<td>Most »inquisitive« Contracting Parties</td>
<td>Sweden – 25</td>
<td>France – 18</td>
<td>Austria – 22</td>
</tr>
<tr>
<td></td>
<td>Spain – 20</td>
<td>Japan – 8</td>
<td>Germany – 16</td>
</tr>
<tr>
<td></td>
<td>France – 8</td>
<td>Croatia – 6</td>
<td>Switzerland – 10</td>
</tr>
<tr>
<td></td>
<td>Brazil – 8</td>
<td>Romania – 6</td>
<td>Croatia – 10</td>
</tr>
<tr>
<td></td>
<td>Austria - 8</td>
<td>Austria - 5</td>
<td>Argentina - 7</td>
</tr>
</tbody>
</table>

Analysing the statistics data could lead to many conclusions which may be also misleading:

a.) **Country group composition influence**

The fact that a certain Contracting Party was in the same Country Group as Slovenia may have led to the increased interest in submitting questions; such conclusion may be taken from the fact that at the 1999 Review Meeting Sweden was in the same Country Group as Slovenia and put as much as 25 questions while at the next two Review Meetings there were no questions for our National Report from Sweden.

On the other hand, Spain (at the 1999 Review Meeting) or France (at the 2002 Review Meeting) were not in the same Country Group with Slovenia, but still showed a rather big interest (20 and 18 questions respectively).

b.) **Countries with or without nuclear programmes**
One may expect that Member States with active nuclear programmes (in the terms of the definition of »nuclear installation« as defined in the Convention on Nuclear Safety) would be more inquisitive than those without nuclear programmes.

Generally, the observation which approves such presumption could be reached, indeed. At all three Review Meetings Slovenia received (within TOP 5) questions on its National Report only from Member States with active nuclear programmes. The only exception was the neighbouring countries (Austria and Croatia) and Australia (which was at the third Review Meeting in the same Country Group as Slovenia).

c.) Geographical neighbourhood

Slovenia borders with four countries, all of them being Contracting Parties to Convention. Two of them are considered (in terms of the definition of »nuclear installation« as defined in the CNS) as nuclear (Hungary and Italy), two as non-nuclear (Austria and Croatia).

Interesting enough, both »nuclear« neighbouring countries did not score the TOP 5 position with respect to question imposed to the Slovenian National Report, while on the other hand Austria was at all three Review Meetings ranked between TOP 5 (being most inquisitive Member State at the 2005 review Meeting with 22 questions to the Slovenian National Report). Croatia increased its interest at the last two Review Meetings, having both times the third position.

Such a result may be explained by Austria's sensitive approach towards nuclear programmes in some of its neighbouring countries and its anti-nuclear policy, while for Croatia the reason lies most probably in the fact that the NPP Krško was the joint investment of both countries and that legal status of the installation is regulated by a bilateral agreement.

d.) Bilateral agreements

Slovenia concluded in the past several »exchange of information« agreements or »emergency preparedness« agreements (last mentioned specially with all neighbouring countries, except with Italy).

Based on the statistic above (TOP 5 most inquisitive Contracting Parties) no affirmative conclusion can be drawn up regarding the influence of the extended scope of information gained through bilateral agreements on the interest for submission of questions within the CNS review process.

The examples of Sweden and Spain (in case of the first Review Meeting ) or Germany and Switzerland (in case of the third one) may well serve for the conclusion that the Slovenian National Report was, in the absence of bilateral information, the only source so that the CNS review process was used for getting the whole picture. But it is also very true that all the States mentioned were fully informed about the nuclear safety situation in Slovenia through different formal and informal channels, as for example through a negotiation process for Slovenia's accession to the European Union, participation in different international organisations or/and associations, collaboration within the IAEA, etc. On the other hand, the examples of France and Austria (in case of the second and third Review Meetings respectively) proves that the existence of bilateral agreements does not decrease the hunger for information.

There are of course also other possible conclusions, as for example those offered under Chapter 4 of this paper.

6 PERSONAL REMARKS INSTEAD OF OBJECTIVE CONCLUSIONS

The answer to the question whether the objectives of the Convention (as defined in its Article 1) have been achieved during the last nine years when the Convention has been in
force or during the last six years after three rounds of the Review Meetings will remain open in this paper. The paper also has no intention to answer more general question, i.e. whether the nuclear safety has improved worldwide in the same period of time.

But let us be so ambitious and, for the end, risk with those few (subjective) remarks:

• Even before its entry into force (in 1996) the Convention on Nuclear Safety had influenced the international legal environment by serving as a »model« for the »sister« convention on radioactive waste, which was adopted on September 5, 1997 and is also an »incentive instrument« which provides for reporting at meetings of the Contracting Parties and for peer review process;

• In the more regional (European Union) level the Convention on Nuclear Safety influence can be recognised in the text of the proposal for a

  ➢ Council directive (Euratom) laying down basic obligations and general principles on the safety of nuclear installations and
  ➢ Council directive (Euratom) on the safe management of spent nuclear fuel and radioactive waste both from 2003/04.

• Some signs, as for example the fact that:

  ➢ All countries with operating nuclear power plants are Parties to the Convention
  ➢ The total number of questions increases from one to another Review meeting
  ➢ The Contracting Parties take advantage of the provision of Article 22(2) and permanently amend the CNS rules and guidelines may easily serve as an evidence of the proof that the Convention is after all these years considered by the Contracting Parties as a vital mechanism – if not a »successful story«.

From Slovenia's point of view the interface between the review process and national reports has been always understood as a lesson learned and a self-assessment exercise rather than purely reporting obligations towards other Contracting Parties.
THE REGULATION OF SECURITY AT U.S. NUCLEAR POWER PLANTS AND RESULTING LEGAL ISSUES

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ABSTRACT

The Atomic Energy Act of 1954, which provided for the licensing of commercial nuclear power plants and other uses of radioactive materials by the private sector in the United States, gave the Federal government (i.e., the U.S. Atomic Energy Commission, and its successor agency, the U.S. Nuclear Regulatory Commission (collectively referred to as the “Commission”)) the authority to regulate the physical security of nuclear facilities. Detailed requirements for physical security at U.S. nuclear power plants have been in place since 1973, and modified numerous times since then. The security at nuclear power plants was, and is, more robust than any other segment of the nation’s critical infrastructure.

An extensive re-evaluation of security measures at nuclear facilities has taken place since the tragic events of September 11, 2001. That evaluation has resulted in five formal Orders to nuclear facilities, and more than sixty advisories and other guidance. Current plant security requirements have been determined by the Commission to be the most that private entities can legally do. However, regulatory and legal issues remain that must be resolved to stabilize security requirements in the post-September 11, 2001, environment.

1 INTRODUCTION

The September 11, 2001, terrorist attacks in the U.S. caused both the Federal government and the private sector to conduct a fundamental re-examination of the security of the facilities comprising our country’s critical industry infrastructure (e.g., dams, chemical plants, refineries, power plants). For the majority of the nation’s critical infrastructure, the general response has been modest, with major concerns focused on the financial impact of increased security measures on an industrial facility’s costs, whether because additional capital investment might be required (e.g., to install physical barriers to prevent a vehicular bomb) or a facility’s operations might become more costly (e.g., to pay for increased numbers of security guards), because it could affect that business’ economic competitiveness. Additionally, existing Federal law provides the government with the authority to regulate the security of only the airline industry and the commercial nuclear power industry.
In contrast, the commercial nuclear power industry, pursuant to requirements established by the NRC over the last fifty years, already had a mature security program in place. Combined with the inherent robustness of nuclear power plants and the practiced ability of their operators to respond flexibly to any off-normal event, nuclear power plants have a formidable and tested defensive structure to respond to credible security threats. Comprehensive security plans and installed physical security features (e.g., robust perimeter barriers, intrusion detection devices, manned checkpoints, vehicle barrier systems), with highly trained and qualified security officers stationed at commercial nuclear power plants, supplemented by the thorough screening (e.g., Federal Bureau of Investigation fingerprint verification; criminal history checks of anyone seeking access to the facility), is unparalleled in the private sector. Since 2001, the nuclear energy industry has spent over $1.2 billion to increase their already formidable security systems. In addition, the number of security officers in the industry has been increased from approximately 5,000 to 8,000 at the 64 sites where nuclear power plants are located, and the required training and qualification of those individuals has been significantly increased as well.

Notwithstanding those facts, nuclear power plants have been referred to by some in the media and the political establishment as “attractive terrorist targets.” In fact, individuals knowledgeable of homeland security in general and terrorist threats in particular (e.g., individuals with the Department of Homeland Security, and the Federal Bureau of Investigation) have concluded that nuclear power plants are probably the least vulnerable targets in the United States.

2 PROTECTING AGAINST TERRORIST THREATS

The Atomic Energy Act of 1954 authorized the Commission to establish, by regulation or order, such requirements as the Commission may deem necessary to guard against the loss or diversion of radioactive materials that the Commission determined would be inimical to the common defense and security.

The Commission has taken a number of regulatory actions accordingly over the past fifty years to address the security of nuclear power plants and other NRC licensed facilities.

2.1 “Enemy of the State”

In 1967, the Commission promulgated 10 C.F.R. 50.13, *Attacks and destructive acts by enemies of the United States; and defense activities*, and that regulation has remained unchanged since. It provides that the licensee of a nuclear power plant “is not required to provide for design features or other measures for the specific purpose of protection against the effects of ... attacks and destructive acts, including sabotage, directed against a facility by an enemy of the United States, whether a foreign government or other person ...”

The Commission’s commentary that accompanied the publication of the final rule stated that “[t]he protection of the United States against hostile enemy acts is a responsibility of the

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1 Atomic Energy Act of 1954, Section 161.i. (42 U.S.C. 5101). Licensees were first required to protect against “industrial sabotage.” The concept of industrial sabotage was replaced in 1979 with the term “radiological sabotage” to “more clearly indicate that the sabotage of concern is that with radiological consequences” (i.e., the potential release of radioactive materials offsite that could affect the public). See SECY-77-283A, “Amendments to 10 C.F.R. Part 73 to Provide Strengthened Physical Protection Against Radiological Sabotage and Theft of Strategic Special Nuclear Material” (June 17, 1977).

nation’s defense establishment and of the various agencies having internal security functions.”

Such a principle is consistent with the U.S. Constitution and our federal system of government. While the Commission required numerous features of security systems and plans to assure the safety of plant employees and the public, the Commission also recognized that “nuclear design features to protect against the full range of the modern arsenal of weapons are simply not practicable and that the defense and internal security capabilities of this country constitute, of necessity, the basic safeguards against possible hostile acts by an enemy of the United States.” The Commission observed that nuclear power plants were not unique with respect to being potential targets for hostile acts and that such possibilities “apply also to other structures which play vital roles within our complex industrial economy. The risk of enemy attack or sabotage against such structures, like the risk of all other hostile acts which may be directed against this country, is a risk that is shared by the nation as a whole.”

In 1967, a contention was raised in the license application proceeding for a nuclear power plant to be sited in Florida (the Turkey Point plant) concerning a postulated attack by an enemy of the United States (i.e., whether the reactor should be constructed to withstand a missile attack from Cuba, which is less than 200 miles away). Upon appeal to the U.S. Court of Appeals, the court concluded that a licensee was not required to ensure that its plant would be invulnerable to whatever destructive forces an enemy might be able to direct against it. The court also noted that “the Commission has essentially decided that to impose such a burden would be to stifle utterly the peaceful utilization of atomic energy in the United States,” a key principle underlying the passage of the Atomic Energy Act.

Domestic organizations with the same aims and attributes would also be enemies of the United States within the terms of 10 C.F.R. § 50.13, which provides that a licensee is not required to protect against the effects of attacks and destructive acts by an enemy of the United States “whether a foreign government or any other person.”

2.2 Role of State and Local Law Enforcement Agencies

The NRC has implemented its authority to establish nuclear facility security requirements in a manner that is inclusive of the role of state and local jurisdictions. In fact, assistance from local law enforcement authorities in responding to an attack on a plant is specifically envisioned by Commission regulations. As early as 1974, the NRC stated that “it should be emphasized and clearly understood by every member of the security organization that under threat conditions, the primary responsibility of the licensee’s security organization to provide protection until the arrival of assistance for local law enforcement authorities.”

Similarly, in a February 20, 1974, letter to the Joint Committee on Atomic Energy of the U.S. Congress, Atomic Energy Commission Chairman Ray addressed the purpose of those

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4 Id.
5 Siegel v. AEC, 400 F.2d 778 (D.C. Cir. 1968).
6 Id. at 783.
7 10 C.F.R. 50.13 (emphasis added).
8 10 C.F.R. 73.55, “Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage.”
amendments to 10 C.F.R. Part 73, Physical Protection of Plants and Materials. The Chairman stated that “[t]he licensee must place a great deal of reliance on obtaining outside assistance since we do not intend that licensees of the AEC should usurp the law enforcement function of state and local authorities.” She stated that this was the predicate for the agency’s regulatory emphasis on alarms, entry barriers and reliable communications.

In a 1974 licensing proceeding, the Atomic Safety and Licensing Appeals Board concluded that “[a]s in the case of defending against the threat of an attack by an enemy of the United States, it seems that an applicant should be entitled to rely on settled and traditional governmental assistance in handling an attack by an armed band of trained saboteurs. Without such reliance, each facility could indeed become an armed camp.”

2.3 The “Design Basis Threat”

In a rulemaking proceeding concluded in 1979, the Commission established the concept of a “design basis threat” that was to be the foundation for designing safeguards systems to protect against acts of radiological sabotage and to prevent the theft of special nuclear material. The design basis threat was defined as a determined violent external assault, attack by stealth, or deceptive actions by several persons who are well-trained (including military training and skills) and dedicated, with the assistance of a knowledgeable insider, and equipped with weapons including hand-held automatic weapons, equipped with silencers and having effective long range accuracy, and hand-carried equipment, including incapacitating agents and explosives to facilitate entry or to destroy the reactor or containment system, transported by a four-wheel drive land vehicle.

In a 1985 licensing proceeding, the NRC concluded that where an act of sabotage is “beyond the design basis security threat encompassed by [Part 73],” an applicant is “entitled to rely on the government’s military or law enforcement agencies to handle such an attack” and that assaults by international terrorist groups are clearly within the ambit of those perpetrated by “enemy of the state.”

In 1991, the NRC stated that: “[i]n response to recent world events, the NRC is continually reviewing the threat environment associated with commercial nuclear facilities.” While the Director deemed no emergency action necessary, he stated that “[n]evertheless, the situation . . . continues to be closely monitored so that, if warranted, individual facility, regional, and national contingency plans can be implemented.” The information on threats and incidents routinely reviewed by the NRC and considered in threat assessments . . . includes activities of terrorist groups that operate independently but may have strong links to and the support of foreign governments. For example, because of the vehicle bomb attack on the World Trade Center in 1993, and other factors, the NRC amended 10 C.F.R. 73.1(a) in 1994 to require reactor licensees to protect their facilities against a four-wheel drive vehicle bomb. In that rulemaking, the NRC also clarified its position regarding the responsibilities of nuclear power plant licensees and possible domestic terrorists:

The statement of considerations for 10 C.F.R. 50.13 makes it clear that the scope of that regulation is to relieve applicants of the need to provide protective measures that are the assigned responsibility of the nation's defense establishment. The Atomic Energy

10 Consolidated Edison Company of New York, Inc. (Indian Point Station Unit No. 2), ALAB-202, 7 AEC 825, 829 (1974).
11 Id.
13 10 C.F.R. 73.1(a)(1) and (2).
16 Id. at 54.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
Commission recognized that it was not practical for the licensees of civilian nuclear power reactors to provide design features that could protect against the full range of the modern arsenal of weapons.

The new rule, with its addition to the design basis threat and added performance requirements, is in response to a clearly demonstrated domestic capability for acts of extreme violence directed at civilian structures. The participation or sponsorship of a foreign state in the use of an explosives-laden vehicle is not necessary. The vehicle, explosives, and know-how are all readily available in a purely domestic context.\(^\text{17}\)

The premeditated attack on September 11\(^{th}\) on major symbols of our country, with the intent to kill civilians, destabilize the country, and cause large-scale property damage, demonstrates that such individuals and their sponsoring organizations constitute “enemies of the U. S.” No private entity could have a security force that could protect against such an occurrence.\(^\text{18}\)

Following the events of September 11\(^{th}\), in December 2001, the Commission reiterated its position that attacks perpetrated by enemies of the United States are the responsibility of the “national defense establishment and various agencies having internal security functions,” and that “requiring reactor design features to protect against the full range of the modern arsenal of weapons is simply not practical.”\(^\text{19}\) Subsequently, the Commission issued five formal Orders and a number of advisories and guidance to increase the already formidable physical barriers, security systems and security officer training and qualification requirements. Most notably, the Commission significantly increased the design basis threat that nuclear power plants must be able to defend against.

2.4 Force-on-Force Exercises

The ability of nuclear power plants to defend against the design basis threat has been tested and honed and further refined through repeated force-on-force exercises.\(^\text{20}\) The deterrent and defensive capability of each site is evaluated and must be demonstrated to be adequate.


\(^{18}\) That is not to say that nuclear facility security plans do not provide significant protection against attacks of an enemy of the state: nuclear facility security forces, and the inherent design of the plant and related structures, enable the industry to provide formidable protection to a wide range of off-normal events until local law enforcement authorities and the federal government can respond. However, nothing that occurred on September 11, 2001, (or in information that has surfaced since then) would indicate that an overt armed assault against a hardened, well-defended target (e.g., a nuclear power plant) would be a tactic that an enemy of the state would choose.

\(^{19}\) Private Fuel Storage, LLC (Independent Spent Fuel Storage Installation), CLI-01-26, 54 NRC 376, 379 (2001).

\(^{20}\) The purpose of the force-on-force exercises is to improve plant security officer performance and determine, on the basis of realistic scenarios performed by a mock adversary force, that the facility will be able to protect itself from the design basis threat. The force-on-force exercises inherently give the mock adversary force an advantage through providing them with detailed information and facility drawings, pre-exercise facility tours, and the ability to conduct a variety of exercises (and to repeat the exercises to incorporate lessons learned by the adversaries as they see how plant security forces respond), all of which would not be available to terrorists.
3 SECURITY-RELATED LEGAL ISSUES

Four legal issues regarding nuclear power plant security have emerged that require action, by the industry, the Commission, state legislatures and/or the Congress, to achieve necessary stability for the future.

3.1 Uniform Application of the “Enemy of the State” Criteria

The sound logic behind the Commission’s conclusion, dating back to 1967, that utilities should not be required to protect against an “enemy of the state” remains valid. The limit of what a private security force at a nuclear power plant, or any other industrial facility comprising the nation’s critical industry infrastructure, can legally do and the interrelationship of private security forces and Federal, state and local resources should be clarified to ensure that public and private efforts can be effectively integrated in the interest of best protecting public health and safety and providing for the nation’s common defense and security. Further, the Department of Homeland Security should determine what the design basis threat is for the nation’s critical industry infrastructure so that all components of the critical industry infrastructure can take appropriate steps to establish a nationwide uniform defensive posture.

3.2 Allowable Weapons to be Used by Private Security Forces

Federal law limits the type of weapons that private citizens (including private security forces) can possess and use, and the Commission cannot establish requirements that exceed those limits. The Commission has established uniform national requirements for nuclear power plant security that must be implemented at the 64 sites where nuclear power plants are located, yet individual power plants in the 32 states where they are sited may be constrained by state law as to the types of weapons that can be used in those states.

Federal legislation is required to allow the use of additional weapons as the Commission may deem appropriate to respond to a terrorist threat (e.g., belt-fed automatic weapons) and Federal pre-emption is required of inconsistent state laws (e.g., the limitation on the use of certain weapons).

3.3 Use of Deadly Force

Post-September 11, 2001, it is now even more important to clarify the legal authority of private security forces entrusted with protecting nuclear power plants to use deadly force. For example, in one state, there is a common law duty to retreat except to “protect a homestead.” In another state, deadly force may be used only if necessary to prevent a “forcible and atrocious felony,” which is certainly not a decision that we should expect security officers to make in the dark of night on a split-second basis.

The general principle is that protecting a nuclear power plant from a terrorist attack is intended not to protect property but to protect the public health and safety from a potential accident that could endanger the general public. However, there is no explicit statutory basis for that interpretation, and the principle has not been tested in court.

Congress has dealt with the use of deadly force by private individuals post-September 11th, albeit in a very limited context, when it passed the Arming Pilots Against Terrorism Act (APATA), as part of the Homeland Security Act, in 2002. APATA enables pilots to legally use deadly force, but the pilots’ legal status as a deputized federal law enforcement agent is not extendable in principle to private security forces. Further, APATA does not pre-empt
inconsistent state laws because airspace is solely a Federal domain. Thus, APATA does not establish any useful precedent on an issue of critical importance to entities with fixed facilities.

3.4 Disclosure of Security Sensitive Information

EPA’s “Community Right to Know” regulations mandate the disclosure of the amounts of hazardous materials on an industrial site. Given the fact that such information could be of value to terrorists planning additional attacks on the U.S., Congress should clarify that facilities are not required to publicly disclose the amounts or location of hazardous materials that may be of interest to a potential terrorist on the grounds of protecting security related information post-September 11th. The Critical Infrastructure Information Act of 2002, which is also part of the Homeland Security Act, enables information voluntarily submitted to DHS to be protected from disclosure under FOIA, but its application has not been tested in court.

Further, questions have been raised about the ability of the Commission to establish generic requirements that involve security at nuclear power plants without public participation (see 4.1 below). The U.S. Congress should pass legislation that would ensure the protection of security sensitive information.

4 LITIGATION RELATED TO NUCLEAR POWER PLANT SECURITY

Two cases are currently pending in U.S. Federal courts that could affect security requirements at commercial nuclear power plants.

4.1 Public Citizen, et al. v. NRC

The Commission’s authority to establish extensive new security requirements post-September 11, 2001, by generic Order rather than by rulemaking is being challenged in the U.S. Court of Appeals for the D.C. Circuit in Public Citizen, et al. v. NRC, joined by San Luis Obispo Mothers for Peace. Upon consideration of the security of nuclear power plants after the events of September 11, 2001, and recognizing the threat of further terrorist attacks against facilities in the U.S. was very real, the Commission issued a number of Orders, pursuant to the explicit authority granted the Commission by the Atomic Energy Act of 1954, to nuclear plant operators that imposed new requirements for physical barriers and other components of the security systems at those plants, as well as new requirements for the training and qualification of security officers at those facilities. The petitioners allege that the NRC did not comply with the Administrative Procedure Act, with public participation, in establishing the new security requirements. Interestingly, a provision in the Atomic Energy Act dating back to 1954 authorizes the Commission to establish a rulemaking process that would involve Safeguards Information, a classification given to information unique to the Commission applicable to the security of facilities under the authority of the Commission, but the Commission has never done so.

4.2 San Luis Obispo Mothers for Peace v. NRC

Security at a utility’s dry cask used fuel storage facility, and at the plant generally, is being challenged in the U.S. Court of Appeals for the 9th Circuit in San Luis Obispo Mothers for Peace v. NRC. The petitioner alleges that the Administrative Procedure Act was violated in the there was no public participation in the NRC’s setting of the security requirements and that the NRC did not comply with the National Environmental Policy Act in that no
Environmental Impact Statement was prepared. The Attorneys General of California, Massachusetts, Utah and Washington are appearing as *amici* in support of the Petitioner.

5 CONCLUSION

The fundamental lessons that the events of September 11, 2001, and the exhaustive analyses that followed, have taught are that the individuals who carried out those attacks, whose sole motive was to inflict terror, were well-funded and organized. The perpetrators of such events fall squarely within the Commission’s concept of what constitutes “an enemy of the state.”

Nuclear power plant licensees have established a level of protection against sabotage of the facility, and a potential terrorist attack, that is unequalled in the private sector. The NRC’s clear, consistent and long-standing regulatory position that the defense against attacks greater than the design basis threat rests on the shoulders of the federal, state and local governments in the exercise of their police powers remains sound. It was never envisioned that nuclear power plants, or any other private industrial facilities, would need to (or legally be able to) become armed fortresses guarded by private armies able to repel assaults by land, water or air of suicidal attackers.21

Because it would be impossible for a private entity to protect against an enemy of the state with attributes consistent with those who perpetrated the events of September 11, the focus should be on strengthening the ability of federal, state and local government agencies to respond to the possibility of such attacks by vigorously pursuing improvements relating to intelligence gathering, analysis, and dissemination; and interdiction to preclude attacks on the nation’s critical infrastructure.

There is no way to guarantee that there will never be a terrorist attack at a nuclear power plant. But that possibility can be prepared for, and comprehensive plans made and physical barriers built, to help protect against an attack, and to mitigate against the effects if an attack were to happen. That is why requirements concerning nuclear plant safety and security were included in the comprehensive regulatory system governing nuclear facilities from the very beginning of commercial nuclear power, and increased requirements were established post-September 11, 2001.

Nuclear power plants are designed, built and operated on the assumption that something *can* go wrong. A machine *could* malfunction. A train carrying solid nuclear waste *could* crash. A terrorist *could* attack a nuclear plant. Conceivable scenarios are considered, problems are anticipated and responses developed so that the plant and its operators, and in the case of a possible security challenge, the plant’s security officers, can take whatever actions are appropriate to minimize the likelihood of an event, or be able to respond effectively to an event if it were to occur. Nuclear power plants have always been regulated on that basis, and increased concerns about a potential terrorist attack post-September 11, 2001, have been incorporated into that process.

Notwithstanding concerns post-September 11, 2001, about the increased likelihood of a terrorist attack in the U.S., appropriate steps have been taken by the nuclear energy industry to ensure that the nation’s nuclear power plants remain able to continue to play an important role in our country’s energy portfolio, and the industry is well positioned to assume an increased role in our country’s energy future.

21 Following September 11, 2001, engineering studies were conducted of the impact of a Boeing 767, the most common wide-body aircraft in use in the United States, on nuclear power plant containments, spent fuel pools and independent spent fuel storage facilities. The Electric Power Research Institute, the independent organization that conducted those studies, concluded that a September 11, 2001, type attack would not result in the release of radiation that would endanger public health.
STATUS OF LAWS RELATED TO PHYSICAL PROTECTION AND
RADIOLOGICAL EMERGENCY IN THE REPUBLIC OF KOREA

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ABSTRACT

Laws related to atomic energy of the Republic of Korea, which were quite simple at the
nascent stage, have been diversified in accordance with the expansion of the nuclear industry
and growing public needs. As part of the efforts by the government to redress public concerns
about nuclear safety, the Act for Physical Protection and Radiological Emergency was
enacted to enhance the capabilities to prevent and tackle radiological emergencies and
establish a firm mechanism for physical protection. The above Act stipulates systematic
government-wide measures with a view to preventing radiological emergencies that might
possibly occur within the framework of the existing disaster control system of the Republic of
Korea and coping with any actual disaster. In addition, the Act sets forth a wide range of
measures aimed at effectively grappling with acts of sabotage and terrorism related with
nuclear facilities and nuclear materials, the importance of which is being increasingly
recognized. The Republic of Korea will exert maximum efforts to thwart any unexpected
disaster, expecting that enforcement of the Act will generate its intended effects.

1 INTRODUCTION

For the last several decades, competitive and brisk use of atomic energy has played a
pivotal role in promoting the economic development of the Republic of Korea. Since the
Korean War came to a cease-fire in 1953, tension between the two Koreas has persisted on the
peninsula. To brace for potential attacks from the outside, major public and industrial
facilities have put in place defence systems in alignment with the military and police.
However, past defence systems were aimed at preserving the economic value of nuclear
facilities including nuclear power plants. Now, there has arisen another challenge: thwarting
any attempt to destroy such facilities or kill and injure ordinary people by using nuclear
materials as the so-called dirty bomb. In 2003 and 2004, the Republic of Korea enacted and
enforced the Act for Physical Protection and Radiological Emergency and related laws in an
effort to beef up physical protection and radiological emergency measures for major nuclear
facilities. This study details the background of the enactment of such laws as well as their
significance and major details.

2 ATOMIC ENERGY-RELATED LAWS OF THE REPUBLIC OF KOREA

The legal system pertaining to nuclear power in the Republic of Korea has its source in
the Atomic Energy Act enacted in 1958. At the time, the nation had no nuclear reactor of any type including research or nuclear power reactor. At the same time, radiation was being utilized in an extremely limited manner. Despite the circumstances, the act was enacted due to a special interest in the potential of nuclear power by Lee Seung-man, the first president of the Republic of Korea and the general public as well as the expectations that nuclear power would be able to greatly contribute to the development of the nation. The act primarily set forth the establishment of a government agency supervising the use of atomic energy and a research institute to study the peaceful use of atomic energy.

In accordance with the act, the government set up the Office of Atomic Energy, a central administrative agency headed by a minister-level official and established, under the control of the Office, the Atomic Energy Research Institute, the nation's first national research institute in 1959. In 1962, the Republic of Korea introduced and built the 250KW-grade TRIGA Mark-II and 2MW-grade TRIGA Mark-III that were research purpose reactors. The government performed basic scientific research and studies regarding nuclear power by building research reactors and sought to dramatically expand electric power sources to facilitate the economic development of the nation and enhance public living standards, while pressing for the construction of a nuclear power plant which was deemed an adventurous attempt at the time. In the early 1970s, the government commenced construction of the country's first nuclear power reactor in the vicinity of a fishing village of the East Sea about 30 miles away from the city with the country's second largest population.

The Atomic Energy Act, which comprised relatively simple provisions, required many modifications in line with construction of the nuclear power plant. In particular, there arose significant changes in radiological protection and safety control requirements concerning construction and operation of a power plant. However, laws to brace for radiological emergencies and promote physical protection were inadequate. Realistically, guarding the security of a nuclear plant was under strict control. Since 1982, massive revisions and complementations of atomic energy laws have been enacted. Until that time, the system of atomic energy laws comprised the Atomic Energy Act as well as multiple presidential decrees and respective corresponding enforcement regulations. With drastic amendments and complementations of the Atomic Energy Act, multiple presidential decrees were consolidated into a single enforcement decree. At the same time, a substantial number of provisions in such decree were modified and added in accordance with the amendments of the Atomic Energy Act. However, there arose little difference in physical protection and radiological emergency measures in relevant laws.

Other major laws of the Republic of Korea pertaining to the use and development of atomic energy include the Nuclear Damage Compensation Act enacted in 1969, Act on Assistance to Electric Power Plants-Neighboring Areas enacted in 1989 to support the smooth construction of radioactive waste disposal plants and nuclear power plants, Act on Promotion of the Use of Radiation and Radioisotopes enacted in 2002, and the Act for Physical Protection and Radiological Emergency to be detailed in this study.

3 ENACTMENT OF THE ACT FOR PHYSICAL PROTECTION AND RADIOLOGICAL EMERGENCY

3.1 Disaster Control System and Related Laws in Korea

In addition to atomic energy-related laws, the Republic of Korea has enacted laws intended to brace for national disasters including radiological emergencies. Among them are the Framework Act on Civil Defense enacted in 1975, the Act on Disaster Control enacted in 1995 as a result of large-scale tragic accidents which occurred around the nation in the early and mid 1990s, the Framework Act on Disaster and Safety Control enacted in 2004 as a new
comprehensive law for the handling of national disasters to replace the Act on Disaster Control, comprehensively define national disasters, systemize the mechanism to prepare for and cope with such disasters, and clarify the functions of related government organizations and apparatus, the Act on Countermeasures against Natural Disasters which sets forth national measures against natural disasters in particular, and the Act on Fire Services.

The Framework Act on Disaster and Safety Control stipulates matters necessary to establish the central and local governments' disaster and safety control mechanism for the purpose of preserving the land from various disasters encompassing man-made and natural disasters and protecting people's lives, health and property and to prevent, brace for, respond to and recover from disasters. Figure 1 below summarizes the major disaster control system under such act.

**Figure 1 : National Disaster Management System of the Republic of Korea**

The Act on Countermeasures against Natural Disasters stipulates necessary matters related to the prevention of and recovery from natural disasters and other relevant countermeasures to preserve the land and protect people's lives, body and property as well as major infrastructure facilities from a part of disasters defined in the Framework Act on Disaster and Safety Control (disasters triggered by natural causes).

The Framework Act on Civil Defense stipulates self-defensive activities which must be performed by the populace under governmental guidance including air defense, emergency measures, rescue, restoration, and support for necessary efforts under military operations in order to protect people's lives and property from invasion by an external enemy or prevent a disaster which might jeopardize the safety and order of the entire nation or some parts of it (an event requiring civil defense). It also contains various provisions that can be applied in coping with various disasters and implementing posterior actions. The Framework Act on Disaster and Safety Control is a basic and comprehensive law pertaining to disasters devised to tackle all kinds of disasters including natural disasters such as a typhoon, flood and earthquake, and manmade disasters arising from accidents (including radiological emergencies). For instance, Article 8(1) of the act requires that all other disaster-related laws in the Republic of Korea should be enacted or amended in accordance with the act. Therefore, it is deemed that the Act for Physical Protection and Radiological Emergency or the Act on
Radiological Emergency is presented in Table 1 below.

**Table 1: Comparison of Major Details of Laws related to Disaster Prevention**

<table>
<thead>
<tr>
<th>Apparatus with Supreme Decision Making Authority</th>
<th>Act for Physical Protection and Radiological Emergency</th>
<th>Framework Act on Disaster and Safety Control</th>
<th>Act on Countermeasures against Natural Disasters</th>
<th>Framework Act on Civil Defense</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ministry in Charge</strong></td>
<td>Physical protection - Physical Protection Council - Chairman: Minister of Science and Technology - Members: Deputy minister of each related ministry (Radiological emergency prevention) - Central Safety Control Committee [Chairman: Prime Minister] - Radiological Accident Subcommittee [Chairman: Minister of Science and Technology]</td>
<td>Central Safety Control Committee - Chairman: Prime Minister - Members: minister of each related ministry</td>
<td>Central Disaster and Safety Measure Center - Head: Minister of Government Administration and Home Affairs</td>
<td>Central Civil Defense Council - Chairman: Prime Minister - Deputy Chairman: Minister of Finance and Economy, Minister of Education &amp; Human Resources Development, Minister of Government Administration and Home Affairs - Members: minister of each related ministry</td>
</tr>
<tr>
<td><strong>Disaster Handling Plan</strong></td>
<td>Minister of Science and Technology</td>
<td>Minister of Government Administration and Home Affairs - Head of the National Emergency Management Agency</td>
<td>Emergency Plan: Basic national safety control plan: formulated by each ministry and then coordinated by the Prime Minister for the establishment of a comprehensive plan</td>
<td>Basic civil defense plan: formulated by each relevant minister regarding affairs under their command and then coordinated by the Prime Minister for establishment of a comprehensive plan to be approved by the President - Execution plan: formulated by each relevant minister regarding affairs under their command and approved/finalized by the Prime Minister pending consultation with the Minister of Government Administration and Home Affairs</td>
</tr>
<tr>
<td><strong>Organization Dealing with Disasters</strong></td>
<td>Central Radiological Emergency Management Center - Head: Minister of Science and Technology - Members: deputy minister of each related ministry</td>
<td>Central Disaster and Safety Measure Center: - Head: Minister of Government Administration and Home Affairs - Heads of local centers: Heads of local governments</td>
<td>Central Disaster and Safety Measure Center: - Head: Minister of Government Administration and Home Affairs - Heads of a local centers: Heads of a local governments</td>
<td>Civil defense unit organized at each administrative unit of all levels</td>
</tr>
<tr>
<td><strong>Person with the Authority of Disaster Declara- tion</strong></td>
<td>Radiological disaster: Declared by the Minister of Science and Technology and then reported to the President via the Prime Minister</td>
<td>Prior announcement/alarm of a disaster - Issuer: Minister of Government Administration and Home Affairs and the heads of local</td>
<td>Prior Announcement/alarm of a disaster - Issuer: Minister of Government Administration and Home Affairs and the heads of local</td>
<td>Person with mobilization authority: Head of the National Emergency Management Agency and heads of local governments</td>
</tr>
</tbody>
</table>

Countermeasures against Natural Disasters constitutes detailed and specific laws under the control of said act. A comparison between these laws and the Act for Physical Protection and Radiological Emergency is presented in Table 1 below.
3.2 Background of Enactment of the Act for Physical Protection and Radiological Emergency

In pushing for the construction and operation of the Gori Nuclear Power Plant I, the first nuclear power plant in the nation, major matters were stipulated in the Atomic Energy Act with reference to nuclear energy safety-related laws of such countries as the U.S. and Japan as regards nuclear plant design, construction and operation to ensure the safety of the nuclear plant. At the time, there was little awareness in the Republic of Korea of the possibility of a massive radiation leakage at commercial nuclear power generation facilities. The 1974 WASP 1400 report prepared by the U.S. noted the possibility of a large-scale core meltdown accident. However, the Republic of Korea judged that a radiation leakage accident was unlikely to the extent that rigorous design standards (e.g. general design standards of the U.S., etc.) were met and the conditions for safe reactor operation were complied with to prevent such accident.

However, the TMI accident showed that a massive radiation leakage at a nuclear power plant, which scientists and engineers had played down as a mere possibility, might actually occur, contrary to existing expectations. The government of the Republic of Korea became more aware of the importance of the safety of nuclear power generation which was in its embryonic stage as well as radiological emergency measures. In addition, the government exerted an effort to enable its population to have a sense of security. At the time of said incident, the Republic of Korea was building its 2nd and 3rd nuclear plants, operating its 1st nuclear plant which was put into operation in 1978. The TMI incident made evident the need to expand the scope of countermeasures against radiological disasters. Thus, the Republic of Korea came to press ahead with the enforcement and execution of measures against radiological disasters covering not only employees of nuclear plants, but also people living near nuclear plants and the surrounding environment. Attainment of such goals required active participation and support by the central administrative agencies with the authority of permitting construction of nuclear power plants as well as local administrative bodies and governments which had nuclear facilities in areas under their control.

However, the government of the Republic of Korea sought to operate radiological emergency measures within the legal framework of the then existing disaster-related measures and civil defense-related laws formulated to brace for national disasters or cope with emergencies, while taking substantive actions to expedite radiological emergency measures. Thus, it did not take into account possible enactment of separate laws in connection with radiological emergency measures. It merely took such minimal actions as prescribing the submission of a radiological emergency plan by a nuclear licensee, as a document to apply for a permit to operate nuclear plant facilities, under the relevant provisions of the Atomic Energy Act.

Concerning physical protection, a state intelligence agency and the Ministry of National Defense were involved in safeguarding the security of nuclear plant facilities since they were classified as major national industrial facilities. In addition, KEPCO which was the licensee for nuclear power generation at the time, was subject to security measures by the government since it was under the supervision of the energy-related central government authorities. In the mid and late 1990s, however, the government of the Republic of Korea started to devise stronger measures to prevent radiological emergencies and protect nuclear facilities from and
against threats of nuclear material thefts by acts of terrorism in the face of radiation leakages at home and abroad and the September 11 terrorist attacks. As part of such efforts, the country formulated a law that set forth national radiological emergency/physical protection measures in a specialized manner. The law contained provisions on physical protection measures aimed at protecting the safety of nuclear facilities from terrorism and sabotage from the perspective of reinforcing and further detailing the provisions of the existing Atomic Energy Act as regards radiological emergency measures and meeting the demand for stronger protection of nuclear facilities by parties to the international non-proliferation regime.

The Act was promulgated by Act No. 6873 on May 15, 2003. Its Enforcement Decree and Enforcement Ordinance were respectively promulgated and enforced by Presidential Decree No. 18341 as of March 29, 2004 and by Ordinance of the Ministry of Science and Technology No. 55 as of May 20, 2004.

4 MAJOR DETAILS OF THE ACT FOR PHYSICAL PROTECTION AND RADIOLOGICAL EMERGENCY

4.1 Major Duties of the Central/Local Governments and Nuclear Licensees

The state shall set physical protection objectives as regards preventing illicit trafficking of nuclear materials and sabotage of nuclear facilities and nuclear material as well as establishing a mechanism of physical protection. The Physical Protection Council shall be set up and operated under the Minister of Science and Technology for the deliberation, supervision and coordination of major policies regarding physical protection. The Minister of Science and Technology shall assess threats to nuclear facilities, etc. and formulate response standards by threat every three years for the implementation of physical protection policies. In addition, the central and local governments shall formulate radiological emergency plans. To effectively respond to radiological disasters, central and local agencies in charge must be set up and an organization to support response to a radiological accident installed at the site of an accident. In addition, the national radiological emergency medical system must be formed, together with the national radiation emergency medical center. It is also required to assess the mid- to long-term radiological impact of a radiological disaster, formulate/execute damage restoration measures and posterior actions and perform disaster investigations and so forth.

Nuclear licensees shall establish physical protection facilities and their operational systems concerning the relevant nuclear facilities and obtain the approval thereof from the Minister of Science and Technology. Nuclear licensees shall also formulate regulations for physical protection of nuclear facilities and planned measures against illicit trafficking of nuclear materials and threats to nuclear facilities ("protection emergency plans") and obtain the approval thereof from the minister. With respect to radiological emergencies, facilities and equipment necessary to cope with a radiological disaster shall be secured as provided by related laws. In addition, relevant employees shall undergo radiological emergency training and radiological emergency exercises as set forth in related laws. Prior to commencement of the operation of nuclear facilities, a radiological emergency plan must be established and approval thereof from the Minister of Science and Technology be obtained. Nuclear licensees assume the obligations to submit a report in the event of a radiological accident, install related safety mechanisms, disclose relevant information, take emergency actions to prevent the spread of a radiological accident, and perform other measures deemed necessary to cope with radiological disasters.

4.2 National Radiological Emergency Prevention Measures and Mechanism
• Declaration of Radiological Disasters

In the event of a radiological emergency at a nuclear facility, a nuclear licensee must report such event to the Minister of Science and Technology and the head of the related local government. Radiological emergencies are classified into an alert, site area emergency, general emergency and other abnormalities. The Minister of Science and Technology who receives said report must declare a radiological disaster and promptly make a report to the Prime Minister and the President. A radiological disaster is declared only when the radiation exposure quantity or space radiation dose rate exceeds the level provided by related laws (Article 25 of the Enforcement Decree of the Atomic Energy Act) and when the Minister of Science and Technology acknowledges, in his reasonable discretion, that it is necessary to declare a radiological disaster.

• Radiological Emergency Planning

The central government, local governments and nuclear licensees, respectively, are required to formulate appropriate radiological emergency plans. They comprise three-staged emergency plans including national radiological emergency plans by the central government, local radiological emergency plans by local governments such as metropolitan city/province and city/county/district and nuclear licensees' radiological emergency plans. In particular, when a nuclear licensee formulates a radiological emergency plan, prior consultation with a local government and local administrative authorities shall be conducted. National radiological emergency plans at the level of the central government comprise radiological disaster-related plans and civil defense plans among the national disaster management plans pursuant to the Framework Act on Disaster and Safety Control and the Framework Act on Civil Defense. The efficacy of such radiological emergency plans shall be reviewed each year for their complementation. The Minister of Science and Technology shall examine such emergency plans and rectify/supplement them when and as necessary.

• Apparatus and Mechanism to Cope with Radiological Disasters

Related laws including the Framework Act on Disaster and Safety Control and the Act for Physical Protection and Radiological Emergency provide for the installation of apparatus and organizations necessary to cope with radiological disasters. According to the Framework Act on Disaster and Safety Control, the central government shall organize the central safety measures committee which deliberates, supervises and coordinates major governmental and local policies regarding radiological disasters.

The Act for Physical Protection and Radiological Emergency provides for the organization and operation of the national emergency management committee headed by the Minister of Science and Technology, the local emergency management center mostly headed by metropolitan city mayors/provincial mayors and the emergency operations center of the relevant nuclear licensee actually undergoing a radiological emergency, as the organ that deliberates, supervises and coordinates major policies regarding radiological emergency measures. The national emergency management committee, which consist of its head, the Minister of Science and Technology, and deputy ministers of 11 related ministries, receives reports on and supervises activities by the heads of the on-site emergency management center, radiological emergency technical advisory center and radiological emergency medical service center.
• Implementation of Radiological Emergency Prevention Education and Exercises

It is compulsory to conduct radiological emergency training targeting employees of nuclear licensees, radiological emergency staff of local governments in an emergency planning zone, radiological emergency medical staff and so on. In an attempt to brace for potential radiological emergencies, local governments and nuclear licensees in an emergency planning zone must jointly conduct radiological emergency exercises on a regular basis. Every five years, central administrative authorities, relevant local bodies and governments, and nuclear licensees are required to participate in a combined exercise. Under the existing laws, the next such combined exercise is slated for 2006.

Various radiological emergency exercises are carried out according to scenarios of radiological emergencies, including responses by the emergency staff, evacuation (dispersion) of the population, containment of fire, medical rescue activities, as well as checking of radiation inside and outside of a power plant. These exercises are aimed at checking the overall capabilities to respond to a radiological emergency, minimize damage to the populace and environment and protect the residents, in addition to strengthening the cooperative system among the organizations related with radiological emergencies. Radiological emergency exercises include independent exercises implemented by Korea Hydro & Nuclear Power (a nuclear licensee) and comprehensive exercises conducted by central and local governments in conjunction with relevant institutions.

5 CONCLUSION

All nuclear projects underway in the Republic of Korea have been implemented within the framework of peaceful use as accepted by the international community. However, the threats of terrorism and sabotage against nuclear facilities can never be underestimated, given the complexities of current international politics. In addition, the complicated nature of elements and systems pertaining to the operation of nuclear facilities makes it impossible to eliminate the possibility of radiation leakage from nuclear facilities completely and permanently. Despite such situation, it is of the paramount importance to constantly make efforts toward minimizing such possibility and to strive for the prevention of a radiological disaster and minimization of its consequences in the densely populated Republic of Korea. In particular, the fate of the domestic nuclear industry may be determined according to such endeavors toward ensuring safety. With the enforcement of laws related with nuclear facilities protection and radiological emergency measures, relevant actions and measures necessary in these areas now possess the requisite legal rationale. This will further enhance the Korean people's trust in the safety of nuclear facilities.

REFERENCES


REPORT OF DISCUSSIONS FROM SESSION 1
SAFETY AND REGULATION

Chairman: Mauricio Cumo
Italy

Secretary: Adolfo Lama
Spain

The Session 1 was held on the 10th October 2005, with several conferences out of the seven papers presented, around Safety and Regulation in the field of Nuclear Law.

The morning session started with the words of Mr. Cumo, Chairman of the first session, who talked about the importance of this kind of meetings as a forum for exchange of international experiences and tendencies in the field of Safety and Regulation of Nuclear Law.

After that, Dr. Herbert Schattke followed with the Report of the group 1: “Comparison of nine different states concerning decommissioning and dismantling”, a study about:
1) Legal and policy framework,
2) Strategies for decommissioning, dismantling and radioactive waste management,
3) Financing decommissioning and dismantling,
4) General results.

Some speakers were absent, so the members could not enjoy the conference of Mr. Tomas Israelsson, from Sweden, about the “Four Cornerstones of an efficient nuclear regulatory Authority”, Mr. Alexander A. Matveev, from the Russian Federation, with the presentation “Legal regulation of third party liability in Russian Federation” and the one of Mr. Ales Skraban, from Slovenia, on the “Convention on Nuclear Safety: Lessons Learned after the third round of review meetings”, that was presented by Mr. Peter Grilc. In any case, all their reports were included in the Book of Draft Papers.

“The European Nuclear Package from the German point of view”, by Walter Leder and Hans Steinhauer, from Germany, illustrated the public about the two year file of the European Commission, and the reasons of the different countries to support or not the Directives on nuclear safety and radioactive waste management.

From Germany, Mr. Christian Raetzke and Michael Micklinghoff talked about “Harmonization of Safety Rules: can Existing Plants be Forced to Comply with new requirements?” to expose their thesis on the differences between national legislations, safety culture and technologies that should be considered in the creation of harmonized rules.

“The regulation of security at U.S. nuclear power plants and resulting legal issues” by Mr. Robert Bishop, from USA, developed the needed changes in the physical protection system of USA after the September 11, 2001, attacks.

To finalize, Mr. Jae-dong Koh, Mr. Kim Chang-beom and Mr. Kim Sang-won, from the Republic of Korea, completed the serie of exposures with the subject “Status of Laws related
to Physical Protection and Radiological Emergency in the Republic of Korea”, to explain the provisions of the Korean Act.

The wide range of subjects exposed were of a great interest to the public so, after the speeches, some questions arose that led to a discussion.

The closure of the session was made by the CHAIRMAN of the session who referred to the high legal quality of the speakers and the comments and question of the public.

Madrid, October 2005

Adolfo Lama
1 INTRODUCTION

The Second International Workshop on the Indemnification of Nuclear Damage took place in May 2005 in Bratislava, Slovak Republic. The Workshop was co-organised by the OECD Nuclear Energy Agency (NEA) and the Nuclear Regulatory Authority of the Slovak Republic, and attracted 108 participants from 27 countries, the majority of which are NEA members. The purpose of the Workshop was to assess the third party liability and compensation mechanisms that would be implemented by participating countries in the event of a nuclear accident taking place within or near their borders. To accommodate this objective, two fictitious accident scenarios were developed, one involving a nuclear installation located in the Slovak Republic and the other involving a ship transporting nuclear substances along the Danube River.

The Bratislava Workshop was in fact the second workshop in this series. In November 2001, the First International Workshop on the Indemnification of Nuclear Damage in the Event of a Nuclear Accident\(^1\) was held in Paris, France. This Workshop, organized by the NEA in close cooperation with the French authorities, was a follow-up to the International Nuclear Emergency Exercise INEX 2000, a simulated nuclear accident which took place in May 2001 at the Gravelines Nuclear Power Plant in France. That Workshop assessed the extent and effectiveness of indemnification measures that would be implemented, in both the accident state and in affected neighbouring states, should personal injury or property damage be suffered by third parties in the event of a nuclear accident. It focused primarily on the operation of the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy (“Paris Convention” or PC)\(^2\) and the 1963 Brussels Convention Supplementary to the Paris Convention (“Brussels Supplementary Convention” or BSC).\(^3\)

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\(^3\) The text of the Brussels Supplementary Convention is available on the website of the NEA at [http://www.nea.fr/html/law/nlb布鲁塞尔.html](http://www.nea.fr/html/law/nlb布鲁塞尔.html)
The proposal by the NEA’s Nuclear Law Committee to organise a second workshop was based on the desire to explore further issues in particular in relation to the 1963 Vienna Convention on Civil Liability for Nuclear Damage (“Vienna Convention” or VC)\(^4\) and the 1988 Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention (“Joint Protocol” or JP).\(^5\) That Joint Protocol is the bridge which links the Paris and Vienna Conventions, providing that victims in a Paris Convention country may be indemnified in respect of an accident in a Vienna Convention country and vice versa.

For the purposes of this presentation, I shall commence with a brief description of the Joint Protocol, explaining the context in which it was adopted and its primary objective. I shall then say a few words about the second scenario used at the Bratislava workshop (the transport accident) in relation to which a number of questions concerning the Joint Protocol arose.

2 **JOINT PROTOCOL**

After the Chernobyl accident, it was acknowledged that a solution should be found to the fact that two similar but distinct international liability regimes operate in parallel, and a group of governmental experts set up by the OECD/NEA and the IAEA drafted the Joint Protocol for this purpose. It was adopted in 1988, entered into force in 1992 and currently has 24 Contracting Parties.\(^6\) Its objective, as stated in its preamble, is (1) to establish a link between the Vienna Convention and the Paris Convention by mutually extending the benefit of the special regime of civil liability for nuclear damage set forth under each convention; and (2) to eliminate conflicts arising from the simultaneous application of both Conventions to a nuclear incident.

The objective of linking the two conventions is achieved by the provisions of Article II of the Joint Protocol. Article II provides that the operator of a nuclear installation in a Paris State shall be liable in accordance with that Convention for nuclear damage suffered in a country which is party to both the Vienna Convention and the Joint Protocol, and vice versa.

The second objective of the Joint Protocol, the elimination of conflicts due to the possible simultaneous application of the Vienna Convention and the Paris Convention, is the subject of Article III of the Joint Protocol, which sets forth the principle that only one convention should apply to the same incident to the exclusion of the other. Choice of law rules are established providing essentially that the applicable convention should be that to which the Installation State of the liable operator is party, i.e. the convention which is implemented by the operator’s national law.

Article IV of the Joint Protocol lists the applicable operative articles of the Vienna Convention (Articles I to XV) and the Paris Convention (Articles 1 to 14) and states that they are applied “in the same manner as between the Parties” to either convention.

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\(^4\) The text of the Vienna Convention is available on the website of the IAEA at http://www.iaea.or.at/Publications/Documents/Conventions/liability.html

\(^5\) The text of the Joint Protocol is available on the website of the NEA at http://www.nea.fr/html/law/nljoint_prot.html

\(^6\) Of these, 9 are Contracting Parties to the Paris Convention (Denmark, Finland, Germany, Greece, Italy, the Netherlands, Norway, Slovenia and Sweden) while 15 are Contracting Parties to the Vienna Convention (Bulgaria, Cameroon, Chile, Croatia, Czech Republic, Egypt, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Ukraine).
3 TRANSPORT SCENARIO

In the second fictitious scenario which was selected for the Bratislava workshop, an accident was deemed to have taken place on board a ship transporting low enriched uranium hexafluoride (a nuclear substance considered to come under the scope of application of both the Paris and Vienna Conventions) along the Danube River from Germany to Romania. The accident occurs when the ship is approaching a Hungarian port and is within Hungary’s territorial jurisdiction, but it is a German nuclear operator which is liable for the resulting damage. The terms of the contract between the two nuclear operators provides that the operator of the German installation will be liable for all nuclear third party damage occurring as a result of an accident during the course of transport until such time as the enriched uranium hexafluoride is unloaded at the designated port of entry in Romania.

During the preparations for the Workshop, it transpired that completion of the questionnaire which had been circulated to facilitate workshop discussions was being hindered by various differences of opinion in relation to the issue of jurisdiction. In order to determine which court would be competent in the case of the above scenario, it is necessary to return to the terms of the Joint Protocol.

Article IV of the Joint Protocol abolishes the distinction between Contracting Parties and non-Contracting States between the Contracting Parties to the Joint Protocol. This mutual recognition as Contracting Parties does not however give the full status of a Contracting Party to the other Convention, an issue which was debated at length during the negotiations on the Joint Protocol. Therefore, adherence to the Joint Protocol does not result in making a country a Contracting Party to the “other” Convention in the meaning of general treaty law. What it does is eliminate the distinction between Contracting Parties and non-Contracting Parties in respect of the functional relations among PC/VC countries which are also Party to the Joint Protocol as far as the operative provisions of both Conventions listed in Article IV JP are concerned (and this of course includes the provisions on jurisdictional competence). Application of Article IV to the transport scenario as outlined above results in the following hypothesis:

It is clear that the German operator is liable for the nuclear damage caused pursuant to the terms of the contract which he concluded with the Romanian operator. Since the German operator is liable, the Paris Convention is applicable to the case (Art. III, para. 3, Joint Protocol). According to Article 13(a) of the Paris Convention, jurisdiction over actions shall lie with the courts of a Contracting Party in whose territory the nuclear incident occurred. According to Article 13(b) of the Paris Convention, jurisdiction over actions resulting from an incident occurring outside the territory of the Contracting Parties shall lie with the courts of the Contracting Party in whose territory the nuclear installation of the operator liable is situated. The difference of opinion which alimented the debates on this subject in Bratislava focused on the application of Article 13(a) or 13(b) which in turn depends on the interpretation of Article IV of the Joint Protocol. Which part of Article 13 is applicable to the second scenario?

The NEA Secretariat took the view that the Joint Protocol clearly eliminates the distinction between Contracting Parties and non-Contracting Parties in respect of the relations among PC/VC countries which are also party to the Joint Protocol as far as the operative provisions of both Conventions listed in Joint Protocol Article IV are concerned. This would mean that the Hungarian court would be competent. It would be required to apply the German legislation.

Dr. Norbert Pelzer, who exchanged a number of views with the NEA Secretariat during preparations for this Workshop, pointed out the following anomalous situation in relation to this interpretation:
(1) In relation to victims from all Joint Protocol States, the Paris Convention applies, and the Hungarian Court is competent as outlined above. The Hungarian Court shall apply the Paris Convention as implemented by German law.

(2) In relation to victims from Vienna States which are not Party to the Joint Protocol (e.g. Russian Federation), the Vienna Convention applies, and the Hungarian Court is competent pursuant to Art. XI(1) of that Convention. The Hungarian Court shall apply the Vienna Convention and implementing Hungarian law. It is unclear as to whether there can be liability of the German operator under either the old or the new Vienna Convention without the Joint Protocol.

(3) In relation to victims from Paris States which are not Party to the Joint Protocol (e.g. Belgium, France, UK), the Paris Convention applies, and the German Court is competent pursuant to Article 13(b) of that Convention. The German Court shall apply the Paris Convention and implementing German law.

At the workshop, Dr. Pelzer addressed the audience in order to raise a number of these issues. He expressed the view that the founding fathers of the Joint Protocol certainly did not aim at establishing two competent courts for the same nuclear incident. One of the principal aims of the international nuclear third party liability regime is to channel claims to one single competent court. Therefore this result would be in conflict with this basic legal rule. He also pointed out a second disadvantage in that the Hungarian Court is obliged to apply German law. He suggested that this case could only be satisfactorily solved if we do not assume that the Joint Protocol makes Germany a Contracting Party to the Vienna Convention. In that case, Article XI, paragraph 2 of the Vienna Convention would apply, leading to the exclusive competence of the Czech court.

Otto von Busekist, who took part in the negotiations and who was referred to as the father of the Joint Protocol, states in his article on this subject entitled “A Bridge between Two Conventions” that the conflict rule in transport cases was perhaps the most disputed one during the negotiations, not so much because of its substance but because of its wording. Conflict rules are usually drafted in such a way that the choice of law is made on the basis of facts or status (for example domicile, nationality or, as in Article III(3) of the Joint Protocol, the place of the incident) and not by reference to legal provisions. Drafting proposals were laid on the table which tried to combine the identical transport provisions of both Conventions, but they ran the risk of making the text rather heavy and being inconsistent with the transport provisions of either Convention; it was finally agreed to make an exception to the usual practice of drafting choice of law rules.

The discussion of these issues in relation to the competent court triggered debate at the workshop concerning applicable law, and in particular as to whether it is desirable or even acceptable that the competent court of a Vienna Convention/Joint Protocol country be obliged to apply the Paris Convention because it needs to be implemented by national law. Otto von Busekist points out in his above-referenced article that it is not unusual in conflict of law cases for the court having jurisdiction to have to apply a national law different from the lex fori. He considers that the application of the foreign law will in most cases be limited to the amount of compensation available under the foreign operator’s national law, while the nature, form and extent of the compensation as well as the equitable distribution thereof would be governed by the national law of the competent Court. However, as Dr. Pelzer suggested during the Bratislava discussions, this is a rather simplified interpretation as the Paris and Vienna Convention regimes are imperfect ones, and require the assistance of domestic law to implement them. If Hungary is a Party to the Vienna Convention, its national legislation is

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designed to implement the Vienna Convention and it could by no means implement national law to apply the Paris Convention.

Dr. Pelzer referred to Article 2 of the revised Paris Convention\(^8\) which clearly distinguishes between Contracting Parties to the Paris Convention, non-Contracting States which are Parties to both the Vienna Convention and the Joint Protocol, and other non-Contracting States. He suggests that if the Joint Protocol were really abolishing that distinction, that this article would be superfluous or at least would have been drafted in a different manner. Professor Vanda Lamm, who is our distinguished president here today, and who also attended the Bratislava workshop, raised the question of the very constitutionality of the Hungarian courts applying an international treaty to which it is not a party i.e. the Paris Convention as implemented by German law.

Discussions at the workshop concluded in the general agreement that the solution to this problem is not an obvious one, and the matter should be discussed in an appropriate forum to which all Paris and Vienna States would be invited, included those which are not yet Party to the Joint Protocol but which hope to ratify it in coming years. Neither the Nuclear Law Committee of the OECD/NEA nor the INLEX group within the IAEA appear to be the appropriate forum to guide this work due to their membership or powers. Delegates therefore requested the two Agencies to co-operate on this matter and, in consultation with the countries concerned, find an appropriate forum for discussion and resolution.

NUCLEAR LIABILITY FOR INTERNATIONAL TRANSPORT ACCIDENTS UNDER THE MODERNISED NUCLEAR LIABILITY CONVENTIONS: AN ASSESSMENT

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ABSTRACT

At the 1997 IAEA Conference, the Protocol to Amend the Vienna Convention (1997 VC) and the Convention on Supplementary Compensation (CSC) were adopted. The CSC has not yet entered into force, whereas the Vienna Protocol entered into force on 4 October 2003. Furthermore, in February 2004, the Contracting Parties to the Paris Convention signed the revised Paris Convention and BSC, which are now envisioned to enter into force around “the end of 2006”. All these instruments contain several significant changes that will have impacts on transport coverage.

Due to the fact that the nuclear liability treaties have recently been modernised, the nuclear liability situation in case of international transport might become more complicated, but at the same time also more transparent, should these treaties enter into force for certain States, but not for others. For instance, the widening of the geographical scope of application, the enlargement of the definition of nuclear damage to include environmental and economic damage, and the increased liability amounts for operators, will result in higher liability coverage for a wider category of victims than before. On the other hand, the risks of claims outside the nuclear liability regime under other laws and/or in different courts, might be reduced.

This paper aims to provide an analysis of the possible complications and consequences nuclear liability protection applicable to multimodal transport of nuclear material/substances, falling within the description of the Vienna and Paris Nuclear Liability Conventions; the cause génératrice being a catastrophic accident with wide-scale and/or transboundary consequences of a possible terrorist nature involving different countries. It aims to look at the different legal aspects (jurisdiction, applicable law, liability amounts, reciprocity) should the revised Vienna and Paris Convention become applicable to a transport accident as opposed to the unrevised conventions. Included will also be an analysis of the interrelation between the new and old nuclear liability regime. In this framework, the paper intends to reflect upon aspects relevant to the various possible interrelation between States of origin, destination, transit, and coastal States, where a transport accident or resulting damage might potentially occur, and that might be party to the same, different or none of the nuclear liability treaties.

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1 INTRODUCTION

The nuclear activities in which nuclear operators are involved pose a number of liability risks which are normally well-insured and are regulated by the 1960 Paris Convention (PC), the 1963 Brussels Supplementary Convention (BSC), the 1963 Vienna Convention (VC), the 1988 Joint Protocol linking the Paris and Vienna Conventions (Joint Protocol), the 1971 Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material (1971 Maritime Convention), in addition to domestic nuclear liability legislation, implementing the respective treaty provisions.

Apart from the operation of nuclear power plants per se, a special liability risk is posed by transfrontier shipments of nuclear materials from nuclear facilities to and from other nuclear facilities in and through various countries. Such liability risk is especially real and multifaceted, if the receiving, sending or transit States are not part of any international nuclear liability treaty regime, or have joined a different nuclear liability regime.

The latter situation, is, in fact, more likely to arise with the adoption of the four modernised nuclear liability treaties, i.e. the 1997 VC, the two Protocols of 2004 revising the Paris Convention and Brussels Supplementary Convention (2004 PC and 2004 BSC), and the 1997 CSC. These treaties tend to add to the ambiguity of the liability risks involved in transport activities, especially until such time as all the Contracting Parties of the original version of the treaties have ratified the modernised ones. Moreover, it should be emphasised, particularly in respect of liability associated with nuclear transport, that States with a majority of the world’s operating nuclear power plants are not yet parties to any nuclear liability treaty. Shipments between and among them thus are not covered by any treaty.

It is therefore unfortunate that with all existing nuclear liability treaties in place, the number of which is unique within international law to cover one and the same topic, they lack a comprehensive and unified international legal regime for nuclear accidents under which potential nuclear damage claims can be settled in a predictable and transparent manner. In fact, this labyrinth of international agreements on nuclear liability, the interrelations of which have become increasingly complicated, is especially problematic in respect of nuclear transport accidents which could easily result in the application of more than one (nuclear) liability agreement. This is further multiplied in case of multimodal transnational shipments that habitually involve a number of countries, apart from the sending and receiving countries, i.e. transit countries in respect of transport by land or waterways, and coastal States in respect of transport by sea.

Finally, as highlighted by the 11 September 2001 attacks in New York and Washington D.C., the train attacks in Madrid of 11 March 2004, and the subway attacks in London of June 2005, a new and very real risk involved in case of nuclear shipments is terrorism, i.e. a terrorist attack on any of the means of transport and resulting liability questions involved.

2 LIABILITY FOR NUCLEAR TRANSPORT ACCIDENTS

2.1 Transnational Multimodal Transport: issues involved

Within the national boundaries of States that have adopted comprehensive nuclear liability laws and even between States that are parties to one of the international nuclear liability conventions, nuclear liability transport regimes usually are relatively well-defined. However, once a shipment crosses international boundaries, potential nuclear liability presents a number of intricate and largely untested legal issues. This particularly is the case for shipments while on the high seas. Many elements can bear on liability for nuclear damage
during transport. For example, liability may depend upon the origin or destination of the shipment; the type of nuclear material involved; the *situs* of the transport accident (applicable geographical scope, e.g., EEZ); the nature of nuclear damage involved (e.g., environmental cleanup or retrieval at sea, pure ecological damage); the nationality and domiciles of the victims (e.g., Austrians); allocation of jurisdiction or applicable law. Depending upon these and other circumstances, the law applied could be the law of the forum, the law of the place where the accident or damages occurred, or the law of the place with the most significant links with the parties. Moreover, the availability and degree of insurance coverage and/or State funds further determines the degree of successful compensation for damages, if liability is established.

Under the general international rules on nuclear liability, as incorporated by the nuclear liability treaties, three main principles are to be separated that influence the decision on which law and the extent of liability is applicable to a transport incident. These relate to the person liable, the court having jurisdiction and the national (implementing) law applicable.

### 2.2 Allocation of Liability for Transport Accidents

The nuclear liability treaties contain rules to determine the allocation of liability in case of a certain nuclear transport accident. Article 4(a) and (b) 1960/2004 PC and Article II.1(b) and (c) 1963/1997 VC, provide explicit rules on transport stipulating that liability, in principle, typically is imposed on the installation operator sending the nuclear substances, including storage incidental thereto, which passes to the receiving operator upon contractual assumption of liability by that operator or, in absence thereof, when that operator takes charge of the shipment. Article 4(d) 1960 PC, Article 4(e) 2004 PC, as well as Article II.2 1963/1997 VC, further contain the option that a Contracting Party may provide by legislation that a carrier, at its request and with the consent of the operator of a nuclear installation situated in its territory, be liable in the place of the operator. In order to prevent contractual liability transfer to operators with the domestically fixed lowest liability cap for transport in order to factoring less expensive insurance premiums into the price of the transport, a new provision, Article 4(c) 2004 PC, stipulates that permits such transfer of transport liability only the other operator has a direct economic interest in the nuclear substances being transported.

In the case of transport to or from operators of non-Contracting Parties, special provisions apply to ensure that an operator to whom the Paris or the Vienna treaty regime (or one of both in case of an existing Joint Protocol link) applies, will remain liable for the entire transport operation as of the moment of loading or unloading of the transport vessel, excluding the liability of the carrier, who would otherwise be liable under common law. In principle, the person liable during transport is the receiving operator of a nuclear facility situated in a Contracting State (Installation State) in respect of nuclear materials sent from a non-Contracting State, after they have been loaded on the means of transport by which they are to be carried from the territory of that non-Contracting State, regardless of any contractual provisions, and *vice versa*, the sending operator of a Contracting State is liable for materials sent to an operator situated in a non-Contracting State, until unloading of the materials.

The Joint Protocol links the PC to the VC. Should the operators involved in a transport activity be situated in States that have ratified the Joint Protocol, its rules will be applicable in the determination of the allocation of liability. As such, the Joint Protocol in Article II stipulates that the operator of a nuclear installation situated in a Paris State, shall be liable in accordance with the PC for damage suffered in the territory of a Vienna State, and *vice versa*, provided both are party to the Joint Protocol. Article III(3) further provides in case of transport accidents, “the applicable Convention shall be that to which the State is a Party within whose territory the nuclear installation is situated whose operator is liable pursuant to
either Article II.1(b) and (c) VC or Article 4(a) and (b) PC. To what extent a Vienna State party to the Joint Protocol should be considered as a Contracting Party or not, in respect of a Paris State that also ratified the Joint Protocol under Article 4(a)(iv)/(b)(iv) PC, and vice versa under Article II.1(b)(iv)/(c)(iv) VC, has been disputed and thus gives room for various interpretations.

If under the nuclear liability regimes no operator is liable, no nuclear liability treaty will be applicable to a possible transport accident, which might trigger the application of other law in respect of transboundary (nuclear) damage. For example, nuclear shipments could take place between two operators not party to any of the nuclear liability treaties, but nonetheless cause nuclear damage within countries that are party of one of such treaties. The liability allocation will then have to be determined according to other (international) law, even though the domestic law of the victim State might have compensatory funds available for their national victims in absence of a liable operator under one of the nuclear liability treaties.

Moreover, under Article II.5 VC as well as Article 6(b) PC, the principle of exclusive liability “shall not affect the application of any international convention in the field of transport in force or open for signature, ratification or accession at the date on which this Convention is opened for signature”, i.e. any third party liability agreements involving a means of transport or dealing with bills of lading. Therefore, a person suffering damage due to a transport accident may have two rights of action, i.e. one against the operator under the VC or PC and one against the carrier liable under such existing agreement. Although the 1971 Maritime Convention aims to solve this, it theoretically still exists in respect of non-Contracting Parties thereto.

The 1971 Maritime Convention supplements both the Vienna and Paris treaties in relation to maritime transport. Under its liability regime, the operator, and not the carrier, will be exclusively liable for damage resulting from any incident occurring during the maritime carriage of nuclear material. However, it will not apply if either Paris or Vienna treaty is applicable or national law (provided that it is not less favourable to the victim, covers the damage caused by such nuclear material). As such, Contracting Parties to the 1971 Maritime Convention will have to apply the rules of the Paris of Vienna Convention in order to determine the liability of the operator.

2.3 Jurisdiction in case of Transport Accidents

The *situs of the accident* will determine the jurisdiction of the courts as well as applicable law of a particular State (transit, coastal, origin or destination State), the gravity of the accident (transboundary or not), the type of resulting nuclear damages (environmental damage), and possible involvement of injured States not in treaty relation with the State of the liable operator, or those not part of any nuclear liability treaty. These are unpredictable elements and can be identified as liability risks for any operator involved in nuclear transport that should be taken into account when agreeing upon a special transport route and transport contract.

Article 13 PC and Article XI VC determine that the jurisdiction and applicable law over actions for compensation, lies in principle, with the courts of the accident State (*lex loci delicti*), unless the accident occurs in a non-Contracting State during transport, then jurisdiction lies with the courts of the Installation State, *i.e.* State of the operator liable (*lex loci actiones*). The courts of the Installation State also have jurisdiction in cases where the place of the nuclear incident “cannot be determined with certainty” or occurs on the high seas.

The 1997 VC and 2004 PC follow the basic jurisdictional rules of the unrevised version, however, in respect of nuclear incidents occurring in the EEZ of a Contracting Party (or, if such zone has not been established, in an area not exceeding the limits of an EEZ were one to
be established in the future), jurisdiction will lie only with the courts of that Contracting Party.

As for the applicable substantive law, the competent court will apply the self-executing provisions of the relevant nuclear liability treaty, if these have been made directly applicable within its domestic legal order, or the national legislation specifically enacted in order to implement the applicable treaty. The national law of the court will apply to all matters of a both substantive and procedural nature not specifically governed by the treaties or on aspects where these treaties leave States certain latitude.

Final judgments rendered in the competent court will be recognized by and are enforceable in any of the other Contracting Parties without re-examination of the merits. This applies also to a judgment rendered under the Paris Convention in respect of victims of a Vienna-Joint Protocol State, even if, under the revised Paris Convention, the available compensation might then be conditioned by reciprocity requirements.[1]

2.4 Transport Routes and Territorial Application

Whether compensation under a nuclear liability treaty would be available for transport accidents occurring in the course of nuclear materials transports from the sending to the receiving operator situated in another State, depends also upon whether the incident falls within the geographical scope of application.

The territorial application of the 1960 PC is limited to nuclear incidents occurring and nuclear damage suffered in the territory of Contracting Parties, including, as recommended[2], the high seas, unless the legislation of the Installation State determines otherwise (Article 2). The geographical scope of application of the Paris Convention would thus vary according to the law of the Installation State.

The geographical applicable scope of the 1963 VC is not explicitly defined. It is clear that it applies whenever the nuclear incident occurs in the territory of a Vienna State, or, if it occurs outside such territory in the course of transport, if the installation of the liable operator is situated within such Vienna State, and if not, the VC will apply if that installation was operated by a Vienna State or under its authority.

The revised Paris and Vienna Conventions extend the geographical application to damage wherever suffered, including the EEZ. Whereas the 1997 VC permits a unilateral exclusion of this extension only in respect of non-Contracting nuclear States (or its maritime zones) that do not afford equivalent reciprocal benefits (Article IA), the 2004 PC a priori excludes damage coverage in such case, while excluding a priori also cases where such States lack nuclear legislation based on identical nuclear liability principles as the 2004 PC, unless national legislation provides otherwise (Article 2).

The Joint Protocol expands the geographical scope of the Paris and Vienna Convention by linking them and establishing a mutual extension of the civil nuclear liability regimes established under both. This means that a nuclear incident at a nuclear facility in a Paris State would be covered on a reciprocal basis under the terms of the Paris Convention in an additional fifteen countries. Moreover, the Joint Protocol (Article III) is meant to eliminate conflicts which might otherwise arise, especially in transport cases, from the simultaneous application of the two Conventions: it aims to ensure that either the Paris or the Vienna treaty is applicable to a nuclear incident.

Thus, to determine with some certainty to what extent a potential transport accident would fall within the territorial application of the existing nuclear liability treaties, it is necessary to analyze the domestic laws of the sending, receiving, transit and victim States, situated in the vicinity of planned transport routes and the respective treaty relations among them.
2.5 Liability Limits Applicable to Transport Accidents

The operator’s liability cap will be fixed by the law of the Installation State and will apply wherever the nuclear accident occurs, also in respect of transitional caps fixed temporarily lower than the general liability limit under the revised nuclear liability treaties. Such is stipulated explicitly in Article 7(d) of the 1960/2004 PC, as well as Article V(3) of the 1997 VC. Therefore, in case of a nuclear transport accident, the operator will not be liable for varying amounts depending on the States transited or where the accident occurred, but will remain to be that amount as determined by the legislation of the Installation State implementing the nuclear liability treaty. As a result, the potential applicable liability limit in case of accidents occurring in the course of multimodal transboundary transport activities seem less unpredictable, especially once there is certainty about the operator liable.

In respect of the Paris States, this means that even though the treaty maximum liability cap is set at 15 million SDRs, national law generally increased this amount, sometimes even following the OECD Steering Committee recommended maximum of not less than 150 million SDRs[3] (e.g., Finland, Belgium, The Netherlands, Sweden). In respect of the Vienna States, most caps are fixed much lower by national law, but never as low as US$5 million as stipulated in Article V VC.

A special rule exists in respect of transit of nuclear material. Article 7(e) PC provides that a Contracting Party may subject the transit of nuclear substances through its territory to the condition that the maximum amount of liability of the foreign operator concerned be increased, if it considers that such amount does not adequately cover the risks of a nuclear incident in the course of the transit: provided that the maximum amount thus increased shall not exceed the maximum amount of liability of operators of nuclear installations situated in its territory. Clarity about the liability cap applicable can thus be deduced from an analysis of the various domestic laws of the potential transit States.

Under the 2004 PC, if it will come into force, it will be clear that virtually all Paris operators will provide at least the first 700 million euros of liability coverage, with the rest coming from State contributions. However, lower limits are allowed for the carriage of nuclear substances, if fixed not less than 80 million euros. This would thus be the minimum amount available within the PC region for a transport accident involving a liable operator situated in a Paris State. On the other hand, the 1997 VC increased the liability limit to not less than 300 million SDRs, with a minimum operator’s liability of 150 million SDRs if the public funds would guarantee the difference. Lower limits can also be established to not less than 5 million SDRs, and provided that the Installation State ensures that public funds provide for the difference (Article V(2) 1997 VC).

In principle, depending upon the applicable treaty and the specific caps as fixed under the domestic law of the Installation State, these will be the amounts available for compensating (transboundary) nuclear damage as a result of a transport accident, if and to the extent it would be covered by one of such nuclear liability treaties.

2.6 Liability Exclusions in respect of Transport Accidents

The rules on exoneration of liability are defined in Article 9 1960/2004 PC and Article IV(3) 1963/1997 VC. They stipulate that the operator’s liability will be exonerated only where it can prove that the damage was caused by a nuclear incident directly due to an act of armed conflict, hostilities, civil war, insurrection or a grave natural disaster of an exceptional character, unless the law of the Installation State determines otherwise. Acts of terrorism, in principle, do not fall within the exoneration for an “act of armed conflict” or “hostilities”.

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Should a ship or train be subject to a terrorist act, the liable operator will continue to be obliged to provide for compensation up to limit fixed by the law of the Installation State.

As for grave natural disaster of an exceptional character, e.g., hurricanes or tornados causing a nuclear accident in the course of shipment of nuclear material, the operator’s liability will still be exonerated under the 1960 PC and 1963 VC, unless the law of the Installation State determines otherwise. However, the revised versions of the Paris and Vienna Conventions, explicitly deleted this exonation. The operator will therefore remain, just like for terrorist attacks, liable for any resulting nuclear damage caused by such situations of force majeure.

2.7 Types of Nuclear Damage Covered

The kind of nuclear damage that would be compensated under the unrevised versions of the Paris Convention (Article 3) and Vienna Convention (Article I(1)(k)(i)) were confined to damage directly linked to that suffered by individuals or their property (other than the nuclear installation itself and any property on the same site), as well as damage that cannot be reasonably separated from nuclear damage, which, in case of transport accidents, arises out of or results from the radioactive properties (or a combination of radioactive properties with toxic, explosive or other hazardous properties) of nuclear fuel or radioactive products or waste coming from, originating in, or sent to a nuclear installation (Article 1(a)(v) PC and Article I(1)(h) VC).

Article I(k)(ii) of the 1963 VC further adds “any other loss or damage so arising or resulting if and to the extent that the law of the competent court so provides”. The 1960 PC does not contain this addition. Even so, damage to the general environment per se (water, air, the soil, etc.) still falls outside the scope and can only be compensated if the applicable substantive law so provides. Since it is for the applicable law to determine the precise meaning of damage, and the extent to which environmental damage can be compensated under those heads, that wide discretion may lead to uncertainties as to the extent of compensation to be paid in case of a nuclear transport incident.

Under the 1963 VC the operator is, in principle, not liable for nuclear damage to the means of transport unless national law explicitly regulates otherwise (Article IV(5)(b) and IV(6)), whereas under the 1960/2004 PC (Article 7(c)), and the 1997 VC (Article IV(6)) this is optional, leaving it to national law of the State, provided it will not the effect of reducing the liability of the operator in respect of other damage to a specific amount.

Both the 2004 PC and 1997 VC extended the narrow definition of nuclear damage to explicitly include a) economic loss resulting from personal injury or property damage, b) costs of measures of reinstatement of impaired environment if actually taken or to be taken (unless such impairment is insignificant), c) certain loss of income resulting from an (a direct) economic interest in any use or enjoyment of the environment resulting from a significant impairment of the environment, d) costs of preventive measures and further loss or damage caused by such measures, and only under the 1997 VC also to, e) any other economic loss.[4]

Consequently, whereas claims for compensation for the enumerated heads of damage must be admitted although the extent of coverage is left to the “law of the competent court”, the admissibility of claims under the latter head (e) is totally dependent upon the provisions of the applicable substantive law. The court will also have to judge upon the remoteness of claims, which is left open by the definition, e.g., whether indirect economic loss sustained are too remote in the chain of causation.[5] Finally, although (pure) economic loss might be covered, it is, however, necessary that the loss arises out of an emission of ionizing radiation. If, for example, a ship with nuclear substances sinks, but there is no emission, economic loss suffered as a result of widespread public fear of contamination will not be covered.
2.8 Compensation Funds under BSC and CSC

Whereas both the 1963/2004 BSC and the 1997 CSC provide for additional public and joint public funds up to 300 million SDRs, 1.5 billion Euros, and 600 million SDRs, respectively, such supplementary compensation is available only for accidents occurring and damage suffered in the territory of BSC or CSC States (even though including their EEZ), provided an operator of a Contracting Party is liable (i.e., geographically limited). This means that especially in case of accidents involving transfrontier transport, likely to cause damage in States not party to such treaties, supplementary compensatory funds will not be available, even if they are non-nuclear States.

3 CONCLUSION

As seen from the comparison above between the unrevised and the revised version of the Vienna Convention and the Paris Convention, the 1997 VC and 2004 PC might thus have some far reaching consequences for transport activities. In case of casualties during multimodal and transnational shipments, they would allow victims of Contracting but also non-Contracting non-nuclear States to recover costs of damages resulting from marine contamination or preventive measures (even in case of sinking of the ship without actual release of radiation), and costs of loss of income or other economic damages, give jurisdiction to coastal Contracting States for accidents occurring in their EEZ, as well as set much higher minimum liability limits, also explicitly for transport activities.

With the adoption of the modernised nuclear liability treaties, i.e. the 1997 VC, and the 2004 PC and BSC, the lack of transparency of the liability risks involved in transport activities might nevertheless increase, especially as long as not all the Contracting Parties of the original version of the treaties have ratified the modernised ones. Only the CSC, in this respect, is different. The CSC aims to provide a basis for one unified nuclear liability regime attracting the widest possible membership by allowing States to participate no matter which treaty regime they adhere to and States that did not join any such regime but have domestic nuclear liability legislation in place that follows some specified basic nuclear liability principles. As such, it links all States together in one legal regime that aims to apply the main basic nuclear liability principles between and among them. And although a number of aspects and interrelations would still need to be clarified, especially in respect of international transmodal transport activities, the CSC could provide more legal certainty and transparency as to the main liability risks involved.

In addition, the CSC might function as an alternative to the Joint Protocol, which due to the modernised Paris and Vienna treaties might become largely redundant. The modernised versions of the Vienna and Paris treaties establish a nuclear liability regime that extends its scope of compensatory rights unconditionally to victims of non-nuclear States. The 1997 VC applies also to damage suffered in nuclear non-Contracting States, regardless of whether they ratified the Joint Protocol, unless that Vienna State used its option to exclude such damage, allowed only if that victim State does not afford “equivalent reciprocal benefits”. In effect, this means that from the perspective of the 1997 VC, all Paris States whether or not they ratified the Joint Protocol, are covered since they do provide for such reciprocity.

The situation is somewhat different under the 2004 PC, unfortunately. Its geographical application is confined to nuclear damage suffered in non-Contracting States that are non-nuclear States, and in case they are nuclear States if they afford “equivalent reciprocal benefits” based on identical (i.e. exactly the same) nuclear liability principles, unless national law of the Paris State has broadened its geographical application. So whereas, the revised VC unconditionally includes damage wherever suffered, unless national law imposes a reciprocity.
requirement in respect of nuclear victim States, the revised PC geographical scope was only extended to damage suffered in all non-nuclear States, whereas in respect of all nuclear victim States the reciprocity and “identical” condition might, depending upon interpretation, apply unless national law broadens its scope.

In effect, this would make the Joint Protocol redundant under the 1997 VC in the sense that the benefits of the Joint Protocol are extended also to non-Joint Protocol non-Vienna States, as well as under the 2004 PC in the sense that the benefits of the Joint Protocol can now be conditioned in the same manner as to non-Joint Protocol non-Paris States.

Ergo, since as yet there exist no worldwide applicable fixed and unified nuclear liability regime under which potential nuclear damage claims can be settled in a predictable and transparent manner, the CSC, if entering into force, might function as such and prove to be an adequate substitute for the Joint Protocol.

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[2] The Paris Convention Steering Committee recommended that parties extend the PC’s geographical application by national legislation (a) to damage suffered in a Contracting State or on the high seas on board a ship registered in the territory of a Contracting State (even if the nuclear incident causing the damage has occurred in a non-Contracting State) and that (b) to damage suffered and incidents occurring on the high seas (i.e., res communis). OECD Steering Committee Recommendations of 25.4.1968 [NE/M(68)1] and of 22.4.1971 NE/M(71)1, respectively. The latter would in practice apply only to damage occurring in the course of carriage, since it is only in this case that the operator of a Contracting State could be held liable under the PC for an incident occurring in a non-Contracting State. However, some national laws, e.g., in France, do not follow this recommendation.


[4] The residual category of economic loss is not covered by the new definition of “nuclear damage” adopted in the 2004 PC, a definition which is otherwise almost identical to that found in the 1997 VC. Apparently, as is stated in the Explanatory Report attached to the 2004 PC, “the Paris Convention States were simply not convinced that this head of damage was not already covered by other heads of damage included in the definition” (paragraph 12).

[5] Whereas Article I.1(k)(v) of the 1997 VC refers to “loss of income deriving from an economic interest in any use or enjoyment of the environment”, the corresponding provision in the 2004 PC, Article 1(a)(vii)(5) leaves less discretion to the competent court, since it covers loss of income deriving from a “direct” economic interest in the use or enjoyment of the environment.
CONCERNING IMPROVEMENT AND REFORM TOWARDS MORE EFFECTIVE AND REALIZABLE NUCLEAR LIABILITY LEGAL SYSTEM IN JAPAN

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INTRODUCTION

The basis for the nuclear liability system in Japan is regulated by the Law on Compensation for Nuclear Damage (hereinafter referred to as “the Law”). The purpose of “the Law” is to protect persons suffering from nuclear damage and also to contribute to the sound development of nuclear industry. Under the existing unlimited liability system in Japan, however, there is a problem that nuclear operators can not necessarily foresee the probable limit of their risks to owe.

Therefore, I would like to reconsider the framework concerning nuclear liability, through which nuclear operators can foresee their probable risks definitely to some extent. I will address the notion of nuclear damages in Japan and the system of financial security for compensation of the nuclear damage. Moreover, I will refer to problems relating to ratification of international treaties for nuclear liability. I will present problems of the nuclear liability legal system, proposals concerning improvement and reform towards a more effective and realizable system in Japan.

1 THE NOTION OF NUCLEAR DAMAGES IN JAPAN

1.1 The Definition of Nuclear Damages in “The Law”

“The Law” prescribes for compensation in the case of an occurrence of nuclear damage through operation of the reactor etc, but not one in the case of a nuclear accident.

“The Law” prescribes compensation for any damages caused by the effects of the fission process of nuclear fuel material, by the effects of radiation of nuclear fuel material etc. or by the effects of toxic natures of such materials (which mean the effects that cause toxication or its deuteropathy to the human body by taking or inhaling of such materials).

By this prescription, we can view that the damage to which “the Law” is applied will be loss of life or personal injury (including delayed radiation injury) and loss of or damage to property caused by a nuclear disaster etc.
1.2 The Range of a Nuclear Damage to be Compensated for

“The Law” does not have any stipulated prescriptions regarding the concrete range of nuclear damage to be compensated. The kinds of damages caused by a nuclear incident, must be within the limit of “reasonable and probable causation”. “Reasonable and probable causation” is the judicial precedent and the accepted theory of the Civil Code specifying general requirements and effects of the illegal act. These damages will be compensated for as “nuclear damage” under “the Law”. Over and above, the damage within the limit of “reasonable and probable causation” referred here means general damage and the damage which can be foreseen among special damages.

1.3 The Problem in the Existing Law

“The Law” has taken the absolute liability system which does not make requirements of the nuclear operator’s intention or negligence unlike most illegal acts. Regardless of the nuclear operator’s intention or negligence, only the existence of “reasonable and probable causation” is acknowledged between the cause of the accident and the occurrence of the damage, the damage would be compensated under “the Law”.

As mentioned above, “the Law” does not have a prescription about a definition of a nuclear accident and also does not make requirements of the occurrence of it, unlike many foreign laws or international treaties. There is also room for interpretation of “the Law”, the nuclear damage prescribed includes not only one caused by a nuclear accident, but also one during normal operations. Taking this into consideration, we can say that the damage to be compensated for is more extensive in Japan as compared to other countries and international treaties.

Under such an existing law system, if a huge nuclear accident should occur for example, bringing a lot of actions for compensation about the existence of “reasonable and probable causation”, I am anxious about the big burden to our judicial system. As a result, it may lead to protraction of a trial. It is not desirable with respect to the relief of victims. Moreover, in a situation, where we can not predict if compensation is accepted or not, nuclear operators are forced into an indefinite and unstable condition, also.

It is necessary to clarify the range of nuclear damages and to take shape of them, from the standpoint of compatibility with relief for victims and the sound development of the nuclear industry.

2 THE SYSTEM OF THE FINANCIAL SECURITY FOR COMPENSATION OF THE NUCLEAR DAMAGE

2.1 The Unlimited Liability and “The Aid by the State”

Concerning the nuclear liability system, my country adopted the unlimited one. But it is a different problem whether nuclear operators can compensate unlimitedly. So, nuclear operators are required to provide the financial security in order to secure the fulfilment of their liabilities for damages.

When nuclear damage occurs, the Government shall give to a nuclear operator such aid as required for him to compensate the nuclear damage. Such a case requires the amount which he should compensate for the nuclear damage exceeds the financial security amount concerned and when the Government deems necessary in order to fulfil the purpose of “the
Law”. So, there is room for judgment and discretion by Government authorities to intervene between the occurrence of damage and “the Aid by the State”.

Moreover, “the Law” prescribes that “the Aid by the State” shall be made to the extent that the Government is authorized by the decision of the National Diet. So, there is a high possibility that the National Diet could decide not to approve “the Aid by the State”, even if the Government judges in advance that it is indispensable to invoke.

The problem is as follows; since the standard has not been clarified, on the basis of which the government can judge the necessity of invoking “the Aid by the State”, it is uncertain what kind of situation “the Aid by the State” is invoked.

In terms of the sound development of nuclear industry, two requirements are needed; the security of safety to prevent disasters from taking place and the predictability about the compensation for damages. If nuclear operators can not predict how much compensation to owe in the future, the stability of nuclear enterprise is not guaranteed. However, judging from the condition of the accident, “the Aid by the State” should be invoked quickly to relieve victims. If not invoked, the relief of the victims is not achieved thoroughly in such a case. Clarification of the standard of invoking “the Aid by the State” is desirable so as to attain the purpose of “the Law”.

2.2 The Effectiveness of “Joint Risk Owning Scheme for Nuclear Damages”

It depends how funds to support fulfilment of nuclear operator’s liability are secured actually, rather than what is regulated in “the Law”, doesn’t it?

If my country could establish “Joint risk owning scheme for nuclear damages” such as “the Price-Anderson Act” in the United States, we might be able to estimate a valid compensation.

Under this American system, the indemnification funds are provided entirely by the operators of nuclear installations through a fund which comprises two tiers. The first tier is administered by the American nuclear insurance pool. It is currently fixed at USD 300 million and includes the proceeds of insurance which each operator is required to maintain in respect of its installations. The second tier is comprised of retrospective assessments which all nuclear operators are required to pay in the event of a nuclear accident. It is currently fixed at USD 95.8 million per installation/accident plus 5% for claims and costs, payable in annual instalments of up to USD 10 million per installation/accident. Payments are guaranteed by the U.S. Government and there is an inflation adjustment every five years. Payments are collected by the United States Nuclear Regulatory Commission which is equally responsible for the distribution of indemnities.

The merit of this system is all nuclear operators owe indemnities jointly in respect of its installations. They pay assessments retrospectively to the American nuclear insurance pool in the event of a nuclear accident. Therefore nuclear operators do not always need to provide the fixed amount of financial security. Moreover, these assessments can be paid by instalments. So, we can say that nuclear operators’ economic liability is reasonable.

This framework allows nuclear operators to offer substantial compensation to victims, while avoiding the risk of being charged the total amount of damages every incident.

At the present time, Japan has no administration to pay the financial security in a lump sum. So, we need to construct such an administration. Moreover, there is a problem on how to secure the impartiality for the distribution of indemnities among nuclear operators.
3 PROBLEMS RELATING TO RATIFICATION OF INTERNATIONAL TREATIES FOR NUCLEAR LIABILITY

3.1 Significance of Ratification of International Treaties for Nuclear Liability

It is expected that the development and utilization of nuclear energy will progress remarkably in the Asian area around Japan in the future. It is desirable to examine the construction of the international framework concerning the nuclear liability system in Asia. We need to address the international viewpoints of quick and certain relief for victims, sound development of the international nuclear power industry, and the contribution to safety of nuclear use.

Japan should take the initiative in looking at the international framework. First to examine, the ratification of the international nuclear liability conventions such as “the 1997 Vienna Convention on Civil Liability for Nuclear Damage” (hereinafter referred to as “the 1997 Vienna Convention”) and “the Convention on Supplementary Compensation for Nuclear Damage” (hereinafter referred to as “CSC”). Secondly, addressing concerns that Asian countries have in adopting these international treaties.

3.2 Topics to be Examined in Detail

There are advantages of ratification of “the 1997 Vienna Convention” or “CSC”. They establish the regulation of consideration for countries adopting the unlimited liability system, and more importantly the amount of financial security is much increased.

On the assumption that Japan ratifies those conventions, I will discuss four issues of national law to be examined in detail. I would like to state legislative options to solve them respectively. As for these issues in law, the contents of the conventions must be reflected in the national law. Therefore, it is necessary to try to look over the domestic legal system.

3.2.1 The Difference of the Definition of “Nuclear Damage”

It is not necessary to amend the definition of “nuclear damage” prescribed in “the Law” to be the same as the definition in the international treaties because Japanese definition of “nuclear damage” is broad in scope, and includes the contents of nuclear damage prescribed in the international treaties as interpreted by “the Law”. But, as mentioned above, it is desirable to clarify the definition by the provisions of “the Law”.

3.2.2 Handling of Exemption Clause “The Extraordinary Great Natural Disaster”

When a nuclear damage is caused by “the extraordinary great natural disaster”, it is supposed that the government takes necessary measures to relieve victims and to prevent further damages in Japan.

If, a country is not a contracting party to “the 1997 Vienna Convention” and “the Paris Convention on Third Party Liability in the Field Of Nuclear Energy”, but ratifies “CSC”, there is an exemption clause to “the extraordinary great natural disaster”. But if a country is a contracting party to “the 1997 Vienna Convention”, the exemption clause is excluded. Therefore, we have two options; one, to select ratification with reservation of the prescription concerned or, two, ratification by exclusion of it from the exemption clause through the revision of “the Law”.

The former option, however, has problems because it has no prescription for reservations and whether other Contracting Parties can approve with these reservations. If we adopt the latter option, if the operator’s financial security is insufficient to compensate the damage.
caused by “the extraordinary great natural disaster”, “the Aid by the State” will be invoked by a decision of Japan’s Diet. But, there is room for judgment and discretion of the Government authorities to intervene. So I think it is necessary that “the Law” prescribes the exceptional rule that “the Aid by the State” is sure to be taken, in such a case.

3.2.3 Handling of “The Lower Amount of Financial Security System”

Japanese nuclear operators are obliged to maintain financial security in amounts that vary according to the nature of the activity. The current requirement in respect of nuclear reactors and spent fuel reprocessing facilities is 60 billion Yen. A lower amount of financial security can be established by the operator according to the level of risk of the material being handled.

“The 1997 Vienna Convention” and “CSC Annex” prescribe as follows; “Where the liability of the operator is unlimited, the Installation State, having regard to the nature of the nuclear installation or the nuclear substances involved and to the likely consequences of an incident originating therefrom, may establish a lower amount of financial security of the operator, provided that in no event shall any amount so established be less than 5 million SDRS (about 8 hundred million Yen), and provided that the Installation State ensures the payment of claims for compensation for nuclear damage which have been established against the operator by providing necessary funds to the extent that the yield of insurance or other financial security is inadequate to satisfy such claims, and up to the limit provided pursuant to sub-paragraph (a) of this paragraph (300 million SDRS, about 48 billion and 7 hundred million Yen).”

In order to satisfy requirements specified in “the 1997 Vienna Convention” and “CSC Annex”, it would be necessary to take the legal measure as follows; obliging legally “the Aid by the State” to be invoked to the amount of 60 billion Yen through the revision of “the Law”, still maintaining “the lower amount of financial security system”, or abolishing it and unifying the amounts of financial security to 60 billion Yen.

In adopting the latter one, however, I think the Government should take the measure in not burdening nuclear operators with additional cost.

3.2.4 Compatibility of the Principle of Reciprocity with the Indiscriminate Application Principle of the International Nuclear Liability Conventions

“The 1997 Vienna Convention” prescribes as follows; “This Convention and the national law applicable thereunder shall be applied without any discrimination based upon nationality, domicile or residence.” What happens under “the principle of indiscriminate application”? In a case that a nuclear incident occurs in the Contracting State adopting the limited liability system, victims in Japan could be relieved only to the extent of the limited amount prescribed by the Contracting State, even though Japan has adopted the unlimited liability system. While in a case where a nuclear incident occurs in Japan, and a Contracting State suffers the damage by the occurrence of it, victims in the Contracting State could be relieved to an unlimited amount. Therefore, from the view of relief for victims, there is a possibility that the unequal situation might happen for the country adopting unlimited liability system such as my country.

“The 1997 Vienna Convention” prescribes the exception of “the principle of indiscriminate application” concerning nuclear damages suffered in the territory of the country where an equivalent amount of liability for compensation is not prescribed, from the viewpoint of security of reciprocity among the Contracting Parties. “The 1997 Vienna Convention” prescribes as follows; “Insofar as compensation for nuclear damage is in excess of 150 million SDRs, the legislation of the Installation State may derogate from the provisions
of this Convention with respect to nuclear damage suffered in the territory, or in any maritime zone established in accordance with the international law of the sea, of another State which at the time of the incident, has a nuclear installation in such territory, to the extent that it does not afford reciprocal benefits of an equivalent amount.”

If my country ratifies “the 1997 Vienna Convention”, it is necessary to examine whether possible or not to establish the special provision which limits the amount of the nuclear operator’s compensation for nuclear damages outside Japan, based on the trend of other national laws, other countries’ laws, and other countries’ compensation for nuclear damages, and so on.

3.3 The Peculiar Subjects to Japan on Ratification of “CSC”

Another possible option for Japan is to ratify only “CSC”. Because it does not make requirements of ratification of “the 1997 Vienna Convention”, which requires a very high amount of financial security (it is okay if only with the domestic nuclear liability system equivalent to “the 1997 Vienna Convention”). It also specifies nuclear damages caused by the extraordinary great natural disaster as the exemption clause.

My country can maintain the existing prescription about the handling of nuclear damage caused by “the extraordinary great natural disaster”. It is considered to be the most contrary issue over the burden of the extra cost between the nuclear operator and the government.

But, concerning the ratification only of “CSC”, there are many issues. In the first place, a large amount of contributions would be charged in the event of a nuclear accident. It is an issue to be examined further, about who should undertake this burden in what kind of way. In the second place, in the application of this convention to the national law, it becomes legislative subject how to contribute the indemnification funds in the event of a nuclear accident and distribute in use of them.

4 CONCLUSION

We have examined problems of the nuclear liability system in Japan, from the standpoint of attainment both of nuclear enterprise’s promoting sound development and of making victims’ relief steadfast. Lastly, in conclusion, I would like to state as follows.

As mentioned above, it is not clear when and how “the Aid by the State” is invoked. It is desirable to clarify the standard, but is difficult actually.

So, it is necessary to consider how invoking “the Aid by the State” becomes justifiable. I think justifiability would be decided, in spite of anything, whether nuclear operators perform their own liabilities for damages to owe fully or not. So long as they do not perform their own liabilities fully, even if “the Aid by the State” were invoked, it would be open to criticism. Therefore, it would be necessary to increase the amount of the financial security to such an extent that people in general can accept invoking “the Aid by the State” as unavoidable. I think it is worthy of examining the scheme to collect the indemnification funds adopted overseas, for example the American one, though attention must be paid to the fact that the background is different from Japan.

After taking the measure of an increased financial security amount, “the Aid by the State” should be invoked surely if compensation to victims exceeds this amount, not to mention in cases where damages were not caused by intention or negligence of the nuclear operators. If Japan can construct such a framework for compensation of damages, nuclear operators’ risks are more foreseeable.
REFERENCES


Table 1: International Convention Scheme Concerning Compensation for Nuclear Damages

**IAEA**
- Joint Protocol (entered into force in 1992)
  - Enlarge the scope of victims’ protection by combining the two conventions

**OECD/NEA**
- Paris Convention (entered into force in 1968)
  - Liability without fault
  - Channeling liability to nuclear operators
  - Maximum limit of liability: Limited liability of 15 million SDR

- Protocol of Amendment to the Paris Convention (Adopted in 2004)
  - Change the provision for the maximum limit of liability to the minimum limit of liability as well as raising the limit from 15 million SDR to 700 million Euro.
    * 1 Euro ≈ 130 Yen
  - Expand the concept of nuclear damage.
    (Environmental damages, costs for preventive measures, etc.)
  - Expand the scope of application. (Applied to damages occurred in no contracting State)

- Brussels Supplementary Convention (entered into force in 1991)
  - Damages exceeding the limit of liability are covered up to 300 million SDR by funds provided by the State where the nuclear incident has occurred and the contracting States.
  - Indiscriminate coverage of domestic and cross-border damages

- Protocol of Amendment to the Brussels Supplementary Convention (adopted in 2004)
  - For damages exceeding the limit of liability raise the coverage by the fund provided by the State where the nuclear incident has occurred and the contracting States from 300 million SDR to 15 billion Euro.

**IAEA**
- Vienna Convention (entered into force in 1977)
  - Liability without fault
  - Channeling liability to nuclear operators
  - Minimum limit of liability: Limited liability of 5 million US dollars

- Protocol of Amendment to the Vienna Convention (entered into force in 2003)
  - Raise minimum limit of liability from 5 million US dollars to 300 million SDR.
  - Expand the concept of nuclear damages. (Environmental damages, costs for preventive measures, etc.)
  - Expand the scope of application (Applied to damages occurred in no contracting State)

- Supplementary Fund Convention (opened for signature in 1997 but not entered into force yet)
  - For damages exceeding the limit of liability the State where the nuclear incident has occurred and the contracting States provide the fund. (Maximum of 300 million SDR as a target)
  - Supplement both Vienna Convention and Paris Convention including their amendments.
  - No contracting States to these conventions are eligible to ratify or access this convention if such State possess domestic laws conforming to the provisions of the appendix.
THE STATE OF IMPLEMENTATION OF THE PARIS CONVENTION AS AMENDED 2004 IN GERMANY

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ABSTRACT

The 2004 amendment of the “Convention on Third Party Liability in the Field of Nuclear Energy of 29th July 1960, as amended by the Additional Protocol of 28th January 1964 and by the Protocol of 16th November 1982” (Paris Convention) provides large-scale changes aiming at a further harmonisation of the international third liability regime. The ratification now requires the adaptation of the existing national law governing the third party liability in the field of nuclear law to the accomplished amendments. The submitted paper portrays the state of implementation of the Paris Convention in the field of third party liability in German nuclear law. It exemplifies the state of the transposition by the adoption of the new liability coverage system and maintenance of an insurance or other financial security established in Article 7 and 10 of the Paris Convention.

1 INTRODUCTION AND PREFACE

In 2004 the contracting parties signed the latest amendment of the Paris Convention [1]. The 2004 amendment [2] provides large-scale changes aiming at a further harmonisation of the international third liability regime and a guarantee of sufficient financial security in the case of a nuclear incident.

One of the key-points in the revision of the Paris Convention is the establishment of a new liability coverage system introducing significantly raised base amounts. The amount at which the contracting parties will have to fix the operator’s liability now is set up as a common minimum and no longer as a maximum. Furthermore, the 2004 revision provides for an extended guarantee of financial security in the case of a nuclear incident, which meets the now raised base amounts of nuclear third party liability.

The ratification now requires the adaptation of the existing national law governing the third party liability in the field of nuclear law to the accomplished amendments of the 2004 revision of the Paris Convention. At this point, it should be noted that the submitted paper will focus on the adoption of the new liability coverage system and the statutes governing the maintenance of an insurance or other financial security set forth in Articles 7 and 10 of the Paris Convention into the German regulatory framework on nuclear third party liability.

For that purpose, in a first step the Paris Convention’s liability and coverage regime still in force will be shortly portrayed. The second measure will then give a survey of the main features of the 2004 revision. In a third step the liability regime of the 2004 amended Paris Convention will be compared to the existing German nuclear third party liability system. This
comparison will outline the range of congruence between the Paris regime and German law. Furthermore it will identify the requirements in the field of the 2004 amendment which still ask for their implementation and therefore at the same time an amendment of the applicable German law.

2 THE PARIS CONVENTION ON THIRD PARTY LIABILITY IN THE FIELD OF NUCLEAR ENERGY

In the following the principles of the liability and coverage system of the Paris Convention set forth in its articles 7 and 10 will be depicted.

2.1 Exposé des Motifs of the Paris Convention

For a better understanding of the liability and coverage system of the Paris Convention it is helpful to be acquainted with the motifs, that lead to the agreements contained in the Convention. According to the revised text of the Exposé des Motifs of the Paris Convention [3], the prime objective of the Convention’s liability regime is to assure an adequate compensation of damage caused by a nuclear incident. As the impacts of such an incident will ignore political and geographical borders and it was considered highly desirable to provide for an even-handed code of liability and compensation practice in all countries affected, the Paris Convention’s special regime for third party liability should as far as possible provide a uniform system for all Contracting Parties [4]. Furthermore, the Convention was drafted in assumption that the possible magnitude of a nuclear incident requires international collaboration between national insurance pools. Only by an effective marshalling of the resources of the international insurance market by coinsurance and reinsurance sufficient financial security was deemed available to meet possible compensation claims. The establishment at an international level of uniform third party liability regulations is essential if this collaboration is to be achieved [5]. To accomplish this uniformity, the Paris Convention offers two options for the implementation of its liability regime into the respective national liability law. The contracting parties can either transport the provisions made by the Convention into a national liability law or may implement the Convention directly as a self-executing comprehensive body of rules.

2.2 Liability Principles

In order to provide for an adequate and effective compensation in case of a nuclear incident and at the same time protect the operator against an excessively burdensome liability, the liability and coverage system of the Paris Convention is based on the following principles:
- strict liability, i.e. liability without fault
- exclusive liability of the operator
- limitation of liability in amount and time
- obligation on the operator to maintain an insurance or other financial security to provide for a liability coverage

2.3 Exemptions from Liability

The liability system set forth by the Paris Convention permits only few exceptions from the rule of strict and exclusive liability. The operator is not liable for damage caused by nuclear incidents that are directly evoked by acts of an armed conflict, hostilities, civil war, insurrection or, if the national law applicable does not provide to the contrary, a grave natural
disaster of an exceptional character. The exclusive and strict liability of the operator, though, is not subject to classic exonerations like force majeure, Acts of God or intervening acts of third persons.

Notwithstanding the prime objective of the Paris Convention’s liability system being to ensure an adequate compensation of damage caused to persons and to property by a nuclear incident, the operators yet were not meant to be exposed to an exorbitantly inflated liability. By virtue of this exceptional character, all risks that can properly be dealt with through the ordinary common law are exempted from the scope of application of the Convention [6].

In this context, it is of importance that the scope of application of the Paris Convention is not only determined by the wording of the contractual document. The definitions of the Paris Convention that delineate its application range, such as “nuclear installation” or “nuclear substance”, can be adjusted to the current state of the scientific and technical knowledge through a self-governed supplementary interpretation. Article 1 (a) of the Paris Convention authorises the Steering Committee of the OECD Nuclear Energy Agency (NEA), to specify the terms “nuclear installation” and “nuclear fuel”.

Under Article 1 (b), if in its view the small extent of the risks involved so warrants, the Steering Committee is empowered to define exemption-rules by excluding any nuclear installation, nuclear fuel, or nuclear substances from the application of the Paris Convention. Through this competence the NEA Steering Committee can make itself available of the opportunity to broaden or narrow the scope of application of the Paris Convention. According to Article 16 of the Paris Convention the Steering Committee must reach an unanimous decision, which then is binding for the contracting parties.

2.4 Limitation of Liability in Amount

Whenever risks, that are associated with nuclear activities, are of an exceptional character justifying the application of the Paris Convention, they are subject to the rules of Articles 7 and 10 of the Paris Convention. These provisions are of prime importance because they determine the liability amounts and govern the maintenance of an insurance or other financial security.

The liability and coverage system under Article 7 and 10 of the Paris Convention still in force can be abstracted as follows: Article 7 of the Paris Convention stipulates the sum of 15 million Special Drawing Rights of the International Monetary Fund (SDR) as the ceiling amount to the liability of an operator.

Article 7 of the Paris Convention, though, in paragraphs (a) and (b) offers two ways to diminish the liability amount. Considering the chances of the operator of setting up an insurance or another financial security required under the Convention in principle, the Contracting Parties may either establish under national law an amount greater than 15 million SDRs or a lower amount which is not, however, to fall short of 5 million SDRs.

The maximum amount can further be reduced by up to two thirds for installations and transports that are deemed to involve only a small extent of risk. This cutback is justified by the motif of the Convention of not burdening the operators with unjustifiable costs for insurance or any other financial security. Again the ceiling amount is not to fall below 5 million SDRs.

2.5 Liability Coverage

To meet liability towards victims the operator is held under Article 10 (a) of the Convention to have and maintain financial security up to the maximum amount established pursuant to Article 7. Actually Article 10 (a) was meant to provide for financial security...
available for each nuclear incident, however, insurance coverage appears to be discretionary per nuclear installation for a fixed period only and not with regard to a single incident. The Paris Convention offers no rules that would prevent this, as long as in case of reduction or exhaust of the ceiling liability amount, appropriate measures are taken to ensure its availability for subsequent incidents. The guiding principle, though, remains that financial security is held obtainable in the amount fixed under Article 7 at all times.

Both, the determination of the maximum liability amount as well as the type and terms of the insurance or other financial security are up to the competent public authority.

3 THE REVISION OF THE PARIS CONVENTION ON THIRD LIABILITY IN THE FIELD OF NUCLEAR ENERGY AS AMENDED 2004

Before portraying the 2004 amendment restructuring the liability and coverage system of the Paris Convention, it has to be stressed anew that due to the great extent of the provisions covered, this analysis does not demand to be seen as a complete description of the 2004 amendment of the Paris Convention. This paper should be understood as an illustration only of some of the most important changes of the 2004 revision of the Paris Convention in comparison to the existing nuclear third party liability law in Germany.

Therefore in this context, again, only the statutes governing liability amounts and the maintenance of an insurance or other financial security established in Article 7 and 10 of the revised Paris Convention are of interest.

3.1 Minimum Liability Amounts and Unlimited Liability

Due to the Chernobyl accident demonstrating the inadequacy of the coverage put up under the existing liability system of the Paris Convention, Article 7 experienced several fundamental changes. According to the 2004 amendment the provisions of Article 7 no longer provide for a limitation of liability in amount.

The contracting parties are now required to fix the operator’s liability amount as a common minimum at 700 million Euros. This base-amount leaves the contracting parties free to either determine an amount at a higher level, which then again represents the cap to the operator’s liability; or the contracting party chooses the option of an unlimited civil liability.

Again the Paris Convention allows to decrease from the minimum amount in two ways. Article 7 (b) (i) admits a lower amount to be fixed for low-risk installations at a minimum of 70 million. Article 7 (b) (ii) likewise grants a reduction to a minimum of 80 million Euros for transports in which only small risks are involved.

3.2 Congruence of the New Liability Amounts and Coverage

Under the 2004 amended Convention the operator under Article 10 (a) is held to set up and maintain insurance or other financial security of the amount established in accordance with Article 7 (a) or (b). Article 10 (b) of the revised Paris Convention imposes on operators, who are subject to an unlimited liability, to set up and maintain a financial security for the amount fixed under Article 7. In view of the inability to obtain an unlimited financial security or insurance, the contracting party then has to assess a minimal limit not to fall short of the minimum amount of Article 7.

After all, the revision of the liability and coverage system can be summarized as follows:
The liability regime of the Paris Convention has been amended in its key-elements. It no longer contains maximum amounts limiting the liability of an operator. The contracting parties will have to fix the liability of an operator no longer as a maximum but as a minimum. Furthermore the liability regime under the revised Paris Convention provides for the new instrument of an unlimited civil liability.

4  NUCLEAR THIRD PARTY LIABILITY IN GERMANY

For a better comprehension of the liability and coverage system of the German nuclear third party liability law and the way the liability system of the Paris Convention has been implemented, it is of avail to briefly depict the link between German and international nuclear law as well as the instruments for an implementation of the latter provided for under the German Atomic Energy Act [7].

4.1 The Implementation of International into German Nuclear Law

Section 1 Nr. 4 of the German Atomic Energy Act regulates by law that one of the main goals of the Atomic Energy Act is to warrant the fulfillment of international obligations of the Federal Republic of Germany in the fields of nuclear energy and radiation protection. The object in Section 1 Nr. 4 of the Atomic Energy Act is not only of a declaratory nature, but furthermore aims at a high degree of conformity with international nuclear law. Consequently the legislator chose the option of implementing the Paris Convention as self-executing law.

Furthermore Annex 1 to the Atomic Energy Act, which contains the definitions applying to the rules governing nuclear third party liability, is identical to Article 1 (a) of the Paris Convention, which determines the main definitions specifying the scope of application of the Convention.

In addition Section 12 a of the Atomic Energy Act comprises the basis of authorisation for the German legislator to transport the content of decisions made by the NEA’s Steering Committee under Article 1 (b) of the Paris Convention into national law in the form of an executive order law. The establishment of an enabling statute like Section 12 a Atomic Energy Act was necessary since at the time of the ratification of the Paris Convention only the definitions then in force could be integrated into national law. Therefore a machinery for the embedding of subsequent decisions of the Steering Committee was required to allow the German legislator an efficient and flexible adaptation of the national nuclear energy law to such decisions to warrant full compliance of the national law and the Paris Convention.

By this means the largest congruence possible of the Paris Convention and German nuclear third party liability law is accomplished and the requirements of the objective in Section 1 Nr. 4 of the Atomic Energy Act are met.

4.2 Liability Principles

The operator of a nuclear installation is liable under Section 25 of the German Atomic Energy Act that in turn subjects the operator to the liability rules launched under the Paris Convention. Therefore nuclear third party liability in Germany fundamentally pursues all the principles as they are embodied in the Paris Convention before the 2004 amendment, such as strict and exclusive liability of the operator and the obligation on the operator to provide for liability coverage, but with one eminent exception:

The liability of an operator of a nuclear installation for damage occurring within Germany in principle already is unlimited.
In cases of accidents that are due to war, insurrection or a grave natural disaster, the operator’s liability is limited to the amount of the state guarantee set at 2.5 billion Euros. In case the damage being compensated occurred abroad, the maximum is determined in accordance with the principle of reciprocity. Therefore it is limited to the extent to which the state in which the damage occurs has equivalent compensation arrangements in relation to Germany. In relation to states which do not operate a nuclear installation in their territory, liability is limited under Section 31 of the Atomic Energy Act to the maximum amount under the Brussels Supplementary Convention [8], which currently is 300 million SDR.

4.3 Exemptions from liability

Following Section 25 paragraphs 2 and 5 of the Atomic Energy Act the operator of a nuclear installation is not subject to the liability regime of the Paris Convention, in case damage is brought about by a nuclear incident that was caused by nuclear substances covered by the Annex 2 to the Atomic Energy Act.

The exception-rule in Annex 2 to the Atomic Energy Act contains provisions and criteria which define the scope of application of the special liability regime under Section 25 of the Atomic Energy Act and the Paris Convention. It specifies small quantities of nuclear substances that can reasonably be exempted from the civil liability regime of the Paris Convention. In case the requirements set up by Annex 2 to the Atomic Energy Act are met, due to the small extent of risks then involved, the operator of a nuclear installation is relieved from the liability for nuclear damage, its compensation and therefore from the maintenance of a financial security in regard to the small quantities of nuclear substances during transport and use outside a nuclear installation. The exclusion of liability yielded by the exception-rule in Annex 2 to the Atomic Energy Act refers to the liability under the Paris Convention alone. Yet other liability law remains applicable.

4.4 Liability Coverage

In Germany, too, a financial security necessary to provide for coverage of all legal liability is required. The licensing authorities are responsible for defining the nature, extent and amount of cover necessary to meet the legal liability for compensation. The financial security is not to exceed 2.5 billion Euros for a nuclear installation. The Financial Security Ordinance [9] regulates in detail how and in which individual amounts financial security has to be provided.

The operator of a nuclear installation will be indemnified against claims for damages of up to another 2.5 billion Euros to the extent that they are not covered by the private financial security or that claims cannot be paid out of such security. According to Sections 34 and 36 of the Atomic Energy Act indemnification, up to the amount of 500 million Euros, is borne by the federal state and the Land within which the installation is situated. The federal state alone then covers the remaining amount between 500 million and 2.5 billion Euros.

Under Section 38 of the Atomic Energy Act the state will pay compensation for damage suffered in Germany following a nuclear incident in another country if adequate compensation is not obtainable under the law of that country.

4.5 Liability Beyond the Special Liability System of the Paris Convention

Serving as a catch all clause, Section 26 of the Atomic Energy Act covers all other cases of liability not applied to by Section 25 and the Paris Convention. This statute also establishes a strict and unlimited liability of the holder of radioactive substances involved in a nuclear
incident. However, the liability, in contrast to the regime set forth under Section 25 of the Atomic Energy Act and the Paris Convention, is not an exclusive one and the person liable is relieved from liability upon proof that the incident occurred despite all necessary precautionary measures. This exemption-rule again does not apply if the radioactive substances or material involved can be subsumed under the respective definitions of Article 1 (a) of the Paris Convention.

Finally non-nuclear damages arising in the course or the aftermath of activities involving certain nuclear installations are subject to the Act on Liability for Damage to the Environment [10] and general tort law.

5 RÉSUMÉ

The 2004 amendment of the Paris Convention offers changes of some of its fundamental principles as to the categorical financial limitation of the operator’s liability to be replaced by a regime that now offers the option of implementing the new instrument of an unlimited civil liability. In addition the revised Paris Convention yields a significant increase of the base amounts of the operator’s liability that moreover is no longer to be fixed as a maximum but as a minimum amount instead. The German law on nuclear third party liability already meets some of the requirements made by the 2004 amendments of the Paris Convention. Especially the instrument of an unlimited civil liability already forms an inherent component of German nuclear third party liability law. However, the new and significantly raised base amounts, that no longer fix the operators’ liability at a maximum, but rather constitute a minimum, are not yet an integral part of the German law applying to nuclear third party liability and financial security and therefore still ask for their implementation.
REFERENCES


TRANSPORTS NUCLEAIRES ET ASSURANCE : UN CASSE-TETE POUR LES EXPLOITANTS NUCLEAIRES FRANÇAIS

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RESUME

Les difficultés rencontrées par les exploitants nucléaires français, en matière d’assurance de transports nucléaires, sont principalement liées :

- A la variété des régimes juridiques applicables (droit commun, régime défini par la Convention de Paris),
- Aux questions d’interprétation soulevées par la Conventions de Paris.

Le 5 septembre dernier, un rapport de l’ONU publiait le bilan final de l’accident de Tchernobyl survenu le 26 avril 1986. Bien que les prévisions aient été revues à la baisse, passant de dizaines de milliers de morts à 4000 morts, le rapport souligne l’impact psychologique désastreux sur les populations proches de l’accident. Le nucléaire fait peur. Malgré tout, l’envolé du prix de l’or noir souligne la nécessité de trouver des solutions alternatives, notamment par le biais du nucléaire.

En conséquence, le nucléaire revient à l’honneur et l’implantation du premier réacteur à fusion (ITER) sur le site de Cadarache en est la démonstration. Objet d’une coopération internationale, ce projet illustre la volonté pour les Etats d’investir dans le nucléaire.

Toutefois, le risque est toujours présent. La multiplication des installations nucléaires, donc des transports nucléaires, rend toujours possible la survenance d’un sinistre, et plus sensible le sujet de l’indemnisation des victimes.


L’objet de la présente étude est de s’intéresser aux difficultés rencontrées par les exploitants nucléaires dans le cadre de l’assurance de leurs transports de matières radioactives.

L’analyse du processus conduisant à l’assurance des transports de matières nucléaires effectués par des exploitants français (I) permet de mettre en exergue certaines difficultés inhérentes à ce domaine (II).

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206.1
I/ Analyse du processus

Tout montage assurance nécessaire, au préalable, de s’intéresser aux différents régimes juridiques applicables (A). Face à la variété des régimes, l’assurance a du s’adapter et proposer des garanties préservant l’intérêt des victimes (B).

A/ Variété des régimes juridiques applicables
En matière de responsabilité civile dans le domaine des transports nucléaires internationaux, il existe plusieurs catégories de pays :
- Les pays qui prônent la responsabilité civile illimitée de l’exploitant nucléaire responsable en n’encadrant pas sa responsabilité.

La Convention de Vienne s’inspirant de la Convention de Paris, certains principes sont donc communs aux deux conventions, à savoir :
- Le principe de la responsabilité civile objective,
- La canalisation de la responsabilité civile sur l’exploitant nucléaire responsable,
- La limitation de la responsabilité de l’exploitant en montant (par la définition d’un plafond d’indemnité), en durée (les actions en réparation devant être intentées dans les 10 ans à compter de la date de l’accident nucléaire),
- L’unicité de juridiction,
- L’égalité de traitement entre les victimes.

- Les pays intermédiaires qui, comme les États-Unis avec le Price Anderson Act, ont adopté une législation dans le domaine de la responsabilité civile nucléaire sans pour autant ratifier la convention de Vienne ou de Paris.

Même si le Protocole commun du 21 septembre 1988 a bien évidemment contribué à créer une passerelle entre le régime mis en place par la Convention de Paris et par la Convention de Vienne, le workshop organisé sous l’égide de l’AEN, en mai dernier, a permis d’en souligner les limites.

Ledit workshop s’est notamment penché sur la question de l’indemnisation des victimes suite à un accident survenu au cours d’un transport de substances nucléaires. Force était de constater la variété des régimes d’indemnisation au regard de la nationalité des victimes, compte tenu des conventions internationales ratifiées ou non par les différents pays présents. Dans ce contexte, l’entrée en vigueur de la Convention de Paris révisée risque de renforcer la disparité des régimes.

En conséquence, les assureurs ont du mettre en place des garanties d’assurance s’adaptant aux différents cas de figure rencontrés.

B/ Un système assurantiel adapté à la variété des régimes
Dans le cadre de la loi du 30 octobre 1968 modifiée relative à la responsabilité civile dans le domaine de l’énergie nucléaire, la France a transposé en droit interne les dispositions de la Convention de Paris.

Il ressort de l’article 7 de ladite loi que :
« Chaque exploitant nucléaire est tenu d’avoir et de maintenir une assurance ou une autre garantie financière à concurrence, par accident, du montant de sa responsabilité. »

Le ministre de l’économie et des finances, sur proposition du ministre chargé de l’énergie atomique, est habilité à donner aux exploitants d’installations nucléaires la garantie de l’État, qui se substituera en tout ou en partie à une assurance ou à une autre garantie financière. »

En conséquence, il résulte de l’article précédent, l’obligation pour l’exploitant nucléaire de souscrire une garantie financière (assurance ou autre) tenant compte des montants d’indemnisation prévus par la Convention de Paris en matière de transports nucléaires, à savoir 22 867 353,00 € par
accident nucléaire. Il s’agit de la première tranche d’indemnisation. Elle relève de l’exploitant nucléaire.

Par ailleurs, la France ayant ratifié la Convention complémentaire de Bruxelles du 31 janvier 1963, deux tranches de montants d’indemnisation s’ajoutent à celui défini par la Convention de Paris :

- De 91 469 000,00 € à 228 674 000,00 €, cela relève de la responsabilité de l’Etat sur le territoire duquel l’accident est survenu
- De 228 674 000,00 € à 381 122 543,00 €, il appartient à la collectivité des Etats d’indemniser les victimes.

En pratique, le pool atomique français, réassuré auprès d’autres pools étrangers, prend en charge la totalité du montant imposé par la Convention de Paris à l’exploitant nucléaire. Le montant de la garantie est donc de 22 867 353,00 € par accident nucléaire et par transport. Ce montant est reconstituable une fois. Par ailleurs, s’ajoute audit montant le remboursement des intérêts et dépens de justice (honoraires…), ainsi que les frais de gestion.

Suite aux attentats du 11 septembre 2001, pour des raisons de capacités financières, les assureurs et réassureurs ont souhaité introduire une disposition limitant les frais de gestion (tant interne, qu’externe) en cas de sinistre dépassant le montant maximal de la garantie, en contrepartie, ils continuaient d’assurer les accidents nucléaires ayant pour origine un acte de terrorisme, mais uniquement dans le cadre des recours soumis au régime défini par la Convention de Paris. Les frais de gestion ont donc été plafonnés à 30 489 803,45 € par accident nucléaire et par transport.

Il faut rappeler qu’en France, les contrats d’assurance sont scindés en deux parties, d’une part, les conditions générales communes aux assurés, et d’autre part, les conditions particulières propres à chaque assuré.

Les polices de responsabilité civiles nucléaires répondant à des garanties obligatoires, susceptibles d’engager l’Etat, les conditions générales, communes à l’ensemble des exploitants nucléaires français, doivent impérativement recueillir l’accord du ministère de tutelle. En conséquence, les événements du 11 septembre nécessitant la modification des conditions générales, l’ensemble des exploitants nucléaires ont du approuver les nouvelles conditions générales, puis les transmettre au ministère concerné pour accord, d’où la lourdeur du processus.

Toutefois, l’ensemble des dommages susceptibles d’être causés au cours d’un accident nucléaire ne relevant pas de facto du régime élargi dans le cadre de la Convention de Paris, il a paru opportun à certains exploitants français de souscrire des garanties pour couvrir les recours de droit commun. Il en résulte que les polices d’assurance transports nucléaires proposées aux exploitants nucléaires français peuvent comporter deux volets, l’un se rapportant aux recours de droit commun, le second aux recours Convention de Paris.

Ainsi, il est possible de parler d’un certain effet de lissage de l’assurance dans la mesure où des garanties peuvent être mises en œuvre indépendamment du fondement juridique du recours de la victime.

Le contexte étant défini, il convient de s’attarder sur quelques points litigieux.

II/ Analyse des difficultés rencontrées

L’objectif n’est pas ici de dresser une liste exhaustive des difficultés rencontrées par les exploitants dans le cadre de l’assurance de transports de matières nucléaires. Je reviendrai ici sur deux sujets, l’un tenant à la définition de la substance nucléaire, l’autre se rapportant à la gestion du risque face à la diversité des recours.

A/ La qualification de la matière transportée

L’article 4 de la Convention de Paris est l’article de référence en matière de transports nucléaires puisqu’il définit le régime desdits transports. La révision de la Convention de Paris n’a pas changé cela, introduisant uniquement des précisions sur le transfert de responsabilité en faveur d’un autre exploitant nucléaire, en obligeant l’exploitant acceptant de prendre la responsabilité du transport à avoir un intérêt économique direct au transport.
L’article 4 ne visant que les substances nucléaires, une interprétation a contrario permet de conclure que les matières ne répondant pas à la définition de la substance nucléaire sont exclues du champ d’application de la Convention de Paris.

Concernant la définition de la substance nucléaire, il convient de se reporter à l’article 1 de la Convention de Paris.

Par substance nucléaire, il faut entendre « les combustibles nucléaires (à l’exclusion de l’uranium naturel et de l’uranium appauvri) et les produits ou déchets radioactifs ».

« Combustibles nucléaires signifient les matières fissiles comprenant l’uranium sous forme de métal, d’alliage ou de composé chimique (y compris l’uranium naturel), le plutonium sous forme de métal, d’alliage ou de composé chimique et toute autre matière fissile qui serait désignée par le Comité de Direction ».

« Produits ou déchets radioactifs signifient les matières radioactives produites ou rendues radioactives par exposition aux radiations résultant des opérations de production ou d’utilisation de combustibles nucléaires, à l’exclusion, d’une part, des combustibles nucléaires et d’autre part, lorsqu’ils se trouvent en dehors d’une installation nucléaire, des radioisotopes parvenus au dernier stade de fabrication qui sont susceptibles d’être utilisés à des fins industrielles, commerciales, agricoles, médicales, scientifiques ou d’enseignement. »

En outre, deux décisions du Comité de Direction du 27 octobre 1977 [NE/M(77)2] excluent certaines substances nucléaires, en raison de la faiblesse du risque encouru. Il s’agit :

- Des petites quantités de substances nucléaires. Un renvoi est fait à une annexe II qui définit pour chaque radionucléide, la valeur seuil en dessous de laquelle l’application du régime défini par la Convention de Paris est exclu.
- De certaines catégories de substances nucléaires.

L’annexe II mentionnée ci-dessus n’ayant pas été révisée depuis son origine, des difficultés d’interprétation ont surgi.

En effet, ladite annexe exclut les petites quantités de substances nucléaires par référence au Règlement de transport des matières radioactives de l’Agence Internationale de l’Énergie Atomique de 1973. D’autres éditions ont été publiées depuis, la dernière datant de 2005. Or, au fil du temps, le mode de calcul de la valeur de A2, utilisé dans la réglementation de l’AIEA pour déterminer la dangerosité d’une matière, a changé. En conséquence, selon la réglementation appliquée, une même matière transportée, peut, ou non, relever de la Convention de Paris. La question était donc de savoir si l’exploitant responsable devait utiliser la dernière réglementation technique éditée par l’AIEA, ou bien, se référer à la réglementation de 1973 devenue caduque.

Le Comité de Droit nucléaire a donc décidé de créer un groupe de travail international dont la mission est notamment de procéder à la révision de cette annexe. La même difficulté se posant dans le cadre de la Convention de Vienne un groupe de travail étudie également le même thème.

Comme indiqué précédemment, la qualification de la matière influe directement sur la nature du régime juridique applicable.

B/ Diversité des recours et gestion du risque

Le régime défini par le Convention de Paris en matière de transports nucléaires n’est susceptible d’être déclenché que dans l’hypothèse où l’accident nucléaire survient lors d’un transport de substances nucléaires. Il s’agit d’une condition nécessaire, mais pas suffisante, puisque d’autres critères, notamment liés à la territorialité, entrent en ligne de compte.

Toutefois, même dans le cas de figure où le transport de substances nucléaires serait effectué dans le cadre du champ territorial de la Convention de Paris, des dommages transfrontaliers peuvent survenir, et des recours de droit commun être intentés. À fortiori, le risque de faire face à des recours de droit commun est multiplié lorsque les territoires des États traversés sont, tantôt des territoires d’États membres, tantôt des territoires d’États non membres.

À l’inverse, lorsqu’il ne s’agit pas d’une substance nucléaire, seuls des recours de droit commun sont envisageables.
Il en résulte que l’exploitant nucléaire doit opérer une gestion des risques engendrés par chaque transport. Il est certes contraint de souscrire les garanties obligatoires imposées par la Convention de Paris, mais reste libre pour les recours relevant du droit commun. Toutefois, est-il logique d’assurer un transport de substances nucléaires uniquement dans le cadre du champ territorial de la Convention de Paris, et de cesser la couverture au-delà alors que le risque est toujours le même ?

En outre, la gestion du risque doit intégrer la capacité financière disponible sur le marché de l’assurance à un moment donné. L’augmentation des montants de garantie dans le cadre de la Convention de Paris va donc amplifier la difficulté de trouver une capacité financière, notamment dans le cadre des recours de droit commun.

Enfin, concernant les recours, il convient de déterminer à l’encontre de quel exploitant ledit recours peut-être effectué.

L’article 4 pose le principe de la responsabilité de l’exploitant expéditeur, sauf dispositions contractuelles contraires ou prise en charge par un autre exploitant nucléaire des substances nucléaires. Ledit article précise également dans quelles mesures un transport de substances nucléaires, en provenance ou à destination d’un pays non contractant, peut être régis par la Convention de Paris.

La demande de garantie d’assurance ne peut être émise qu’au moment où l’exploitant responsable de l’installation est identifié, ce qui implique de se renseigner sur les éventuels transferts de responsabilité opérés. Il convient de revenir rapidement sur la notion d’installation à cette occasion.

La définition de l’installation est donnée à l’article 1i) de la Convention de Paris. Ledit article évoque également la possibilité de « Considérer comme installation unique, plusieurs installations nucléaires ayant le même exploitant et se trouvant sur le même site, ainsi que toute autre installation sur ce site ou sont détenues des matières radioactives ». Cette définition a été amendée dans le cadre de la révision de la Convention de Paris.

Il est important de souligner qu’il existe, en France, une distinction entre l’exploitant nucléaire de l’installation, qui est responsable de l’installation, et l’exploitant technique de l’installation, qui exploite l’installation. Seul l’exploitant nucléaire peut transférer sa responsabilité d’où l’utilité d’avoir recours à la terminologie adéquate.

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En conclusion, j’aimerais, si vous le permettez, citer une citation de Montaigne, philosophe du XVIème siècle, qui écrivait dans ses essais : « L’amitié se nourrit de communication ».

Si on devait transposer cette citation au niveau des transports nucléaires, on conviendrait que la communication entre les différents intervenants (exploitants, assureurs), tant au plan national, qu’international, permettrait de faire naître une meilleure prise en compte des besoins de chacun.
REPORT OF DISCUSSIONS FROM SESSION 2
NUCLEAR LIABILITY AND INSURANCE

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The first remarks/questions addressed to the speakers during this discussion session emanated from Steven McIntosh, of the Government and Public Affairs Division of the Australian Nuclear Science and Technology Organisation (ANSTO). In relation to the presentation by Fiona Geoffroy on the Joint Protocol, he remarked that there had been lengthy discussion on this subject at the last INLEX meeting. He expressed his agreement with the viewpoint taken by the NEA that the Hungarian court would be competent, and would be required to apply German law. He noted that the Convention on Supplementary Compensation is in fact a superior instrument in this regard as it would lead to the Hungarian court applying Hungarian law. Mr. McIntosh further pointed out in relation to the presentation by Hirotoshi Iizuka that the extensive development of nuclear power in Asia makes liability an important issue. He suggested that Japan should take a lead in ratifying third party liability conventions which may thereby encourage other states, eg. China, to ratify. In relation to the grave natural disaster issue, he noted that this would not mean compensation would not be available; it would just mean that the convention system would not apply.

Mr. McIntosh pointed out, in relation to Simon Oehlmann’s presentation, that the new Paris Convention regime is not an unlimited liability regime: it simply allows for Contracting parties to have unlimited liability. States are certainly allowed to set a maximum ceiling for the liability of their operators. He noted that in practice, resources are limited in any event, and as insurers inform us that even covering 700 M EUR will be difficult, then presumably government will step in to foot the bill beyond the insurance coverage.

Mr. Takashi Komatsu, of the Overseas Reprocessing Committee in Japan, raised a number of questions in relation to the transport scenario used at the Bratislava workshop. He expressed the opinion that the argument according to which the German operator should be liable and jurisdiction should be granted to the German court is a convincing one. He asked for further clarification from Mr. McIntosh as to how the Convention on Supplementary Compensation would apply to the case at hand.

Mr. Patrick Reyners, former Head of Legal Affairs at the OECD Nuclear Energy Agency, suggested that it is appropriate to return to the initial objective of the Joint Protocol: to avoid distinctions between Contracting Parties and non Contracting Parties for Vienna and Paris Convention States. He considered that it is not because the application of an instrument to a specific case is difficult that we can question the very authority of that instrument. He
expressed the view that this question should be explored by the two agencies which sponsored
the adoption of the Joint Protocol and which have encouraged their member states to ratify it.

Mr. McIntosh pointed out that with the revisions made to both conventions, the
question becomes less important as benefits are extended to most countries. He did
acknowledge however that the question of jurisdiction could be a tricky one. He referred in
particular to transport through the Pacific and the implication of non-nuclear states.

Following the presentation by Valérie Nicolas on nuclear transport and insurance, Ms.
Marianne Lavergne, Legal Adviser at the Direction générale de la sûreté nucléaire et de la
radioprotection - DGSNR - in France, queried the difference between the nuclear operator
and the technical operator of a nuclear installation. Ms. Nicolas confirmed that the technical
operator is responsible for the management of the installation whereas the nuclear operator is
responsible for operations involving the application of the Paris Convention.

During the discussion on the activities of Working Group 2, Prof. Vanda Lamm
pointed out that there has been extensive reporting on the revision of the Vienna and Paris
Conventions over the past ten years. She suggested that future topics for consideration by this
group could be (1) the future of the Joint Protocol; (2) the 1997 Vienna Protocol and
particular problems encountered by the low number of accessions to this instrument; or (3)
issues related to insurance and problems for insurers to offer the extra coverage pursuant to
the revised regimes.

Mr. McIntosh noted that in relation to the insurance question, it is not simply a
question of revised amounts but other factors come into play eg. the expanded definition of
damage and the longer prescription periods. He considered these issues to be certainly worthy
of discussion.
AIDN - INLA

Working Group 6 "radioactive sources"

REPORT

Liabilities and insurance cover of Radioactive sources Owners

October 9 – 14, 2005
Part One

General Questionnaire

Outline

I. Background
   I.1. Types of sources
   I.2. Types of users
   I.3. Applications of sources
   I.4. Categorisations of sources

II. Status of 2005 data count
   II.1. Source users around the world
   II.2. Bodies issuing authorisations
   II.3. Liability obligations in source management

III. Conclusion

Appendix:

General Questionnaire (September 2004), English version

Part Two

Liabilities and the Insurance cover of the holders of sources

I. The foundations of the liability of the holders of radioactive sources
   I.1. The third party liability
   I.2. Administrative Liability
   I.3. Penal Liability

II. Insurance cover of the liabilities of holders of sources
Part One

General Questionnaire

Outline

I. **Background**
   I.1. Types of sources
   I.2. Types of users
   I.3. Applications of sources
   I.4. Categorisations of sources

II. **Status of 2005 data count**
   II.1. Source users around the world
   II.2. Bodies issuing authorisations
   II.3. Liability obligations in source management

Appendix:

General Questionnaire (September 2004), English version
INTRODUCTION

As at previous congresses of our association, Working Group 6 will give an updated overview of the legal framework surrounding the use of radioactive sources in various countries around the world.

This overview appoints the first part of our report. As you know, the questionnaire was drawn up and completed over recent years by our first chairman, Jacques Deprimoz. His invaluable assistance and thorough knowledge of the subject helped us to progress and achieve the results which will be described to you: we thank him.

Concerning the second part taking into account the small number of answers from the countries questioned, it has been difficult for the working group, to realise an exhaustive comparative study of the different forms of liabilities liability which are used by radioactive sources owners.
Part One

General Questionnaire

I. Background

Keeping track of the number of users authorised to make use of radioactive sources around the world has always been one of the key concerns of our group, which has already devoted years of work to the subject.

These works draw their inspiration directly from the Code of Conduct on the safety and security of radioactive sources, approved on September 8, 2003, by the Board of Governors Council of the IAEA.

The loss of a source represents a heavy responsibility for the radioactive sources owner: so these works aim to promote awareness among the authorities of different countries to take well the weight of the responsibility’s owner into account.

We hope that, at a time of world-wide business, the lawyers of multinational companies will be more able to comprehend the different regulations which need to be enforced to manage radioactive sources and particularly to conciliate the operational constraints with the regulation of the country where sources are used.

Our aim is no way to take the IAEA's place, but rather to promote greater awareness among INLA members as to:

- the regulations in force applicable to the production and uses of radioactive sources
- the rules applicable to users' civil liability
- third-party liability insurance for users of radioactive sources

Once again this year, we will be presenting our progress report by country. We have also updated the general questionnaire, which you will find appended to the report. Finally, we will describe the objectives we have set for our efforts in 2003.

We thank the people in countries questioned who have taken time to fill and send us back questionnaires, these inputs being very difficult to put together.
I.1 Types of sources

Our scope covers sealed and unsealed sources subject to authorisation¹. This classification criterion stems from the definition given in the Code of Conduct, the use of which was recommended by the IAEA Board of Governors in its session on September 8, 2003:

"Authorization means a permission granted in a document by a regulatory body to a natural or legal person who has submitted an application to manage a radioactive source. The authorization can take the form of a registration, a license, or alternative effective global legal control measures which achieve the objectives of the Code."

Furthermore, our work does not encompass radioactive sources that are part of military or defence programs.

I.2. Types of users

In our scope are included manufacturers-suppliers of sources, industrial concerns, research centres, universities, agronomic testing centres, and medical institutions. However, this is not an exhaustive list.

It should be pointed out that new professional categories may be added to the scope owing to new problems or even recent regulatory developments. One such example in France was the detection of lead in paint².

Holding and using electric generators of ionising radiation are now submitted to authorisations, whereas with the precedent regulation, these installations were just submitted to declaration. In France, installations using electric generators of ionising radiation are estimated to be a few thousands destined to industrial, research and veterinary activities.

I.3. Applications of sources

The applications of artificial radionuclides have developed and diversified considerably over the last forty years.

Activities involving radiation sources are found not only in industry and research, but in medicine as well.

¹ In France, decree 2002-460 of April 4, 2002 modifying the public health code on the general protection of persons against ionizing radiation hazards defines a source as a device, radioactive substance or facility from which ionizing radiation or radioactive substances could be emitted. An unsealed radioactive source is defined as a source which, due to its presentation and ordinary conditions of use, will not prevent the dispersion of radioactive substance. Lastly, a sealed radioactive source is defined as a source which, due to its structure or packaging, will prevent, under normal conditions of use, any dispersion of radioactive material into the environment.

² A legal provision on action against exclusion (law 98-657, decree 99-484) requires that measures be taken to prevent lead poisoning in children by imposing limits on lead content in paint. The implementation order of July 12, 1999 specifies that "lead content shall be measured preferably using a portable x-ray fluorescence device". The presence of lead in a coat is detected instantaneously by this non-destructive method of analysis.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
I.3.1 Sealed sources

Activities for which authorisations are required are primarily those involving:

- industrial irradiation, for such purposes as sterilisation of medical equipment, pharmaceutical or cosmetic products, and food preservation;
- non-destructive testing, mostly by gamma radiography;
- measure density, weight;
- measure dust content;
- measure moisture and of density;
- elimination of static electricity;
- smoke detection;
- calibration instruments;
- instruction in the course of laboratory work;
- chromatography;
- x-ray fluorescence meters (for detection of lead in paint).

I.3.2 Unsealed sources

Activities using unsealed sources include:

- research involving the use of sources as tracers (cell biology, hydrology research, etc.);
- calibration
- teaching;

I.4. Sources categorisations

The AIEA has released in 2003 a method of classification based on the principle of dangerousness, which is based on the report A (in TBq) by a constant D (in TBq). If this ratio A/D exceeds 1, then the source is deemed dangerous. Starting from this definition, the AIEA has drawn a classification of dangerousness in five categories: the associated risks are also defined as regards to dispersion of radioactivity following fire or explosion.

It is noted that this scheme has been submitted to member states for commentary and thought, and so far it has not been transposed into EU or French law. For the time being, the classification leans on Directive No. 96/29 dated May 13, 1996, transposed into French Law by Decree No. 2002-460 dated April 4, 2002.
II. **Status of 2005 data count**

II.1 Source users around the world

At the time of the report before the Cap Congress in March 2003, the count of source users to whom one or several authorisations were issued concerned 26 countries.

The new survey begun in September 2004 enabled us to add MOROCCO, based on information given in answers to the general questionnaire.

- **MOROCCO totalled in 2004 140 users for all sectors. Radioisotopes manufacturing will start at the end of 2005, when the reactor named Triga Mark II, located in the Nuclear Study Centre of the Maamora, will be ended.**

Furthermore, data from some countries could be updated:

- **ROMANIA totals in 2004, 171 industrial users, 12 research users and 45 medical users.**

- **SWEDEN has only one manufacturing site: Studsvik AB. There is no available estimation of the number of users by sector.**

- **FRANCE totals in 2004, in industry and research branches, 4180 users of sealed sources and 1138 users of unsealed sources, i.e. a total of 5318 industrial users. For many years seal detection devices users (sealed sources) are more and more numerous (38000 in 2003). The number of unsealed sources users has slightly decreased, after a strong rise between 2002 (758) and 2003 (1165).**

Some countries have not yet returned the general questionnaire. In addition, it seems to us high time for a data update by countries having replied several years ago.

Bearing in mind the approximate nature of the data and our reservations, the world-wide total of authorised users may be estimated around **63,000**.
<table>
<thead>
<tr>
<th>Country</th>
<th>Industry</th>
<th>Research</th>
<th>Total non-medical</th>
<th>Medical</th>
<th>Country</th>
<th>All sectors</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>1100</td>
<td>1000</td>
<td>Germany</td>
<td>2100</td>
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<td></td>
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<tr>
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<td>1000</td>
<td>1000</td>
<td>Saudi Arabia</td>
<td>100</td>
<td>?</td>
<td></td>
<td></td>
</tr>
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<td>Argentina</td>
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<td>125</td>
<td>?</td>
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<td></td>
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<td>620</td>
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<td>1759</td>
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<td></td>
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<td>3000</td>
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<td>Canada</td>
<td>5000</td>
<td>1997</td>
<td></td>
<td></td>
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<tr>
<td>China</td>
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<td>3477</td>
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<td></td>
</tr>
<tr>
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<td>140</td>
<td>?</td>
<td></td>
<td></td>
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<td>9</td>
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<td>801</td>
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<tr>
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<td>101</td>
<td>23</td>
<td>Ghana</td>
<td>96</td>
<td>?</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>1753</td>
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<td></td>
</tr>
<tr>
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<td>790</td>
<td>Italy</td>
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<td>?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
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<td>Japan</td>
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<td></td>
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<td>26</td>
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<td></td>
<td></td>
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<td>?</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Romania</td>
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<td>12</td>
<td>Romania</td>
<td>228</td>
<td>2004</td>
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<td></td>
</tr>
<tr>
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<td></td>
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<tr>
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<td>1998</td>
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</tr>
<tr>
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<td>RU</td>
<td>4000</td>
<td>?</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>22000</td>
<td>22000</td>
<td>USA</td>
<td>22000</td>
<td>1996</td>
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<td></td>
</tr>
<tr>
<td>World Total</td>
<td></td>
<td></td>
<td>World Total</td>
<td>62483</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
II.2. Bodies issuing authorisations

In the second part of the report presented in Budapest, official bodies issuing authorisations for use were cited for 21 countries.

The only country added to the list was MOROCCO, which specified that its official body was the National Centre of Radioprotection (CNCAN), depending on Ministry of Public Health.

Furthermore, some data could be updated:

In France, it is interesting to note that regulation relating to medical applications of ionising radiation states that the Code of public Health fixes rules regarding authorisations or declarations related to nuclear activities which apply to medicine, dental art, human biology and medical research, including manufacturing and distribution of radionuclides or devices containing radionuclides destined to medical purposes. For instance, apart from the DGSNR which authorises use of electrical generators of ionising radiation (particle accelerator, etc.) and radioactive sources (curietherapy, télégammatherapy, etc.), the AFSSAPS (French Agency for Health Products Safety) authorises manufacturing, holding, distribution, importation, exportation of radionuclides and tests on devices that emit ionising radiation (radiopharmaceutical, medical equipment (sources and devices).

In Morocco, the Centre National de Radioprotection, depending on the Ministry of Health, is the only organisation to issue authorisations.

In Sweden, manufacturers and suppliers obtain authorisations from the Swedish Radiation Protection Authority.

In Romania, only the Commission Nationale de Contrôle des Activités (CNCA) issues authorisations to users and suppliers.
<table>
<thead>
<tr>
<th>Country</th>
<th>Body issuing authorisations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>NRPC - National Radiation Protection Commission</td>
</tr>
<tr>
<td>Germany</td>
<td>KACST - King Abdul Aziz City for Science Technology</td>
</tr>
<tr>
<td></td>
<td>ARN - Autoridad Regulatoria Nuclear</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>AECB - Atomic Energy Control Board</td>
</tr>
<tr>
<td></td>
<td>CNNC and Ministry of Public Health</td>
</tr>
<tr>
<td>Armenia</td>
<td>NCNSRC - National Center Nuclear Safety Radiation</td>
</tr>
<tr>
<td>Argentina</td>
<td>Consejo de Seguridad Nuclear and Ministry of Industry</td>
</tr>
<tr>
<td>Brazil</td>
<td>STUK - Radiation Safety Authority</td>
</tr>
<tr>
<td>Canada</td>
<td>DGSNR - Direction Générale de la Sûreté Nucléaire et de la Radioprotection</td>
</tr>
<tr>
<td>China</td>
<td>RPB - Radiation Protection Board</td>
</tr>
<tr>
<td>Egypt</td>
<td>State Public Health and Medical Office</td>
</tr>
<tr>
<td>Spain</td>
<td>Atomic Energy Regulatory Board in Mumbai</td>
</tr>
<tr>
<td>Estonia</td>
<td>Radiation Safety Division of the Ministry of Environment</td>
</tr>
<tr>
<td>Finland</td>
<td>Ministry of Public Health</td>
</tr>
<tr>
<td>France</td>
<td>National Radioprotection center (Ministry of Public Health)</td>
</tr>
<tr>
<td>Ghana</td>
<td>CNCAN - National Commission for Nuclear Activities Control</td>
</tr>
<tr>
<td>Hungary</td>
<td>SSI - Svenska Stral Skydd Institute</td>
</tr>
<tr>
<td>India</td>
<td>Federal Office of Public Health</td>
</tr>
<tr>
<td>Israel</td>
<td>Ministry of Science and Technology</td>
</tr>
<tr>
<td>Italy</td>
<td>CNRP - Centre National de Radio Protection</td>
</tr>
<tr>
<td>Japan</td>
<td>USA</td>
</tr>
<tr>
<td>Lithuania</td>
<td>NRC - National Regulatory Commission</td>
</tr>
<tr>
<td>Morocco</td>
<td>RPB - Radiation Protection Board</td>
</tr>
<tr>
<td>Moldavia</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td></td>
</tr>
<tr>
<td>Tunisia</td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td></td>
</tr>
<tr>
<td>Zambia</td>
<td></td>
</tr>
</tbody>
</table>
II.3. Liability obligations in source management

II.3.1. Update of country data

The summary of the situation given in the fourth part of the report presented in Cap Congress focuses on civil liability doctrines applying to source producers and users as they stand in 20 countries of varying sizes, specifying where applicable whether they derive directly and solely from normal law or were clearly stated in a particular law on the use of radioactive sources.

The table has not been substantially modified in any way since then, aside from the addition of a 21st country, Morocco. Applicable normal law in that country provides for liability only in the event of proven or presumed negligence by the legal custodian of the hazardous source.

To guarantee the financial consequences of source users' civil liability, the fourth part of the report presented in Cap Congress cited 7 countries (Germany, Spain, France, India, Italy, the United Kingdom and Switzerland) in which users can take out insurance covering an unlimited amount but restricted to damage claimed during a set time period (30 years in Germany and Switzerland, 5 to 10 years in the other countries) after the date of the cause for action ("claims made" clause). Among those countries, we were able to update the data previously provided for France, Morocco, Romania and Sweden for the years 2003 and 2004.
<table>
<thead>
<tr>
<th>Country</th>
<th>Normal Law</th>
<th>Particular Law</th>
<th>Proven negligence</th>
<th>Presumed negligence</th>
<th>Contract obligations</th>
<th>Absolute liability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>Section 26, Atomic Energy Law 1975</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>Civil Code art. 1382 to 1386</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>After delivery</td>
</tr>
<tr>
<td>Brazil</td>
<td>1988 Constitution, article 37</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>With recourse against negligent party</td>
</tr>
<tr>
<td>Canada</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>X Therapy</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>After delivery</td>
</tr>
<tr>
<td>Estonia</td>
<td>Radiation Protection Act 1977</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>France</td>
<td>Civil Code art. 1382 to 1386</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>After delivery</td>
</tr>
<tr>
<td>Ghana</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>Radiation Protection Act 1977</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>In Liability therapy</td>
</tr>
<tr>
<td>Italy</td>
<td>Civil Code</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>After delivery</td>
</tr>
<tr>
<td>Japan</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithuania</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moldavia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<td>Morocco</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Ionizing Radiation Regulation 1985</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Sweden</td>
<td>Ionizing Protection Act 1988</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Switzerland</td>
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<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>After delivery</td>
</tr>
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<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Zambia</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
III. Conclusion

It appears necessary to keep up to date our knowledge of legal frames where radioactive sources are used if, at our association’s scale, we aim to have at disposal an overview that will have to be as homogeneous as possible, as industrial and scientific partnerships nowadays grow to a European, even world-wide size.

Without knowledge of a country’s preferences and perception of the procedures to account for source use, there can be no effective guarantee of safety and security on a world-wide level.

Actually, only an exhaustive data statement allows to evolve more relevantly towards working out and harmonisation of policies and rules on radioactive sources safety and security.
QUESTIONNAIRE

ON HASARDS LINKED TO THE PRODUCTION AND USE OF RADIOISOTOPES IN THE INDUSTRIAL AND MEDICAL FIELDS

Answer from the National Section of ................................................(country)

1. Regulation applicable to the production and to the various use of artificial radioisotopes

1.1 Are radioisotopes produced in your country ? ...........................................YES / NO

If "yes", are the producers :
- State-owned establishments with monopoly ...........................................☐
- Private establishments ...........................................................................☐

Name the main establishments and production facilities:
......................................................................................................................
......................................................................................................................

If "yes", is the production process subject to official authorizations ..............YES / NO

Are radioisotopes used in your country ?
- For medical purpose (diagnosis or therapy) ...........................................YES / NO
- For industrial purpose (tracers, gammagraphy) .......................................YES / NO
- For agricultural purpose .........................................................................YES / NO

If "yes", is the use of radioisotopes subject to official authorizations ..........YES / NO

Name the bodies issuing the authorizations according to the type of use:
......................................................................................................................
......................................................................................................................

Approximate the most up to date number, of users in the industrial, agricultural and medical (diagnosis and therapy) fields : .........................................................

Legal rules applicable to the liability of users

This questionnaire excludes the legal provisions applicable to an incident occurring in a nuclear installation within the meaning of the Paris Convention of 29th July,1960 or of the Vienna Convention of 1st May, 1963.

In the following questionnaire, please mark the case if your answer is "yes".

<table>
<thead>
<tr>
<th>Users in industrial or agricultural field</th>
<th>Users in diagnosis or therapy field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary Law</td>
<td>Specific Law (Mention it)</td>
</tr>
<tr>
<td>Ordinary Law</td>
<td>Specific law (Mention it)</td>
</tr>
<tr>
<td>Legal basis</td>
<td></td>
</tr>
<tr>
<td><strong>Proved professional negligence fault</strong></td>
<td>☐</td>
</tr>
<tr>
<td><strong>Alleged fault of the legal custodian</strong></td>
<td>☐</td>
</tr>
<tr>
<td><strong>User out of delay</strong></td>
<td>☐</td>
</tr>
<tr>
<td><strong>Objective Responsibility</strong></td>
<td>☐</td>
</tr>
</tbody>
</table>

| **Time limit for bringing claims: … years** | **Time limit for bringing claims: … years** |
| **Give the starting point:** | **Give the starting point:** |
| Utilization | ☐ | ☐ | Medical treatment | ☐ | ☐ |
| Appearance of damage | ☐ | ☐ | Appearance of damage | ☐ | ☐ |

| **Motives for absolute or partial exoneration** | **Motives for absolute or partial exoneration** |
| **Vis Major** | ☐ | ☐ | Informed consent | ☐ | ☐ |
| **Third party fault** | ☐ | ☐ | Accepted risk | ☐ | ☐ |
| Former condition of the patient | ☐ | ☐ |

**Relationship Producer/ User**
Can the producer of radioisotopes or the manufacturer of packaging be summoned by the industrial or medical user in the direct action which opposes the user to the victim? ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………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Prerequisites to the insurability of the hazards users are exposed to?
Strict observance of authorizations issued by legal Authorities:
  - For sealed sources: .......................................................... ☐
  - For unsealed sources: .......................................................... ☐

Named such authorities: ..............................................................

Legal authorities agreement for appliances devoted to contain radioelements in medical utilization for diagnosis and therapy, ........................................... ☐

Named such authorities: ..............................................................

For medical use, professional qualifications required from the practitioners and from the medical staff: .......................................................... ☐

Scope of cover in time
For industrial use, time-limit for bringing claim against the insurer: ....... years.

For damage resulting from diagnosis or medical treatment, time-limit for bringing claim against the insurer: ....... years from the medical treatment.

Amount of cover usually provided
For individual users (domestic currency): ...........................................
For medical users (domestic currency): .............................................

Specific third party liability cover provided to the holder of radioisotopes in case of loss or theft

Does the Ordinary Law or, possibly a specific Law maintain the liability of the industrial or medical holder when radioactive sources in storage have been lost or stolen? .......................................................... YES / NO

Is there a special insurance cover for this type of liability in your country? .......................................................... YES / NO

  - Time limits for bringing claims: ....... months or years, from the date of theft or loss.
  - Amount of cover usually provided (domestic currency): .................
Part Two

Liabilities and the Insurance cover of the holders of sources

I. The foundations of the liability of the holders of radioactive sources
   I.1. The third party liability
   I.2. Administrative Liability
   I.3. Penal Liability

II. Insurance cover of the liabilities of holders of sources
Part Two

Liabilities and the Insurance cover of the holders of sources

I – The foundations of the liability of the holders of radioactive sources.

The responsibilities of the holders of sources first of all result from a certain number of international conventions and charters. Some define the liabilities of the States, which have to introduce authorization systems, administrative or criminal sanctions whereas others especially lean on the third party liability in the nuclear activities field.

A – On international level, within the safety and security field, the administrative and criminal liability for the utilisation of source, leans particularly on:

- the Convention of 1997 concerning used fuel and radioactive waste,
- the Code of conduct on the safety and security of radioactive sources.

On European Union level, a guideline of 2003 defines the obligation for the member States to establish the administrative system of utilisation of radioactive source as well as the administrative and criminal liabilities of the users.

Finally, the national regulations determine the liabilities, both in the administrative field and in the criminal field.

B – In the field of the third party liability applicable to nuclear installations, two very related systems find their foundation in:

- the modified Paris Convention of 29 July 1960 completed by the Brussels Convention modified on 31 January 1963 and which covers most of the Western European countries,
- and the Vienna Convention of 21 May 1963 which has a worldwide character.

These conventions, in principle, do not include the radioactive source into their application field, but we will see that in some cases, they nevertheless could be applied.

As for the administrative or criminal responsibility, regulations of third party liability, whether of common law, whether of application or completing laws foreseen by the national conventions, are implemented by the national legislations and regulations.
I.1 - The third party liability

At first it is advisable to take down that the question of the indemnification's responsibility and, if the need arises, of the financial guarantee allowing to assure this indemnification is separate from the question of the expenses relating to the recovery of radioactive sources at life end. On this last point, the taking up again of radioactive source means that the user return them whether to the supplier and/or to the manufacturer, or sends them to a storage or evacuation installation of these sources. This operation being expensive and if we want to avoid that the operation would be stopped or compromised for lack of payment, it may be useful to dispose in advance of a financial guarantee for this purpose. This is what some national systems already foresee and, as previously mentioned, by the European Directive of 2004.

A - The special system of the nuclear third party liability and its application to radioactive sources

The nuclear third party liability is since the 1960's the subject of a particular system which is surrounded by the international conventions :

- the modified Paris Convention of 29 July 1960 on the third party liability in the nuclear energy field, completed by the modified Brussels Convention of 31 January 1963 that is applicable in the OECD countries ;

- and the Vienna Convention on civil liability for nuclear damage dated 21 May 1963 which is of worldwide application.

But the damages caused by radioactive sources are placed outside the application field of these conventions as the damage caused is due to sources situated outside the site of a "nuclear installation".

Indeed, article 1 a) iv) of the Paris Convention excludes from its application field the "radioisotopes which have reached the final stage of fabrication so as to be usable for any industrial, commercial, agricultural, medical, scientific or educational purpose".

In the same way, article 1.1 g) of the Vienna Convention excludes «the radio-isotopes which have reached the final stage of fabrication so as to be usable for any scientific, medical, agricultural, commercial or industrial purpose». 
Consequently, several solutions can be implemented by the States:

- in some countries, as France, the sources situated inside a nuclear installation covered by the particular system of nuclear third party liability come under the same particular system whereas the others are subject to common law of the third party liability;

- in other countries, the system of liability within the scope of the utilisation of radioactive sources, is the subject of specific laws;

- finally in some other countries, it is the common law system of third party liability which is applied in all cases.

These different solutions are highlighted in the table that is mentioned in the first part of the report in point II.3: the guarantees involved in the sources management.

B - The case of sources situated inside a nuclear installation

When sources are situated inside a nuclear installation which is covered by the Convention, whether they are used there, or that they are being manufactured there, the cover of the damage is possible in accordance with the rules foreseen by the special system of nuclear third party liability of the conventions mentioned above of which the main characteristics are the following:

- channeling of the liability of the operator of the installation for nuclear accidents occurred in this installation, included during transport;

- objective liability of the operator, whether a fault lies with him or not;

- limited liability as regards its amount and its duration;

- obligation to underwrite an insurance or a financial guarantee up to the amount of its liability;

- non discrimination of the victims who are entitled to compensation without distinction of nationality in particular;

- uniqueness of jurisdiction.
C - Rules applicable to the sources situated outside the application field of the international conventions system

The third party liability of the user of a radioactive source can be implicated on the basis of the rules relating to the criminal or almost criminal third party liability, of the contractual liability or the liability on account of products.

1) Common law of the almost criminal liability

In some countries such as France, Belgium or Italy, the clauses of Civil law are applicable in this field, as soon as the Paris and Vienna Conventions are not applicable.

The rule according to which "any fact whatever of mankind causing a damage to others, forces him by the fault of which he has come to repair it" is applicable. In this way, the personal liability of the user of a source can be involved as soon as the damage caused by the source, results from a fault attributable to him.

In this way, also the user's liability can be involved on the basis of article 1384 of the Civil code relating to the third party liability on account of others or on account of things.

Still in application of the civil code, «one is responsible, not only for the damage caused by its own, but even for the one caused by persons of whom has to be responded for or the things under one's guard».

Consequently, it is possible to implement the third party liability of the protector of the radioactive source at the origin of a damage. The protector is the one who has the power of use, the management and the control of the source.

2) Liability on account of defective products

The French Common Law stipulates in its articles 1386-1 and following the liability of the producer and supplier in case of damages caused by defective products, one product being considered as defective as soon as it "does not offer the legally expected safety."
3) **Contractual Liability**

The liability of manufacturers, producers, users or sellers of sources may be founded on:

- the guarantee of hidden faults, the hidden fault being the one that makes the thing unfit for the use to which it is intended;
- the omission of safety obligation, which is established in French law as soon as the professional salesman provides products which may create a danger for the persons or properties;
- the omission of information or of safekeeping penalizes the seller of a product who does not inform the buyer about the danger that this product may present and of the application precautions to be observed.

For implementing the liability of the user of a radioactive source, the victim should, most of the time, while the special system of nuclear third party liability of the conventions is not applicable, prove the fault of this user, the reality of the loss he suffered, as well as the causality connection between the harmful circumstance and the damage.

Anyway, contrary to the victim who can benefit from the conventions system (objective and exclusive liability of the operator and compulsory financial guarantee), the victim who can not enjoy benefits from it, has to justify its claim on very multiple regulations (right of work, medical error, liability on account of products …).

Moreover, in the absence of uniform international regulations, the compensation will be different for an identical damage in accordance to the national law of the victim.
I.2 – Administrative liability

In France, the production, use and holding of radioactive sources is governed by the specific provisions of the Public Health Code (Book III – Protection of Health and the Environment, Section III – Prevention of health risks linked to environments and environmental health security, Chapter III – Ionizing radiation).

In particular, the code determines an authorization or declaration system. Failure to respect this system leads to administrative sanctions once the violations have been noted by specially authorized agents. In this report, we will only present the authorization system.

It should also be noted that the holding and use of radioactive sources is governed by management rules.

1. The authorization system

Article L. 1333-4 of the Public Health Code states that "The activities mentioned in article L. 1333-1 are subject to an authorization or declaration system according to the characteristics and uses of the sources in question." The authorization system applies indifferently to companies or establishments which store radionuclides in their premises and also those which trade them without holding them directly.

The public health code makes a distinction between two main fields of nuclear activity:

- those intended for medical purposes (medicine, dental art, human biology and biomedical research)
- those intended for industrial and research purposes.

The following table summarizes the different uses of radioactive sources, subject to authorisation, in the context of nuclear activities in the medical world.

<table>
<thead>
<tr>
<th>Type of activity</th>
<th>Procedure</th>
<th>Competent authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holding/use of radioactive sources (and systems containing them): nuclear medicine, biomedical research</td>
<td>Authorization Article R. 1333-4 of the Public Health Code</td>
<td>DGSNR (Direction Générale de la Sûreté et de la Radioprotection)</td>
</tr>
<tr>
<td>Production, holding, distribution, importing and exporting of radionuclides and testing of medical systems emitting ionizing radiation</td>
<td>Authorization Article R. 1333-17 of the Public Health Code</td>
<td>AFSSAPS (Agence Française de Sécurité Sanitaire des Produits de Santé)</td>
</tr>
</tbody>
</table>

3 Article L. 1333-1: this covers activities in which there is a risk of people being exposed to ionizing radiation emitted by either an artificial source, whether a substance or a system, or a natural source when natural radionuclides are processed or were processed due to their radioactive, fissile or fertile properties.
The following table summarizes some examples of the use of radioactive sources which require authorization in the industrial and research field.

<table>
<thead>
<tr>
<th>Type of activity</th>
<th>Procedure</th>
<th>Competent authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of radioactive sources or devices containing them.</td>
<td>Authorization</td>
<td>DGSNR (Direction Générale de la Sûreté et de la Radioprotection)</td>
</tr>
<tr>
<td>Production of products or devices containing radioactive sources (*)</td>
<td>Authorization</td>
<td>DGSNR (Direction Générale de la Sûreté et de la Radioprotection)</td>
</tr>
<tr>
<td>Use of radioactive sources (*)</td>
<td>Authorization</td>
<td>DGSNR (Direction Générale de la Sûreté et de la Radioprotection)</td>
</tr>
<tr>
<td>Irradiation of products, including food</td>
<td>Authorization</td>
<td>DGSNR (Direction Générale de la Sûreté et de la Radioprotection)</td>
</tr>
<tr>
<td>Importing or exporting of radioactive sources or devices containing them</td>
<td>Authorization</td>
<td>DGSNR (Direction Générale de la Sûreté et de la Radioprotection)</td>
</tr>
<tr>
<td>Distribution of radioactive sources or devices containing them (*)</td>
<td>Authorization</td>
<td>DGSNR (Direction Générale de la Sûreté et de la Radioprotection)</td>
</tr>
</tbody>
</table>

(*) These activities do not require authorization due to the limited risks involved, subject to respect of the exemption criteria stated in article L. 1333-27 of the Public Health Code.

However, it should be noted that authorizations for industries which come under the mining sector code, basic nuclear installations classified for environmental protection replace the authorization in terms of radiological protection;

Hereafter, we present the examination of a request for the authorization of radioactive sources used for industrial and research purposes.

The authorization application file includes a supporting file and a form issued by the DGSNR (Direction Générale de la Sûreté et de la Radioprotection).

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4 The exemption criteria for authorization procedures applies to
- Radionuclides if the total quantities used or their concentration per mass unit are less than the thresholds determined in the appendix to decree no. 2002-460, of April 2, 2002 (as long as the masses of the substances used do not exceed one tonne.)
- Electric ionizing radiation generators, if they certified as complying with standards and, in normal operation, do not create, at any point located at a distance of 0.1 m from their accessible area, an equivalent dose flow of more than 1 µSv/h, or if they are generators operating under a potential difference of 30 kV at most, under the same conditions of equivalent dose flow limit.
The supporting file:

The first application for authorization can only be examined if it is accompanied by a supporting file containing:

- general information about the establishment and the map of the premises, the applicant, the qualifications in matters of radiological protection of employees in charge of handling radioactive sources as well as employees with expertise in radiological protection, appointed through application of the Labour Code.
- detailed information about the characteristics of the radioactive sources or the products containing them, the technical equipment of installations where radionuclides are kept, the results of tests done to estimate their performance and security, information about measurements used to check them and ensure protection of employees, the population and the environment against the effects of such radiation
- where applicable, additional information about the producer, the suppliers, the conditions planned for recovery of sources along with the associated financial guarantees when the establishments hold sealed radioactive sources, products or devices containing them.

The form:

The form contains the following information:

- designation of the person who is directly in charge of the planned activity
- identification of the company or the organization (company name, quality assurance, etc.)
- the place of production, holding and/or use of radioactive sources
- justification of the use of radioactive sources or the devices containing them
- information about employees with expertise in radiological protection
- radiological protection of persons who will handle radioactive sources.

The application file should be signed by the person who is directly in charge of the planned activity and the director of the establishment. The form should be signed by the person with expertise in radiological protection in order to confirm that he is aware of the authorization application.

The authorization application should be sent to the DGSNR for examination. The authorities which issue the authorization will indicate their decision within a maximum of six months of the date when the file is considered to be complete. Where no answer is received within the stipulated deadline, this means that the application has been refused. The authorities may request all additional information that is necessary to deal with the application. The deadline stated in this article is then suspended until the information is received. The authorization is only granted once the new information is received.

The maximum validity period of the authorization is a renewable term of five years. An authorization issued to the manager of an installation is personal and non-transferable. Any change in the authorization concerning either its beneficiary or the application or its operating conditions is subject to a further examination through application of article R. 1333-36 of the Public Health Code. The holder of an authorization must introduce the measures concerning protection, information and the radiological protection training of persons liable to be exposed to ionizing radiation.
2 – Rules for managing radioactive sources

These rules are laid down by articles R. 1333-45 and subsequent of the Public Health Code:

- it is prohibited to sell sources or acquire them from any person who does not have an authorization
- prior registration with the Institute for Radiological Protection and Nuclear Safety (IRSN) is compulsory for the acquisition, distribution, importing and exporting of radionuclides in the form of sealed or unsealed sources or products or devices containing them. This prior registration is necessary in order to organize the follow-up of sources and inspection by customs authorities.
- the traceability of radionuclides in the form of sealed or unsealed sources, products or devices containing them is required in each establishment and a quarterly report on deliveries must be sent to the IRSN by suppliers
- the loss of theft of radioactive sources must be declared to the authorities
- Any user of sealed sources must recover sources that are outdated, deteriorated or at the end of their use, at its cost (except in the case of a derogation for local decay)
- the supplier must recover any source which is outdated or is no longer used, without any conditions and at the simple request of the user.

3. Inspection by the authorities

For nuclear activities that are subject to authorization, other than the inspections planned through application of the Labour Code and, where applicable, those done through application of article L. 5212-1 and regulations relative to classified installations for protection of the environment, the director of the establishment or the company must have an organization approved by the ministries in charge of heath and labour inspect the efficiency of organization and technical systems installed through application of article R. 1333-7, in particular those for the management of radioactive sources, whether sealed or not, and those used for sorting, storing and any elimination of waste produced.

These inspections do not exclude those done directly by the DGSNR in the context of its inspection activities at the time of renewal or modification of an authorization in the case of an incident or the loss or theft of sources.

Decree no. 2002-255 of February 22, 2002, indicates that, without prejudice to the inspections stated in the Labour Code and the Environment Code, the DGSNR is in charge of organizing inspections in matters of radiological protection and leading all inspections which contribute to inspection of radiological protection in the industrial, medical and research fields, including the follow-up of sources of ionizing radiation used in these fields.

Therefore, the fields of radiological protection inspected by the DGSNR cover the use of ionizing radiation in all nuclear activities as defined in article L. 1333-1 of the Public Health Code. This task is performed jointly with other inspection organizations like the labour inspectorate, the inspection of installations classified for protection of the environment and inspection by the AFSSAPS (French agency for the safety of health products).
In order to apply the policy in matters of radiological protection, Act no. 2004-806 of August 9, 2004, relative to the public health policy introduced new provisions, creating radiological protection inspectors, in the Public Health Code (articles L.1333-17 to L.1333-19, L. 1336-1-1).

As stated in article L.1333-17 of the Public Health Code, radiological protection inspectors are in charge of simultaneously inspecting, for a single nuclear activity, application of the provisions of the Public Health Code and the Labour Code concerning radiological protection.

Radiological protection inspectors have the law enforcement powers defined in the new article L.1333-1-1 of the Public Health Code.

4. Administrative sanctions

Article L.1333-5 of the Public Health Code states that "any violation, by the holder of an authorization as stated in article L.1333-4 or one of its agents, of the provisions of this chapter or the statutory provisions taken for their application or the recommendations stated in the regulations determined by the authorization may lead to the temporary or definitive withdrawal of the authorization.

Withdrawal is pronounced in a justified decision after expiry of a period of one month following the date when party concerned received formal notice indicating the complaints against it.

In an emergency involving the security of persons, suspension of an authorized activity, which has been the subject of a declaration through article L. 1333-4, may be ordered as a measure of conservation.

Article R. 1333-40 of the Public Health Code states that suspension of the activity, as indicated in article L. 1333-5, is pronounced by the authorities which issued the authorization.

Other than suspension of the authorized activities, which may be ordered in an emergency when the safety of persons is endangered, in compliance with article L. 1333-5 of the Public Health Code, cases of non-compliance of installations notified by departments of the authorities in charge of the inspection require a written commitment from the holder of the authorization indicating the type of corrective actions and their implementation date. In the event of non-execution, the authorities may send formal notice to the holder of the authorization then order withdrawal of the authorization under the conditions determined in the previously-mentioned article L 1333.5.

Any change concerning the holder of the authorization, or the premises where radionuclides will be kept or the systems emitting ionizing radiation, any extension of the field covered by the initial authorization, any change in the characteristics of a radioactive source used or distributed, must be the subject of a new authorization application. Where a new authorization application is not filed immediately, the holder of the initial authorization could have its authorization withdrawn immediately without prejudice to any legal action as stated in article L. 1336-5.
The authorization may be suspended or withdrawn by the authorities which issued it, under the conditions stated in article L. 1333-5 when the use made by the holder does not respect the provisions of this code and the regulations notified to it. The suspension may not exceed 90 days; where the suspension is not removed at the end of this period, the authorization becomes null and void. In such a case, the sources and any present or future waste must be eliminated under the conditions determined by the authorities which issued the authorization.

Article R1333-43 states that any refusal to have the installation inspected by the inspection services shall lead to withdrawal of the authorization.

1.3 **Penal liability**

Other than the administrative sanctions which the authorities could impose on the holder of an authorization, the Public Health Code indicates several offences.

1. Verification of offences

Article L. 1336-1-1 of the Public Health Code states that "without prejudice to the acknowledged powers of police officers, labour inspectors and those in charge of mining police, violations are sought and noted by radiological protection inspectors, authorized and sworn under the conditions determined by decree by the Council of State."

For this purpose, they are entitled to have access to all places and installations used for professional purposes, as well as all means of transport, excluding domiciles. They may only enter the premises between 8 a.m. and 8 p.m. or outside these times when public access is authorized or when an activity is on-going.

For the same purpose, they may also obtain communication of all necessary documents, including those containing individual medical data when the agent is a qualified doctor, take copies of such documents, access computer data and copy them to any appropriate media, collect information, on the spot, or through notice, or any necessary justification, take samples which will be analyzed by an organization chosen from a list drawn up by the minister of the environment, employment, agriculture or health, and seize all necessary objects, products or documents through legal authorization and according to the rules of article L. 5411-3.

Their reports shall be considered authentic until proved otherwise. They shall be transmitted within five days of completion to the public prosecutor and a copy shall also be sent to the government representative in the region where infringement of article L. 231-7-1 of the Labour Code, or mentioned in 2°, 7° or 10° of article 141 of the Mining Code, is noted.

The public prosecutor should be immediately notified of any infringement noted at the time of inspections done by radiological protection inspectors.
2. Offences and penalties

Article L. 1336-5 of the Public Health Code states that: "the following offences are punishable by one year of imprisonment and a fine of €15,000:

- the exercise of an activity or use of a process, a system or a substance that is prohibited, through application of article L. 1333-2
- where persons are exposed to levels in excess of the limits set by the decrees taken for application of 3° of article L. 1333-1
- undertaking or exercising an activity mentioned in article L. 1333-1 without holding an authorization or without having made the declaration stated in article L. 1333-4
- in violation of article L. 1333-7, for not recovering sealed radioactive sources intended for activities subject to declaration or prior authorization, or for not providing the financial guarantees stated in the said article."

Article L. 1336-6 of the Public Health Code states that: "the following offences are punishable by six months of imprisonment and a fine of €7,500:

- Failure to respect, within the deadline stipulated in formal notice sent by the authorities which issued the authorization or registered the declaration, the regulations taken for application of chapter III of this document relative to the exercise of a practice or use of a substance or a regulated system through application of article L. 1333-2
- Failure to implement, within the deadline stipulated in formal notice sent by the authorities which issued the authorization or registered the declaration, the exposure monitoring measures, protection measures or measures to inform persons as stated in article L. 1333-8
- Failure to communicate the information necessary to update the national records of radioactive sources as stated in article L. 1333-9
- Failure to comply within the deadline stipulated in formal notice sent by the authorities which issued the authorization.
- Obstructing the functions of radiological protection inspectors."

II. Insurance cover of the liabilities of holders of sources

The risks resulting from the production, use or holding of radioisotopes are treated differently depending on whether the sources are located in a basic nuclear installation (INB) and are used for operation of the said installation (1) or are used for industrial, commercial, agricultural, medical, scientific or teaching purposes and have reached their last stage of production (2).
1. Sources held in basic nuclear installations which are used to operate the installation

Damage caused by radioactive sources held in nuclear installations which are used for their operation are governed by the International Conventions of Paris\(^5\) and Vienna\(^6\). These international conventions state that civil liability is incumbent upon the operator and, consequently, that the operator must provide a financial guarantee to cover this liability.

However, insurance and reinsurance contracts all over the world contain a classic clause "excluding, from insurance cover, damage or aggravation of damage, caused either by weapons or missiles intended to explode through splitting the core of the atom, or any other nuclear fuel, product or radioactive waste, or through any other source of ionizing radiation which engages the exclusive liability of the operator of a nuclear installation, or which originates from the supply of goods or services concerning a nuclear installation abroad, or which directly strikes a nuclear installation."

Consequently, the international co-reinsurance market became organized in pools to cover nuclear risks. The pools form a structure with two levels:

- national level: the pool combines different insurance companies from the same country in order to pool their respective capacity to cover the nuclear risk
- international level: this enables cooperation between pools for the co-reinsurance of these risks.

As such, insurance contracts covering the liability of holders of sources were introduced and are reinsured by the French pool for the co-reinsurance of nuclear risks: Assuratome.

These risks are covered through two contracts taken out by nuclear operators:

- The first contract is the "Nuclear operator civil liability" contract which covers the financial consequences of non-contractual civil liability in terms of injury, tangible and intangible damage, within the limit of the compulsory cover of the Paris Convention (€91,469,410 per nuclear accident and €182,938,820 per site and per period of three years), caused by:
  - a nuclear accident or
  - resulting from ionizing radiation emitted by any source of radiation whatsoever, located in the installation(s) covered by this contract

- the second contract is the "Nuclear transport civil liability" contract when the radioactive source transported is a nuclear substance in the sense of article 1 of the Paris Convention\(^7\). This Nuclear transport civil liability policy covers the financial consequences of non-contractual civil liability in terms of injury, tangible and intangible damage, in the case of a nuclear accident which takes place:

\(^5\) Convention of July 29, 1960, on civil liability in the field of nuclear energy
\(^6\) Vienna Convention of May 21, 1963, relative to civil liability in matters of nuclear damage
\(^7\) The application field of the Paris Convention excludes radioisotopes located outside a basic nuclear installation when they have reached the final stage of production and are liable to be used for industrial, commercial, agricultural, medical, scientific or teaching purposes.
- during transportation covered by the insurance, in particular the transportation of radioactive sources by a nuclear operator
- after the nuclear substances or other radioactive materials have been stolen, lost, thrown overboard or abandoned during the said transportation.

2. Radioactive sources used for industrial, commercial, agricultural, medical, scientific or teaching purposes which have reached their final stage of production and are kept outside basic nuclear installations.

The risks resulting from radioisotopes used for industrial, commercial, agricultural, medical, scientific or teaching purposes which have reached their final stage of production and are kept outside basic nuclear installations are governed by common law since they have no exceptional character requiring a derogatory system.

In the reasons for the Paris Convention of 1960 it is stated that: "Despite the rapid growth of the use of radioisotopes in numerous fields, which will require serious, continued precautions for health protection, there is little possibility of a disaster; therefore, no particular problem of civil liability is raised and, as such, the common law system may be maintained."

That is why the insurance linked to this type of risk is optional and each industrial or medical establishment is free to choose its insurance company and determine the amount of cover required.

Overall, the classic insurance market has excluded from Civil Liability cover all damage which comes or results from radioactive properties, or from both radioactive and toxic properties, explosives or the other dangerous properties of nuclear fuels or any radioactive substances whatsoever, or ionizing radiation emitted by any source of radiation.

Only partial buy-back exists in certain civil liability contracts for damage caused by:
- sources formerly classified as S1, S2, L1, L2 by the ex-CIREA; here it should be underlined that this classification, established by CIREA (Commission Interministérielle des Radioéléments Artificiels) in its day, is no longer valid at present. However, insurance contracts continue to refer to it since there is no new reference standard.
- sources located abroad which could have benefited from this classification if they were located in France.

To make up for this lack of cover, insurance has to be taken out for the civil liability of a holder of radioactive sources.

At present, the French ASSURATOME pool reinsures between 400 and 600 contracts taken out by producers of holders of radioactive sources used by the industrial or medical world, with the exception of basic nuclear installations. These policy-holders provide information to the pool, through the insurance company, in order to assess the risk, such as:
- the list of sources and/or devices generating ionizing radiation
- the use of these sources
- valid authorizations for holders or, failing this, applications for renewal.
ASSURATOME insures these risks linked to radioisotopes according to different liability insurance cover:

- The Nuclear Operator Civil Liability contract covers the civil liability of the nuclear operator policy-holder due to the fact that it holds radioactive sources (outside basic nuclear installations) within a limit of €15,245,000 per claim and per year of insurance.
- The contract covering the civil liability of a producer of radioactive sources covers the professional liability of the producer in the case of a defect in the product that is the radioactive source (operating civil liability – damage due to interventions in the premises of clients or third parties – civil liability after delivery – damage resulting from a material defect or an error in design, storage or delivery).
- The civil liability contract for a holder of radioactive sources includes basic cover of the extra-contractual civil liability of the holder of sources in the case of consecutive injury, tangible or intangible damage caused by the said source as well as damage caused by radioelements lost or stolen.

Other than this civil liability cover, ASSURATOME offers the following optional cover:

- Cover of decontamination costs which is aimed at buying back the exclusion generally stated in a fire insurance policy, in particular concerning damage or aggravation of damage caused by ionizing radiation from sources held by the policy-holder as well as the decontamination costs.
- Damage cover for the radioelements used: depending on the value of the sources and/or the devices generating ionizing radiation, it could be worthwhile taking out damage insurance.
- Civil liability cover during transportation of these materials by the policy-holder.
- An individual accident contract covering a lump sum in the case of injury leading to death, permanent or temporary disability, medical, surgical and pharmaceutical costs for exposed trades like firemen or employees on an assignment in hazardous facilities.

1. Loss and expense ratio

Claims linked to the production or holding of radioactive sources are more numerous in the industrial and medical world than in the world of basic nuclear installations which have a greater radiological protection culture.

Mention could be made of various accidents like:

- injury to firemen fighting a fire in the presence of radioactive sources; a claim was made through the individual accident insurance contract for firemen and the case is being examined.
- damage in Spain due to a defective incinerator.
- overexposure of several persons which led to their death, due to defective maintenance of the system (Spain).
- irradiation accident caused by an electron accelerator.

Claims in terms of these contracts are not very frequent for this type of risk but a claim leads to an increase in the policy-holder's premium and this makes it aware of the problem linked to the management of radioactive sources and radiological protection.
4. Evolution of insurance cover for risks linked to radioactive sources

- Terrorism cover

At insurance level, the consequences of September 11, 2001, led to tough negotiations in order to maintain or exclude this cover in nuclear civil liability contracts. A compromise was finally reached by the parties (insurance and reinsurance companies, operators and the government): nuclear civil liability contracts reinsured by Assuratome only provide terrorism cover for compulsory insurance which comes under the terms of the Paris Convention and the modified French act of 1968. Inversely, terrorism cover is excluded from all optional insurance contracts; operator civil liability, supplier civil liability, civil liability of the holder of sources, etc., as well as the common law claims of contracts covering the civil liability of nuclear operator and nuclear transport contracts.

The future of this terrorism cover in compulsory insurance could be questioned in view of the considerable increase in the cover limits stated in the protocol revising the Paris Convention.

- The EURATOM directive of December 22, 2003

In its article 10, this European Directive indicates the obligation of a financial guarantee for orphan sources. According to the conditions they laid down, member states plan to establish a financial guarantee system or equivalent means of covering the intervention cost relative to the recovery of orphan sources, the cost of recovering, managing and eliminating radioactive sources as well as the work of searching through the archives of authorities like customs, research institutes, material test laboratories or hospitals.

This directive, which has not yet been transcribed into French law, will have the consequence of establishing a compulsory financial guarantee system in order to cover the intervention costs relative to the recovery of orphan sources.

However, it should be pointed out that this directive is aimed at establishing a financial guarantee system that only covers the civil liability of producers or holders in the case of damage caused by radioactive sources.

- The Environment Directive of April 21, 2004

This Directive was adopted after 15 years of work.

Since a liability system derogating from common law was introduced, this raised the question of the introduction of a financial guarantee system, in particular insurance.

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8 Protocol revising the Paris Convention adopted on February 12, 2004
10 Directive 2004/35 of April 21, 2004, concerning environmental liability as regards the prevention and repair of damage to the environment.
After long discussion, it was finally decided that the Commission should draw up a report on the effective application of the directive and, in particular, make proposals for a harmonized financial guarantee system (like the provisions of the Paris Convention).

As such, in a few years time it will be compulsory for holders and users of sources as well as nuclear operators to take out environmental civil liability insurance cover.
AIDN - INLA

Groupe n° 6 « sources radioactives »

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RAPPORT

Responsabilités et couverture assurantielle des détenteurs de sources radioactives

9 au 14 octobre 2005
PLAN DU RAPPORT

Première partie

Le questionnaire général

INTRODUCTION

I. Généralités

I.1. Rappel des sources visées
I.2. Rappel des utilisateurs visés
I.3. Domaines d’utilisation des sources
I.4. Catégorisation des sources

II. Point de situation 2004 du dénombrement

II.1. Les utilisateurs de sources dans le monde
II.2. Les organismes délivrant des autorisations
II.3. Les responsabilités engagées dans la gestion de sources

III. Conclusion

Annexes :
Questionnaire (septembre 2004), version française
Questionnaire (septembre 2004), version anglo-saxonne

Deuxième partie

Les responsabilités et la couverture assurantielle des détenteurs de sources radioactives

I. Les fondements de la responsabilité des détenteurs de sources radioactives

I.1 - La responsabilité civile
I.2 - La responsabilité administrative
I.3 - La responsabilité pénale

II. La couverture assurantielle de la responsabilité civile des détenteurs de sources.
Première partie

Le questionnaire général

INTRODUCTION

I. Généralités

I.1. Rappel des sources visées
I.2. Rappel des utilisateurs visés
I.3. Domaines d’utilisation des sources
I.4. Catégorisation des sources

II. Point de situation 2004 du dénombrement

II.1. Les utilisateurs de sources dans le monde
II.2. Les organismes délivrant des autorisations
II.3. Les responsabilités engagées dans la gestion de sources

III. Conclusion

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INTRODUCTION

Comme lors des précédents congrès de notre association, le groupe 6 doit présenter une mise à jour du panorama du cadre juridique dans lequel sont utilisées les sources radioactives dans les différents pays du monde.

C’est ce panorama, qui constitue la première partie de notre rapport. Comme vous le savez, ce questionnaire a été établi et renseigné durant les années précédentes par notre premier président, Jacques Deprimoz. Son aide précieuse et sa grande connaissance du sujet nous ont permis de progresser et d’aboutir aux résultats qui vont vous être présentés : qu’il en soit ici remercié.

Concernant la deuxième partie, compte tenu du faible nombre de réponses des différents pays sollicités, il n’a pas été possible pour le groupe de travail, de procéder à une véritable étude comparée des différentes formes de responsabilités usitées dans le domaine de la détention des sources.
Première partie

Le questionnaire général

I. Généralités

Le dénombrement des utilisateurs autorisés à se servir des sources radioactives dans le monde a toujours été une préoccupation majeure de notre groupe, et ce depuis plusieurs années déjà.


La menace que représente la perte d’une source fait peser sur son détenteur une responsabilité lourde : ce dénombrement a donc pour but de sensibiliser les autorités des différents pays sur le poids des responsabilités que doivent assumer les détenteurs.

A l’heure de la mondialisation, les juristes des entreprises multinationales seront mieux à même d’appréhender les différentes réglementations applicables à la gestion des sources, afin de concilier les impératifs des opérationnels et le cadre réglementaire du pays dans lequel les sources sont utilisées.

Loin de se substituer à l’AIEA, nos travaux ont donc pour but de sensibiliser les membres de l’AIDN :

- à la réglementation en vigueur applicable dans chaque pays à la production et aux utilisations de sources radio-actives ;
- aux règles applicables à la responsabilité civile des utilisateurs ;
- aux assurances de responsabilité civile des utilisateurs de sources radioactives.

Cette année encore, nous vous présentons donc l’état de nos avancées par pays. Nous avons remis à jour également le questionnaire général, que vous trouverez joint à notre rapport. Nous remercions les interlocuteurs des pays interrogés qui ont bien voulu nous communiquer les données toujours difficiles voire délicates à rassembler.
I.1. Rappel des sources visées

Il s’agit des sources scellées et non scellées soumises à autorisation\(^1\). Ce critère de classement découle de la définition retenue par le Code de Conduite dont le Conseil des Gouverneurs de l’AIEA a préconisé l’emploi en séance du 8 septembre 2003, à savoir :

« Autorisation s’entend d’une permission accordée dans un document par un organisme de réglementation habilité à une personne physique ou morale qui a déposé une demande en vue de gérer une source radioactive. L’autorisation peut revêtir la forme d’un enregistrement, d’une licence ou d’autres mesures de contrôle juridique efficaces qui satisfont aux objectifs du code ».

Par ailleurs, nos travaux ne concernent pas les sources radioactives qui font partie de programmes militaires ou de défense, ni les matières nucléaires.

I.2. Rappel des utilisateurs visés

Il s’agit soit d’un fabricant – fournisseur de sources, soit d’un établissement industriel, soit d’un centre de recherches, soit d’une université, soit d’un centre d’expérimentation agronomique, soit d’un établissement médical, etc.… Cette liste n’est pas exhaustive.

A noter que, de plus, de nouvelles catégories professionnelles peuvent rentrer dans ce périmètre du fait de problèmes nouveaux faisant l’objet de réglementations récentes. A titre d’exemple, on peut citer en FRANCE le cas de la détection de plomb dans les peintures\(^2\). De plus, la détection et l’utilisation des générateurs électriques de rayonnements ionisants font désormais l’objet d’autorisations, étant entendu que dans la réglementation précédente, ces installations étaient soumises à un simple régime de déclaration. On estime en France, à quelques milliers, les installations utilisant des générateurs électriques produisant des rayonnements ionisants, à des fins industrielles, de recherche ou vétérinaires.

I.3. Domaines d’utilisation des sources

Les utilisations des radioéléments artificiels se sont considérablement développées et diversifiées au cours des 40 dernières années. Les principaux domaines d’utilisation sont : l’industrie, la médecine, l’agriculture, la recherche et l’enseignement.

Les activités impliquant des sources de rayonnement sont les activités industrielles et de recherche ainsi que les activités médicales.

\(^1\) En France, le décret n°2002-460 du 4 avril 2002 modifiant le Code de la Santé Publique relatif à la protection générale des personnes contre les dangers des rayonnements ionisants définit « une source comme un appareil, une substance radioactive ou une installation pouvant émettre des rayonnements ionisants ou des substances radioactives ». On définit « une source radioactive non scellée comme une source dont la présentation et les conditions normales d’emploi ne permettent pas de prévenir toute la dispersion de substance radioactive ». Enfin, on définit « une source radioactive scellée comme une source dont la structure ou le conditionnement empêche, en utilisation normale, toute dispersion de matières radioactives dans le milieu ambiant ».

\(^2\) Un dispositif législatif relatif à la lutte contre l’exclusion (loi n°98-657, décret n°99-484) oblige à des actions de prévention du saturnisme infantile en imposant le contrôle de la concentration en plomb dans les peintures. L’arrêté d’application du 12 juillet 1999 précise que « la mesure du plomb sera effectuée préférentiellement à l’aide d’un appareil portable à fluorescence X ». Cette méthode d’analyse non destructive permet de détecter instantanément la présence du plomb dans un revêtement.
I.3.1 Sources scellées

Les activités pour lesquelles les autorisations sont demandées sont celles destinées principalement :

- à l’irradiation industrielle, notamment la stérilisation de dispositifs médicaux, de produits pharmaceutiques ou cosmétiques et la conservation de produits alimentaires ;
- au contrôle non destructif, essentiellement la gammadigraphie ;
- à la mesure de densité et de pesage ;
- à la mesure d’empoussièrement ;
- à la mesure d’humidité et de densité ;
- à l’élimination de l’électricité statique ;
- à la détection de fumée ;
- à l’étalonnage des appareils de mesure ;
- à l’enseignement lors de travaux pratiques ;
- à la chromatographie ;
- à l’analyse par fluorescence X (pour la recherche de plomb dans les peintures).

I.3.2 Sources non scellées

Parmi les activités qui utilisent des sources non scellées, on peut citer :

- la recherche utilisant les sources comme traceurs (recherche en biologie cellulaire, en hydrologie, marquage de molécules…) ;
- l’étalonnage ;
- l’enseignement.

I.4. Catégorisation des sources

L’AIEA a diffusé en 2003³ une méthode de classification qui s’appuie sur le principe de dangerosité : ce dernier est fondé sur le rapport A (en TBq) par une constante D (en TBq). Si ce ratio A/D est supérieur à 1, alors la source est considérée comme dangereuse. Sur la base de cette définition, l’AIEA a élaboré une classification de la dangerosité en cinq catégories : les risques associés sont aussi définis par rapport à la dispersion de la radioactivité à la suite d’un incendie ou d’une explosion.


³ IAEA-TECDOC-1344 : Categorization of radioactive sources, Revision of IAEA-TECDOC-119.
II. **Point de situation 2005 du dénombrement**

II.1. Les utilisateurs de sources dans le monde

Le dénombrement des utilisateurs de sources ayant reçu une ou plusieurs autorisations concernait 26 pays lors de sa présentation au Congrès du Cap de mars 2003.

La nouvelle enquête diligentée depuis septembre 2004 nous a permis d’y ajouter le MAROC, grâce aux réponses à l’ensemble des questions posées dans le questionnaire général.

- Le MAROC compte en 2004 140 utilisateurs, tous secteurs confondus. La fabrication des radioisotopes est prévue fin 2005, avec la réalisation du réacteur Triga mark II au Centre d’études nucléaires de la Maamora.

De plus, les données de certains pays ont pu être mises à jour :

- La ROUMANIE compte en 2004 171 utilisateurs dans l’industrie, 12 dans la recherche et 45 dans le secteur médical. Les principaux établissements et centres de production sont : l’Institut de Physique et Ingénierie Nucléaire « Horia Hulubei » et le Centre de Production de Radioisotopes ;

- La SUEDE dispose d’un seul établissement de fabrication : Studsvik AB. Il n’y a pas d’évaluation disponible quant au nombre d’utilisateurs par secteur ;


Certains pays n’ont pas encore retourné le questionnaire général. Par ailleurs, il nous apparaît que pour les pays ayant répondu il y a déjà plusieurs années de cela, une actualisation des données serait des plus attendues.

Avec toutes ces approximations et réserves précédentes, on peut avancer que le nombre des utilisateurs autorisés dans le monde est de l’ordre de **63 000**.
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Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
II.2. Les organismes délivrant des autorisations

Dans la 2\ème partie du Rapport présenté au Cap, les organismes officiels délivrant les autorisations d’utilisation avaient été cités pour 21 pays.

Seul le MAROC a pu s’y ajouter en précisant que son organisme officiel est le Centre National de Radioprotection, dépendant du Ministère de la Santé.

Par ailleurs, certaines données ont pu être mises à jour :

- En FRANCE, il est intéressant de noter que les dispositions réglementaires relatives aux applications médicales des rayonnements ionisants prévoient que le Code de Santé Publique fixe les dispositions en matière d’autorisation ou de déclaration relatives aux activités nucléaires dans les domaines de la médecine, l’art dentaire, la biologie humaine et la recherche médicale, y compris la fabrication et la distribution de radionucléides ou appareils en contenant destinés à des fins médicales. Ainsi, outre la DGSNR qui autorise l’utilisation des générateurs électriques de rayonnements ionisants (accélérateurs de particules, etc…) et les sources radioactives (curiethérapie, télé gammathérapie, etc..), c’est l’AFSSAPS (Agence Française de Sécurité Sanitaire des Produits de Santé) qui autorise la fabrication, la détention, la distribution, l’importation, l’exportation de radionucléides et essais sur dispositifs émetteurs de RI (radiopharmaceutiques, dispositifs médicaux (sources et appareils)).

- Au MAROC, seul le Centre National de Radioprotection, dépendant du Ministère de a Santé, délivre les autorisations.

- En SUEDE, les fabricants et fournisseurs tiennent leurs autorisations du Swedish Radiation Protection Authority.

- En ROUMANIE, seule la Commission Nationale de Contrôle des Activités (CNCA) délivre les autorisations pour les utilisateurs et fournisseurs.
<table>
<thead>
<tr>
<th>Pays</th>
<th>Organismes délivrant les autorisations</th>
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<tbody>
<tr>
<td>Albanie</td>
<td>NRPC: National Radiation Protection Commission</td>
</tr>
<tr>
<td>Allemagne</td>
<td>KACST: King Abdul Aziz City for Science Technology</td>
</tr>
<tr>
<td>Arabie Saoudite</td>
<td>ARN: Autoridad Regulatoria Nuclear</td>
</tr>
<tr>
<td>Argentine</td>
<td>AECB: Atomic Energy Control Board</td>
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<tr>
<td>Arménie</td>
<td>CNNC et Ministère de la Santé</td>
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<tr>
<td>Brésil</td>
<td>NCNSRC: National Center Nuclear Safety Radiation</td>
</tr>
<tr>
<td>Canada</td>
<td>Consejo de Seguridad Nuclear et Ministère de l'Industrie</td>
</tr>
<tr>
<td>Chine</td>
<td>STUK: Radiation Safety Authority</td>
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<tr>
<td>Egypte</td>
<td>DGSNR: Direction Générale de la Sûreté Nucléaire et de la Radioprotection</td>
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<td>Espagne</td>
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</tr>
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<td>France</td>
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<td>Hongrie</td>
<td>Centre National de Radioprotection (Ministère de la Santé)</td>
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<tr>
<td>Inde</td>
<td>CNCAN: National Commission for Nuclear Activities Control</td>
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<td>Israël</td>
<td>SSI: Swedish Radiation Protection</td>
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II.3. Les responsabilités engagées dans la gestion de sources

II.3.1 Actualisation des données des pays

Le point de situation réalisé dans la 4\textsuperscript{ème} partie du Rapport présenté au Cap faisait ressortir les fondements de la responsabilité civile des producteurs et utilisateurs de sources en vigueur dans 20 pays de toutes tailles, en précisant, le cas échéant, si ces fondements ressortent purement et simplement du droit commun ou si une loi spécifique à l’emploi des sources radioactives les a clairement exprimés.

Ce tableau n’a subi aujourd’hui aucune modification substantielle. Il suffit d’y ajouter avec le Maroc un 21\textsuperscript{ème} pays qui, selon le droit commun applicable dans ce pays, ne retient qu’une responsabilité pour faute prouvée ou une responsabilité présumée en tant que gardien de la source dangereuse.

Pour garantir les conséquences pécuniaires de la responsabilité civile des utilisateurs de sources, la 4\textsuperscript{ème} partie du rapport présenté au Cap signalait 7 pays (Allemagne, Espagne, France, Inde, Italie, Royaume-Uni et Suisse) où des assurances sont proposées aux utilisateurs sans limitation de sommes mais avec une restriction aux dommages révélés dans un certain délai (30 ans en Allemagne et en Suisse, 5 à 10 ans dans les autres pays) après la date de fait générateur (clause dite « claims made »). Parmi ces pays, il a été possible d’actualiser, pour les années 2003 et 2004, les informations précédemment données pour la France, le Maroc, la Roumanie et la Suède.
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<th>Pays</th>
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III. Conclusion

La tenue à jour du panorama du cadre juridique dans lequel sont utilisées les sources radioactives apparaît nécessaire si l’on veut à l’échelle de notre association, disposer d’une vue d’ensemble qui devra être la plus homogène possible à l’heure des partenariats industriels et scientifiques européens voire mondiaux.

Sans la connaissance de la sensibilité et de la perception d’un pays, quant aux procédures de prise en compte de l’utilisation des sources, on ne peut garantir un état de sûreté efficace au niveau mondial.

En effet, seul un recensement exhaustif des données permet de s’engager de manière plus pertinente vers l’élaboration et l’harmonisation des politiques, des lois et des règlements sur la sûreté et la sécurité des sources radioactives.
QUESTIONNAIRE

SUR LES RISQUES LIÉS À LA PRODUCTION ET AUX UTILISATIONS INDUSTRIELLES ET MEDICALES DE RADIOSOTOPES

Réponse de la Section nationale de……………………………………………………… (pays)

1. Réglementation applicable à la production et aux diverses utilisations de radioisotopes artificiels

1.1 Fabrique t-on des radioisotopes dans votre pays ?………………………………….OUI / NON

Si "oui", le ou les producteurs sont-ils :

• Des établissements publics jouissant d’un monopole……………………………
• Des établissements privés…………………………………………………………

Indiquer les noms des principaux établissements et centres de production…………………………

Si "oui", la fabrication est-elle soumise à des règles officielles d’autorisation ?…………………………OUI/ NON

Utilise t-on des radioisotopes dans votre pays ?

• À usage médical (diagnostic ou thérapie)……………………………………OUI / NON
• À usage industriel (traceurs, gammagraphie)………………………………OUI / NON
• À usage agronomique………………………………………………………….OUI / NON

Distinguer le nombre approximatif le plus récent d’utilisateurs dans l’industrie, en agronomie, en médecine de diagnostic et de traitement : ……………………………

Règles applicables à la responsabilité civile des utilisateurs

On écartera des réponses à ce questionnaire les règles applicables à des accidents survenant à l’intérieur d’une installation nucléaire au sens de l’article 1er de la Convention de Paris du 29 Juillet 1960 ou de la Convention de Vienne du 1er mai 1963.

Dans les interrogations suivantes, cochez la case si votre réponse est "oui".
## Utilisateurs industriels ou agronomiques

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<td>☐ ☐ Consentement éclairé ☐ ☐</td>
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<tr>
<td>Faute d’un tiers</td>
<td>☐ ☐ Risque accepté ☐ ☐</td>
</tr>
<tr>
<td></td>
<td>☐ ☐ État antérieur du patient ☐ ☐</td>
</tr>
</tbody>
</table>

La relation producteur - utilisateur

L’appel en garantie du producteur de radioisotope (ou fabricant de son conditionnement) par l’utilisateur industriel ou médical directement actionné par la victime est-il envisageable ? ...............................................................OUI / NON

Veuillez citer les cas de jurisprudence que vous pourriez connaître.

Exemples d’abandons, de pertes ou de trafic illicite de sources survenus dans votre pays ?

Date et lieu :

Conséquences juridiques pour le détenteur dépossédé :

Conditions d’acceptation des risques encourus par les utilisateurs

Obligation de se conformer aux autorisations délivrées par des autorités officielles :

- pour les sources scellées.................................................................☐
- pour les sources non scellées............................................................☐

Nommer ces autorités ...........................................................................

Assurances de responsabilité civile des utilisateurs de radioisotopes

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
De telles assurances sont-elles délivrées dans votre pays  

OUI / NON

Si "oui", le sont-elles :

- Selon des formulations variées ? ..............................................................
- Selon un contrat d’assurance commun à tout le marché :
  - pour les utilisateurs industriels ............................................................
  - pour les utilisateurs médicaux ............................................................
  - pour les producteurs ...........................................................................

S’il existe un ou plusieurs contrats types, depuis quand sont-ils en usage sur votre marché ?

Conditions d’acceptation des risques encourus par les utilisateurs

Obligation de se conformer aux autorisations délivrées par des autorités officielles :

- pour les sources scellées ...........................................................................
- pour les sources non scellées ..................................................................
  Nommer ces autorités ............................................................................

Pour les utilisations médicales en diagnostic et en thérapie, agrément par des autorités officielles des appareils destinés à contenir les radioéléments ........
  Nommer ces autorités ............................................................................

Pour les utilisations médicales, qualification requise des praticiens et de leurs assistantes .................................................................

Étendue de la garantie dans le temps

Pour les utilisations industrielles, délai maximum de recevabilité des actions dirigées contre l’assureur : … ans

Pour les dommages résultant de diagnostics ou de traitements thérapeutiques par radioisotopes, délai maximum de recevabilité des actions dirigées contre l’assureur : … ans à compter de l’acte médical.

Étendue de la garantie en montant

Assurances des utilisateurs industriels : ………………… en monnaie nationale
Assurances des utilisateurs médicaux : ………………… en monnaie nationale

Couverture particulière de la responsabilité civile du détenteur de radioisotopes en cas de perte ou de vol

Le droit commun, ou éventuellement une loi spécifique maintient-il, dans votre pays, la responsabilité après la perte ou le vol de sources radioactives en stock ? .................................................................OUI / NON

Une couverture d’assurance, appliquée spécialement à cette responsabilité est-elle délivrée dans votre pays ? .................................................................OUI / NON

  - Étendue de la garantie dans le temps : … mois ou années à compter de la perte ou du vol.
  - Étendue de la garantie en montant : ………………… en monnaie nationale
**QUESTIONNAIRE**

**ON HASARDS LINKED TO THE PRODUCTION AND USE OF RADIOISOTOPES IN THE INDUSTRIAL AND MEDICAL FIELDS**

Answer from the National Section of …………………………………………………(country)

2. Regulation applicable to the production and to the various use of artificial radioisotopes

1.2 Are radioisotopes produced in your country? ……………………………………YES / NO

   If "yes", are the producers:
   - State-owned establishments with monopoly……………………………………..□
   - Private establishments…………………………………………………………..□

   Name the main establishments and production facilities:
   ………………………………………………………………………………………………

   If "yes", is the production process subject to official authorizations……………YES / NO

1.3 Are radioisotopes used in your country?

   • For medical purpose (diagnosis or therapy)……………………………………YES / NO
   • For industrial purpose (tracers, gammagraphy)……………………………YES / NO
   • For agricultural purpose…………………………………………………………YES / NO

   If "yes", is the use of radioisotopes subject to official authorizations………..YES / NO

   Name the bodies issuing the authorizations according to the type of use:
   ……………………………………………………………………………………………

1.4 Approximate the most up to date number, of users in the industrial, agricultural and medical (diagnosis and therapy) fields:
……………………………………………………………..

2. Legal rules applicable to the liability of users

This questionnaire excludes the legal provisions applicable to an incident occurring in a nuclear installation within the meaning of the Paris Convention of 29th July, 1960 or of the Vienna Convention of 1st May, 1963.

In the following questionnaire, please mark the case if your answer is "yes".

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<th>Users in <strong>industrial</strong> or <strong>agricultural</strong> field</th>
<th>Users in <strong>diagnosis</strong> or <strong>therapy</strong> field</th>
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<tr>
<td>Ordinary Law</td>
<td>Specific Law (Mention it)</td>
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<td>Legal basis</td>
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Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
### Proved professional negligence fault

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<th>Alleged fault of the legal custodian</th>
<th>User out of delay</th>
<th>Objective Responsibility</th>
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<th>Time limit for bringing claims: ... years</th>
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### Relationship Producer/ User

Can the producer of radioisotopes or the manufacturer of packaging be summoned by the industrial or medical user in the direct action which opposes the user to the victim?…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………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4.2 Prerequisites to the insurability of the hazards users are exposed to?
4.2.1 Strict observance of authorizations issued by legal Authorities:
   • For sealed sources: .................................................................
   • For unsealed sources: ...........................................................

   Named such authorities: ...........................................................

4.2.2 Legal authorities agreement for appliances devoted to contain radioelements in medical utilization for diagnosis and therapy, .................................
   Named such authorities: ...........................................................

4.2.3 For medical use, professional qualifications required from the practitioners and from the medical staff ..............................................................

4.3 Scope of cover in time
4.3.1 For industrial use, time-limit for bringing claim against the insurer: ....... years.

4.3.2 For damage resulting from diagnosis or medical treatment, time-limit for bringing claim against the insurer: ...... years from the medical treatment.

4.4 Amount of cover usually provided
4.4.1 For individual users (domestic currency):............................................

4.4.2 For medical users (domestic currency):.............................................

4.5 Specific third party liability cover provided to the holder of radioisotopes in case of loss or theft

4.5.1 Does the Ordinary Law or, possibly a specific Law maintain the liability of the industrial or medical holder when radioactive sources in storage have been lost or stolen?.................................................................YES / NO

4.5.2 Is there a special insurance cover for this type of liability in your country?.................................................................YES / NO
   - Time limits for bringing claims:.......months or years, from the date of theft or loss Amount of cover usually

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Deuxième partie

Les responsabilités et la couverture assurantielle des détenteurs de sources radioactives

I  Les fondements de la responsabilité des détenteurs de sources radioactives

I.1 - La responsabilité civile

I.2 - La responsabilité administrative

I.3 - La responsabilité pénale

II  La couverture assurantielle de la responsabilité civile des détenteurs de sources.
I - Les fondements de la responsabilité des détenteurs de sources radioactives

Les responsabilités des détenteurs de sources découlent tout d’abord d’un certain nombre de conventions et instruments internationaux. Certains définissent les responsabilités des États, qui doivent instaurer des systèmes d’autorisation, des sanctions administratives ou pénales tandis que d’autres portent spécifiquement sur la responsabilité civile dans le domaine des activités nucléaires.

A - Au plan international, dans les domaines de la sûreté et de la sécurité, la responsabilité administrative et pénale pour l’utilisation des sources, repose principalement sur :

- la Convention de 1997 concernant les combustibles usés et les déchets radioactifs,
- le Code de conduite sur la sûreté et la sécurité des sources radioactives.

Au niveau de l’Union Européenne, c’est une directive de 2003 qui définit l’obligation pour les États membres d’établir le régime administratif de l’utilisation des sources radioactives ainsi que les responsabilités administratives et pénales des utilisateurs.

Enfin, ce sont les règles nationales qui précisent les responsabilités tant dans le domaine administratif que dans le domaine pénal.

B - Dans le domaine de la responsabilité civile applicable aux installations nucléaires, deux régimes très voisins trouvent leur fondement dans :

- la Convention de Paris modifiée du 29 juillet 1960 complétée par la Convention de Bruxelles modifiée du 31 janvier 1963 et qui couvre la plupart des pays d’Europe Occidentale,
- et la Convention de Vienne du 21 mai 1963 qui est de caractère mondial.

Ces conventions, en principe, n’incluent pas les sources radioactives dans leur champ d’application, mais nous verrons que dans certains cas, elles pourront cependant trouver à s’appliquer.

Comme pour la responsabilité administrative ou pénale, des règles de responsabilité civile, soit de droit commun, soit d’application ou complétant les dispositifs prévus par les conventions nationales, sont mises en œuvre par les législations et les réglementations nationales.
I.I - La responsabilité civile

Il convient d’abord de noter que la question de la responsabilité de l’indemnisation et, le cas échéant, de la garantie financière permettant d’assurer cette indemnisation est distincte de la question des coûts relatifs à la récupération des sources radioactives en fin de vie. Sur ce dernier point, la reprise des sources radioactives signifie que l’utilisateur les renvoie soit au fournisseur et/ou au fabricant, soit les dirige vers une installation de stockage ou d’évacuation de ces sources. Cette opération ayant un coût et si l’on veut éviter que l’opération ne soit bloquée ou compromise pour défaut de paiement, il peut être utile de disposer par avance d’une garantie financière à cet effet. C’est ce que prévoient déjà divers régimes nationaux et, comme cela a été noté précédemment, par la Directive européenne de 2004.

A - Le régime spécial de la responsabilité civile nucléaire et son application aux sources radioactives

La responsabilité civile nucléaire fait depuis les années 1960 l’objet d’un régime particulier qui est encadré par des conventions internationales :

- la convention de Paris modifiée du 29 juillet 1960 sur la responsabilité civile dans le domaine de l’énergie nucléaire, complétée par la Convention de Bruxelles modifiée du 31 janvier 1963 qui est applicable dans les pays de l’OCDE ;

- et la Convention de Vienne relative à la responsabilité civile en matière de dommages nucléaires du 21 mai 1963 qui est d’application mondiale.

Mais les dommages causés par les sources radioactives sont placées en dehors du champ d’application de ces conventions lorsque le dommage est causé par des sources se trouvant à l’extérieur du site d’une « installation nucléaire ».

En effet, l’article 1 a) iv) de la Convention de Paris exclu de son champ d’application les « radioisotopes parvenus au dernier stade de fabrication qui sont susceptibles d’être utilisés à des fins industrielles, commerciales, agricoles, médicales, scientifiques ou d’enseignement ».

De la même manière, l’article 1er 1 g) de la Convention de Vienne exclu « les radio-isotopes parvenus au dernier stade de fabrication et susceptibles d’être utilisés à des fins scientifiques, médicales, agricoles, commerciales ou industrielles ».

De ce fait, plusieurs solutions peuvent être mises en œuvre par les Etats :

- dans certains pays, comme la France, les sources qui se trouvent à l’intérieur d’une installation nucléaire couverte par le régime particulier de la responsabilité civile nucléaire relèvent de ce même régime particulier tandis que les autres sont soumises au droit commun de la responsabilité civile ;

- dans d’autres pays, le régime de la responsabilité dans le cadre de l’emploi des sources radioactives fait l’objet de lois spécifiques ;
- enfin dans certains autres pays c’est le régime de droit commun de la responsabilité civile qui est appliqué dans tous les cas.

Ces diverses solutions sont mises en évidence dans le tableau qui se trouve dans la première partie du rapport au point II.3 : les garanties engagées dans la gestion des sources.

**B - Le cas des sources situées à l’intérieur d’une installation nucléaire**

Lorsque les sources se trouvent à l’intérieur d’une installation nucléaire couverte par la Convention, soit qu’elles y soient utilisées, soit qu’elles y soient en cours de fabrication, la couverture du dommage peut se faire selon les règles prévues par le régime spécial de la responsabilité civile nucléaire des conventions mentionnées ci-dessus dont les principales caractéristiques sont les suivantes :

- canalisation de la responsabilité sur l’exploitant de l’installation pour les accidents nucléaires survenus dans cette installation, y compris en cours de transport ;

- responsabilité objective de l’exploitant, qu’une faute lui soit ou non imputable ;

- responsabilité limitée quant à son montant et à sa durée ;

- obligation de souscrire une assurance ou une garantie financière à concurrence du montant de sa responsabilité ;

- non discrimination des victimes qui sont indemnisables sans distinction de nationalité notamment ;

- unicité de juridiction.

**C - Règles applicables aux sources situées en dehors du champ d’application du régime des conventions internationales**

La responsabilité civile de l’utilisateur d’une source radioactive peut être mise en cause sur la base des règles relatives à la responsabilité civile délictuelle ou quasi-délictuelle, de la responsabilité contractuelle ou de la responsabilité du fait des produits.

1) **Droit commun de la responsabilité quasi-délictuelle**

Dans certains pays tels que la France, la Belgique ou l’Italie, ce sont les dispositions du code civil qui sont applicables en ce domaine, dès lors que les conventions de Paris ou de Vienne ne sont pas applicables.

La règle selon laquelle « tout fait quelconque de l’homme qui cause à autrui un dommage, oblige celui par la faute duquel il est arrivé à le réparer » est applicable. Ainsi, la responsabilité personnelle de l’utilisateur d’une source peut être engagée dès lors que le dommage provoqué par la source résulte d’une faute qui lui est imputable.
Ainsi, la responsabilité de l’utilisateur peut être également engagée sur la base de l’article 1384 du code civil relatif à la responsabilité civile du fait d’autrui ou du fait des choses.

Toujours en application du code civil, « on est responsable, non seulement du dommage que l’on cause par son propre fait, mais encore de celui qui est causé par le fait des personnes dont on doit répondre, ou des choses que l’on a sous sa garde ».

En conséquence, il est possible de mettre en œuvre la responsabilité civile du gardien de la source radioactive à l’origine d’un dommage. Le gardien est celui qui a le pouvoir d’usage, de direction et de contrôle de la source.

2) Responsabilité du fait des produits défectueux

Le code civil français définit dans ses articles 1386-1 et suivants la responsabilité du producteur et du fournisseur en cas de dommages causés par des produits défectueux, un produit étant considéré comme défectueux dès lors qu’il « n’offre pas la sécurité à laquelle on peut légitimement s’attendre. »

3) Responsabilité contractuelle

La responsabilité des fabricants, producteurs, utilisateurs ou vendeurs de sources peut être fondée sur :
- la garantie des vices cachés, le vice caché étant celui qui rend la chose impropre à l’usage auquel elle est destinée ;
- le manquement à l’obligation de sécurité, qui est établi en droit français dès lors que le vendeur professionnel livre des produits susceptibles de créer un danger pour les personnes ou les biens ;
- le défaut d’information ou de mise en garde sanctionne le vendeur d’un produit qui n’instruit pas l’acquéreur sur les dangers que ce produit peut présenter et les précautions d’emploi à observer.

Pour mettre en œuvre la responsabilité de l’utilisateur d’une source radioactive, la victime doit, la plupart du temps, lorsque le régime spécial de la responsabilité civile nucléaire des conventions n’est pas applicable, prouver la faute de cet utilisateur, la réalité du préjudice qu’il a subi ainsi que le lien de causalité entre le fait dommageable et le préjudice.

En tout état de cause, contrairement à la victime qui peut bénéficier du régime des conventions (responsabilité objective et exclusive de l’exploitant et garantie financière obligatoire), la victime qui ne peut en bénéficier doit fonder sa demande d’indemnisation sur des règles très diverses (droit du travail, erreur médicale, responsabilité du fait des produits…).

En outre, en l’absence de règles internationales uniformes, l’indemnisation sera différente pour un dommage identique selon le droit national de la victime.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
I.2 - La responsabilité administrative :

En France, la fabrication, l'utilisation et la détention de sources radioactives sont encadrées par des dispositions spécifiques du code de la santé publique (Livre III - Protection de la santé et environnement, Titre III - Prévention des risques sanitaires liés aux milieux et sécurité sanitaire environnementale, Chapitre III - Rayonnements ionisants).

Le code fixe en particulier un régime d’autorisation ou de déclaration dont le non-respect donne lieu à des sanctions administratives après que les infractions aient été constatées par des agents spécialement habilités. Dans le présent rapport, nous présenterons exclusivement le régime de l’autorisation.

Il est à noter également que la détention et l’utilisation de sources radioactives font l’objet de règles de gestion.

A - Le régime d’autorisation

L’article L. 1333-4 du code de la santé publique dispose que « Les activités mentionnées à l'article L. 1333-14 sont soumises à un régime d’Autorisation ou de déclaration selon les caractéristiques et les utilisations des sources considérées ». Le régime d’autorisation s’applique sans distinction aux entreprises ou établissements qui détiennent sur place des radionucléides, mais aussi à ceux qui en font le commerce sans les détenu directement.

Le code de la santé publique distingue deux grands domaines pour les activités nucléaires :

- celles destinées à des fins médicales (médecine, art dentaire, biologie humaine, recherche biomédicale),
- celles destinées à des fins industrielles et de recherche.

Dans le tableau ci-après sont synthétisées les différentes utilisations de sources radioactives, soumises à autorisation, dans le cadre d’activités nucléaires intéressant la médecine.

<table>
<thead>
<tr>
<th>Nature de l’activité</th>
<th>Procédure</th>
<th>Autorité compétente</th>
</tr>
</thead>
<tbody>
<tr>
<td>Détention / utilisation de sources radioactives (et de dispositifs en contenant) : médecine nucléaire, recherche biomédicale</td>
<td>Autorisation Article R. 1333-24 du code de la santé publique</td>
<td>Direction Générale de la Sûreté et de la Radioprotection (DGSNR)</td>
</tr>
<tr>
<td>Fabrication, détention, distribution, importation, exportation de radionucléides et essais sur dispositifs médicaux émetteurs de rayonnements ionisants</td>
<td>Autorisation R. 1333-17 du code de la santé publique</td>
<td>Agence Française de Sécurité Sanitaire des Produits de Santé (AFSSAPS)</td>
</tr>
</tbody>
</table>

4 Article L. 1333-1 : il s’agit des activités comportant un risque d’exposition des personnes aux rayonnements ionisants émanant soit d’une source artificielle, qu’il s’agisse de substances ou de dispositifs, soit d’une source naturelle lorsque les radionucléides naturels sont traités ou l’ont été en raison de leurs propriétés radioactives, fissiles ou fertiles.
Dans le tableau ci-après sont synthétisés quelques exemples d’utilisations de sources radioactives, soumises à autorisation, dans le domaine industriel et de recherche.

<table>
<thead>
<tr>
<th>Nature de l’activité</th>
<th>Procédure</th>
<th>Autorité compétente</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabrication de sources radioactives ou d’appareils en contentant</td>
<td>Autorisation Article R. 1333-26 du code de la santé publique</td>
<td>Direction Générale de la Sûreté et de la Radioprotection (DGSNR)</td>
</tr>
<tr>
<td>Fabrications de produits ou de dispositifs contenant des sources radioactives (*)</td>
<td>Autorisation R. 1333-26 du code de la santé publique</td>
<td>Direction Générale de la Sûreté et de la Radioprotection (DGSNR)</td>
</tr>
<tr>
<td>Utilisation de sources radioactives (*)</td>
<td>Autorisation Article R. 1333-26 du code de la santé publique</td>
<td>Direction Générale de la Sûreté et de la Radioprotection (DGSNR)</td>
</tr>
<tr>
<td>Irradiation de produits, y compris les produits alimentaires</td>
<td>Autorisation Article R. 1333-26 du code de la santé publique</td>
<td>Direction Générale de la Sûreté et de la Radioprotection (DGSNR)</td>
</tr>
<tr>
<td>Import ou export de sources radioactives ou d’appareils en contenant</td>
<td>Autorisation Article R. 1333-26 du code de la santé publique</td>
<td>Direction Générale de la Sûreté et de la Radioprotection (DGSNR)</td>
</tr>
<tr>
<td>Distribution de sources radioactives ou d’appareils en contenant (*)</td>
<td>Autorisation Article R. 1333-26 du code de la santé publique</td>
<td>Direction Générale de la Sûreté et de la Radioprotection (DGSNR)</td>
</tr>
</tbody>
</table>

(*) Ces activités sont dispensées d’autorisation en raison du peu de risque qu’elles entraînent, sous réserve de respecter les critères d’exemption fixés à l’article R. 1333-27 du code de la santé publique.\(^5\)

Il est à noter toutefois que les autorisations concernant les industries relevant du code minier, les installations nucléaires de base et les installations classées pour la protection de l’environnement tiennent lieu d’autorisation au titre de la radioprotection.

Nous présenterons ci-après l’instruction d’un dossier de demande d’autorisation de sources radioactives utilisées à des fins industrielles et de recherche.

Le dossier de demande d’autorisation comprend un dossier justificatif ainsi qu’un formulaire délivré par la Direction Générale de la Sûreté Nucléaire et de la Radioprotection (DGSNR).

**A 1 - Le dossier justificatif :**

\(^5\) Les critères d’exemption aux procédures d’autorisation s’appliquent :

- Pour les radionucléides, si les quantités totales mises en jeu ou leur concentration par unité de masse sont inférieures aux seuils fixés en annexe du décret n° 2002-460 du 2 avril 2002 (pour autant que les masses de substances mises en jeu ne dépassent pas une tonne),
- Pour les générateurs électriques de rayonnements ionisants, s’ils sont d’un type certifié conforme aux normes et ne créent, en fonctionnement normal, en aucun point situé à une distance de 0,1 m de leur surface accessible, un débit de dose équivalente supérieur à 1 µSv/h, ou s’il s’agit d’appareils fonctionnant sous une différence de potentiel inférieure ou égale à 30 kV sous les mêmes conditions de limite de débit de dose équivalente.
La première demande d'autorisation ne peut être examinée que si elle est accompagnée d'un dossier justificatif qui contient :

- les informations générales sur l'établissement et le plan des locaux, sur le demandeur et sur les qualifications en matière de radioprotection des personnels chargés de manipuler les sources radioactives, ainsi que sur la personne compétente en radioprotection désignée en application du code du travail,
- les informations détaillées sur les caractéristiques des sources radioactives ou produits qui en contiennent, sur les équipements techniques des installations où sont détenus les radionucléides, les résultats des essais effectués pour évaluer leurs performances et la sécurité, et les informations sur les mesures retenues pour effectuer leur contrôle et assurer la protection du personnel, de la population et de l'environnement contre les effets de ces rayonnements,
- les informations complémentaires, le cas échéant, sur le fabricant, les fournisseurs et sur les modalités prévues pour la reprise des sources et les garanties financières qui y sont associées, lorsque les établissements détiennent des sources radioactives scellées, des produits ou dispositifs en contenant.

A.2 - Le formulaire :

Il contient les informations suivantes :
- désignation du responsable direct de l’activité envisagée,
- identification de l’entreprise ou de l’organisme (raison sociale, assurance qualité,…),
- lieux de fabrication, de détention et/ou d’utilisation des sources radioactives,
- justification de l'utilisation de sources radioactives ou de dispositifs en contenant,
- informations relatives à la personne compétente en radioprotection,
- radioprotection des personnes amenées à manipuler les sources radioactives.

Le dossier de demande d’autorisation doit être signé par la personne directement responsable de l’activité envisagée ainsi que par le chef d’établissement. La personne compétente en radioprotection est tenue de viser le formulaire afin de confirmer qu’elle a connaissance de la demande d’autorisation.

Le dossier de demande d’autorisation est adressé à la DGSNR pour instruction. L'administration qui délivre l'autorisation notifie sa décision dans un délai maximum de six mois à compter de la date à laquelle le dossier est réputé complet. L'absence de réponse dans ce délai vaut rejet de la demande. Elle peut requérir du demandeur toutes informations complémentaires nécessaires à l'instruction de la demande. Le délai prévu au présent article est alors suspendu jusqu'à réception de ces informations. L'autorisation n'est accordée qu'après réception des informations nouvelles.

La durée maximale de validité de l’autorisation est fixée à 5 ans renouvelable. L’autorisation délivrée au responsable d’une installation est personnelle et non transférable. Toute modification de l’autorisation portant soit sur son bénéficiaire, soit sur l’application ou ses conditions de fonctionnement, doit faire l’objet d’une
nouvelle instruction, en application de l’article R. 1333-36 du code de la santé publique. Le titulaire d’une autorisation doit mettre en œuvre les mesures de protection, d’information et de formation à la radioprotection des personnes susceptibles d’être exposées aux rayonnements ionisants.

A 3- Les règles de gestion des sources radioactives

Ces règles sont édictées par les articles R. 1333-45 et suivants du code de la santé publique :

- il est interdit de céder ou d’acquérir des sources à toute personne ne bénéficiant pas d’une autorisation,
- un enregistrement préalable est obligatoire auprès de l’Institut de radioprotection et de sûreté nucléaire (IRSN) pour l’acquisition, la distribution, l’importation et l’exportation des radionucléides sous forme de sources scellées ou non scellées, de produits ou dispositifs en contenant, cet enregistrement préalable étant nécessaire pour organiser le suivi des sources et le contrôle par les services douaniers,
- une traçabilité des radionucléides sous forme de sources scellées ou non, de produits ou dispositifs en contenant, est requise dans chaque établissement, et un relevé trimestriel des livraisons doit être adressé à l’IRSN par les fournisseurs,
- la perte ou le vol de sources radioactives est soumis à déclaration obligatoire,
- tout utilisateur de sources scellées est tenu de faire reprendre à ses frais les sources périmées, détériorées ou en fin d’utilisation (sauf dérogation pour une décroissance sur place),
- le fournisseur est dans l’obligation de récupérer sans condition et sur simple demande de l’utilisateur toute source dont celui-ci n’a plus l’usage ou périmée.

A 4 - Le contrôle administratif

Pour les activités nucléaires soumises à autorisation, outre les contrôles prévus en application du code du travail et, le cas échéant, les contrôles réalisés en application de l'article L. 5212-1 et de la réglementation relative aux installations classées pour la protection de l'environnement, le chef d'établissement ou le chef d'entreprise est tenu de faire contrôler, par un organisme agréé par les ministres chargés de la santé et du travail, l'efficacité de l'organisation et des dispositifs techniques qu'il a mis en place en application de l'article R. 1333-7 notamment pour gérer les sources radioactives, scellées et non scellées, et pour trier, stocker et éliminer les éventuels déchets produits.

Ces contrôles ne font pas obstacle à ceux conduits directement par la DGSNR dans le cadre de ses activités d’inspection lors du renouvellement ou de la modification d’autorisation, en cas d’incident, de perte ou de vol de sources.

Le décret n° 2002-255 du 22 février 2002 indique que la DGSNR est chargée, sans préjudice des inspections prévues par le code du travail et le code de l’environnement, d’organiser les inspections en matière de radioprotection et d’animer l’ensemble des inspections qui concourent au contrôle de la
radioprotection dans les domaines industriel, médical et de la recherche, y compris par le suivi des sources de rayonnements ionisants utilisées dans ces domaines.

Le champ du contrôle de la radioprotection par la DGSNR s'étend donc à l'utilisation des rayonnements ionisants dans toute activité nucléaire telle que définie à l’article L.1333-1 du code de la santé publique. Cette mission s'exerce conjointement avec d'autres organismes d'inspection tels que l'inspection du travail, l'inspection des installations classées pour la protection de l'environnement et l'inspection de l'Agence française de sécurité sanitaire des produits de santé (AFSSAPS).

Afin de mettre en œuvre la politique en matière de radioprotection, la loi n° 2004-806 du 9 août 2004 relative à la politique de santé publique a introduit dans le code de la santé publique (article L.1333-17 à L.1333-19, L.1336-1-1.) de nouvelles dispositions créant les inspecteurs de la radioprotection.

Ainsi que le précise l’article L.1333-17 du code de la santé publique, les inspecteurs de la radioprotection ont vocation à contrôler simultanément, pour une même activité nucléaire, l’application des dispositions du code de la santé publique et du code du travail concernant la radioprotection.

Les inspecteurs de la radioprotection sont dotés des pouvoirs de police définis dans le nouvel article L.1336-1-1 du code de la santé publique.

**B - Les sanctions administratives**

L’article L. 1333-5 du code de la santé publique prévoit que «la violation constatée, du fait du titulaire d'une autorisation prévue par l'article L. 1333-4 ou d'un de ses préposés, des dispositions du présent chapitre ainsi que des dispositions réglementaires prises pour leur application ou des prescriptions fixées par l'autorisation peut entraîner le retrait temporaire ou définitif de l'autorisation.

Le retrait est prononcé par décision motivée et après l'expiration d'un délai d'un mois suivant la notification d'une mise en demeure à l'intéressé précisant les griefs formulés à son encontre.

En cas d'urgence tenant à la sécurité des personnes, la suspension d'une activité autorisée ou ayant fait l'objet d'une déclaration en application de l'article L. 1333-4 peut être ordonnée à titre conservatoire ».

L’article R. 1333-40 du code de la santé publique précise que la suspension de l'activité prévue à l'article L. 1333-5 est prononcée par l'autorité qui a délivré l'autorisation.

En dehors des suspensions d'activités autorisées qui peuvent être ordonnées en situation d'urgence mettant en cause la sécurité des personnes, conformément à l’article L. 1333-5 du code de la santé publique, les cas de non-conformité des installations notifiés par les services de l'État chargés du contrôle donnent lieu, de la part du titulaire de l’autorisation, à un engagement écrit précisant la nature des
actions correctives et leur échéance de mise en œuvre. En cas de non-exécution, l’autorité peut adresser une mise en demeure au titulaire de l’autorisation puis prononcer le retrait de l’autorisation dans les conditions fixées à l’article L. 1333-5 précité.

Tout changement de titulaire de l'autorisation, tout changement d'affectation des locaux destinés à recevoir des radionucléides ou des dispositifs émetteurs de rayonnements ionisants, toute extension du domaine couvert par l'autorisation initiale, toute modification des caractéristiques d'une source radioactive utilisée ou distribuée, doivent faire l'objet d'une nouvelle demande d'autorisation auprès de l'autorité. L'absence de dépôt d'une nouvelle demande d'autorisation expose sans délai le titulaire de l'autorisation initiale au retrait immédiat de cette autorisation, sans préjudice des poursuites éventuelles prévues par l'article L. 1336-5. L'autorisation peut être suspendue ou retirée par l'autorité qui a délivré l'autorisation, selon les modalités définies à l'article L. 1333-5, lorsque l'usage qui en est fait par son titulaire ne respecte pas les dispositions du présent code et les prescriptions qui lui ont été notifiées. La suspension ne peut excéder quatre-vingt-dix jours ; si la suspension n'a pas été levée dans ce délai, l'autorisation devient caduque. Dans ce cas, les sources et les déchets actuels ou futurs doivent être éliminés selon les conditions fixées par l'autorité qui a délivré l'autorisation.

L’autorisation peut être suspendue ou retirée par l'autorité qui a délivré l'autorisation, selon les modalités définies à l'article L. 1333-5, lorsque l'usage qui en est fait par son titulaire ne respecte pas les dispositions du présent code et les prescriptions qui lui ont été notifiées. La suspension ne peut excéder quatre-vingt-dix jours ; si la suspension n’a pas été levée dans ce délai, l’autorisation devient caduque. Dans ce cas, les sources et les déchets actuels ou futurs doivent être éliminés selon les conditions fixées par l’autorité qui a délivré l’autorisation.

L’article R1333-43 dispose que tout refus de soumettre l'installation au contrôle des services d’inspection entraîne le retrait de l'autorisation.

I.3 - La responsabilité pénale

Outre les sanctions administratives que l’administration peut imposer au titulaire d’une autorisation, le code de la santé publique prévoit plusieurs infractions pénales.

1 Le contrôle des infractions

L’article L. 1336-1-1 du code de la santé publique indique que « sans préjudice des pouvoirs reconnus aux officiers ou agents de police judiciaire, aux agents chargés de l'inspection du travail et à ceux chargés de la police des mines, les infractions sont recherchées et constatées par les inspecteurs de la radioprotection, habilités et assermentés dans les conditions fixées par décret en Conseil d'Etat ». Ils disposent à cet effet du droit d'accéder à tous les lieux et toutes les installations à usage professionnel, ainsi qu'à tous les moyens de transport, à l'exclusion des domiciles. Ils ne peuvent y pénétrer qu'entre huit heures et vingt heures, ou en dehors de ces heures lorsque l'accès au public est autorisé ou qu'une activité est en cours.

Ils peuvent également, aux mêmes fins, se faire communiquer tous les documents nécessaires, y compris ceux comprenant des données médicales individuelles lorsque l'agent a la qualité de médecin, et en prendre copie, accéder aux données informatiques et les copier sur tout support approprié, recueillir, sur place ou sur convocation, tout renseignement ou toute justification nécessaire, prélever des
échantillons qui seront analysés par un organisme choisi sur une liste établie par arrêté du ministre chargé de l'environnement, du travail, de l'agriculture ou de la santé et saisir tous objets, produits ou documents utiles sur autorisation judiciaire et selon les règles prévues à l'article L. 5411-3.

Leurs procès-verbaux font foi jusqu'à preuve du contraire. Ils sont transmis dans les cinq jours de leur clôture au procureur de la République et une copie est en outre adressée au représentant de l'Etat dans le département duquel une infraction à l'article L. 231-7-1 du code du travail ou prévue aux 2°, 7° ou 10° de l'article 141 du code minier est constatée.

Le Procureur de la République est avisé sans délai de toute infraction constatée à l'occasion des missions de contrôle des inspecteurs de la radioprotection.

2 Infractions et peines

L'article L. 1336-5 du code de la santé publique indique qu’« Est puni d'un an d'emprisonnement et d'une amende de 15000 euros le fait :

- D'exercer une activité ou d'utiliser un procédé, un dispositif ou une substance interdits en application de l'article L. 1333-2 ;

- D'exposer des personnes au-delà des valeurs limites fixées par les décrets pris pour l'application du 3° de l'article L. 1333-1 ;

- D'entreprendre ou d'exercer une activité mentionnée à l'article L. 1333-1 sans être titulaire de l'autorisation ou sans avoir effectué la déclaration prévue à l'article L. 1333-4 ;

- De ne pas assurer, en violation de l'article L. 1333-7, la reprise des sources radioactives scellées destinées à des activités soumises à déclaration ou autorisation préalable, ou de ne pas constituer la garantie financière prévue audit article ».

L'article L. 1336-6 du code de la santé publique prévoit qu’« Est puni de six mois d'emprisonnement et d'une amende de 7500 euros le fait :

- De ne pas se conformer, dans le délai imparti par une mise en demeure notifiée par l'autorité qui a délivré l'autorisation ou enregistré la déclaration, aux prescriptions prises pour l'application du chapitre III du présent titre relatives à l'exercice d'une pratique ou à l'usage d'une substance ou d'un dispositif réglementés en application de l'article L.1333-2 ;

- De ne pas mettre en œuvre, dans le délai imparti par une mise en demeure notifiée par l'autorité qui a délivré l'autorisation ou enregistré la déclaration, les mesures de surveillance de l'exposition, de protection et d'information des personnes prévues par l'article L. 1333-8 ;

- De ne pas communiquer les informations nécessaires à la mise à jour du fichier national des sources radioactives mentionné à l'article L. 1333-9 ;
- De ne pas se conformer, dans les délais impartis par une mise en demeure notifiée par l'autorité ayant délivré l'autorisation ;

- De faire obstacle aux fonctions des inspecteurs de la radioprotection ».

II La couverture assurantielle des responsabilités des détenteurs de sources.

Les risques résultant de la fabrication, l’utilisation ou la détention de radio-isotopes sont traités différemment selon que les sources sont situées dans une Installation Nucléaire de Base (INB) et concourant au fonctionnement de cette installation (1) ou bien qu’elles sont utilisées à des fins industrielles, commerciales, agricoles, médicales, scientifiques ou d’enseignement et parvenus à leur dernier stade de fabrication (2).

1. Les sources détenues dans les Installations Nucléaires de Base et servant au fonctionnement de l’Installation :

Les dommages causés par des sources radioactives détenues dans les Installations Nucléaires et contribuant à leur fonctionnement sont régis par les Conventions Internationales de Paris\(^6\) et de Vienne\(^7\). Ces conventions internationales canalisent la responsabilité civile sur l’exploitant nucléaire et obligent en conséquence l’exploitant à souscrire une garantie financière pour couvrir cette responsabilité.

Cependant, les contrats d’assurance et de réassurance du monde entier contiennent une clause classique « excluant de la garantie les dommages ou l’aggravation des dommages causés soit par des armes ou engins destinés à exploser par modification de la structure du noyau de l’atome soit par tout combustible nucléaire, produit ou déchet radioactif, ou par toute autre source de rayonnements ionisants et qui engagent la responsabilité exclusive d’exploitant d’installation nucléaire, ou trouvent leur origine dans la fourniture de biens ou de services concernant une installation nucléaire à l’étranger, ou frappent directement une installation nucléaire ».

En conséquence le marché mondial de l’assurance s’est organisé en pools de co-réassurance pour couvrir les risques nucléaires. Les pools constituent un édifice à deux niveaux :
- le niveau national : le pool réunit les différents assureurs d’un même pays dans le but de cumuler leur capacité respective pour la souscription du risque nucléaire,
- et le niveau international qui permet une collaboration des pools entre eux par la co-réassurance de ces risques.

Des contrats d’assurance pour couvrir la responsabilité des détenteurs de sources ont donc été mis en place et font l’objet d’une réassurance par le pool français de co-réassurance des risques nucléaires : Assuratome.

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\(^6\) Convention du 29 juillet 1960 sur la responsabilité civile dans le domaine de l’énergie nucléaire.

\(^7\) Convention de Vienne du 21 mai 1963 relative à la responsabilité civile en matière de dommage nucléaire.
Ces risques sont couverts au travers de deux contrats souscrits par les exploitants nucléaires :

- le premier contrat est le contrat « Responsabilité Civile Exploitant Nucléaire » qui couvre dans la limite de la garantie obligatoire de la Convention de Paris (91.469.410 EUR par accident nucléaire et 182.938.820 EUR par site et par période de trois ans) les conséquences pécuniaires de la responsabilité civile non contractuelle à raison des dommages corporels, matériels et immatériels :
  - causés par un accident nucléaire, ou
  - provenant de rayonnements ionisants émis par une source quelconque de rayonnement se trouvant dans la ou les installations garanties par le présent contrat ;

- le deuxième contrat est le contrat « Responsabilité Civile Transports Nucléaires » quand la source radioactive transportée est une substance nucléaire au sens de l’article 1 de la Convention de Paris. Cette police RC Transports Nucléaires couvre les conséquences pécuniaires de la responsabilité civile non contractuelle à raison des dommages corporels, matériels et immatériels en cas d’accident nucléaire survenant :
  - au cours ou à l’occasion des transports compris dans l’assurance et notamment le transport de sources radioactives par un exploitant nucléaire,
  - après que les substances nucléaires ou autres matières radioactives aient été, au cours des transports, volées, perdues, jetées par dessus bord ou abandonnées.

2. Les sources radioactives utilisées à des fins industrielles, commerciales, agricoles, médicales, scientifiques ou d’enseignement parvenus à leur dernier stade de fabrication et détenues hors des INB :

Les risques résultant de radio-isotopes utilisées à des fins industrielles, commerciales, agricoles, médicales, scientifiques ou d’enseignement parvenus à leur dernier stade de fabrication et situés hors INB sont régis par le droit commun car ils n’ont pas de caractère exceptionnel nécessitant un régime dérogatoire. L’exposé des motifs de la Convention de Paris de 1960 précise que « malgré l’extension rapide de l’usage des radio-isotopes dans de nombreux domaines, qui obligera à des précautions sérieuses et continues pour la protection de la santé, il n’y a guère de possibilité de catastrophes ; aucun problème particulier de responsabilité civile ne se pose donc et le régime de droit commun peut être maintenu ».

C’est pourquoi l’assurance liée à ces risques est facultative, laissant à chaque établissement industriel ou médical la liberté de choisir son assureur et de fixer avec lui les montants de garantie souhaités. L’ensemble de ce marché classique de l’assurance a exclu de la garantie Responsabilité Civile tous les dommages qui proviennent ou résultent des propriétés radioactives, ou à la fois des propriétés radioactives et des propriétés toxiques,

8 Sont exclus du champ d’application de la Convention de Paris les radio-isotopes qui se trouvent en dehors d’une INB lorsqu’ils sont parvenus au dernier stade de fabrication et sont susceptibles d’être utilisés à des fins industrielles, commerciales, agricoles, médicales, scientifiques ou d’enseignement.
explosives ou autres propriétés dangereuses des combustibles nucléaires ou substances radioactives quelconques ou rayonnements ionisants émis par une source quelconque de rayonnements.

Seul un rachat partiel dans certains contrats RC existe pour les dommages causés par :
- les sources anciennement classées S1, S2, L1, L2 par l’ex CIREA ; faut ici souligner que cette classification établie par la Commission Interministérielle des Radioéléments Artificiels (CIREA) en son temps n’est plus valable aujourd’hui. Cependant les contrats d’assurance continuent à y faire référence en l’absence de nouvelle norme de référence.
- les sources situées à l’étranger et qui auraient pu bénéficier de ce classement si elles avaient été situées sur le territoire français.
Pour palier la carence de garantie, il convient de souscrire une garantie RC détenteur de sources radioactives.

C’est auprès du pool français ASSURATOME que sont réassurés aujourd’hui entre 400 et 600 contrats souscrits par des fabricants ou détenteurs de sources radioactives utilisées par le monde industriel ou médical hors Installation Nucléaire de Base. Ces assurés ont fourni certains éléments au pool via l’assureur pour permettre l’appréciation du risque, tels que :
- la liste des sources et/ou appareils générateurs de rayonnements ionisants,
- usage de ces sources,
- autorisation de détention en cours de validité ou à défaut les demandes de renouvellement formulées.

ASSURATOME assure ces risques liés aux radio-isotopes selon différentes couvertures d’assurance de responsabilité :

- le contrat Responsabilité Civile Opérateur Nucléaire couvre la responsabilité civile de l’assuré exploitant nucléaire du fait de la détention de sources radioactives (hors INB) à hauteur d’un plafond de 15 245 000 € par sinistre et par année d’assurance;
- le contrat Responsabilité Civile fabricant de sources radioactives garantit la responsabilité professionnelle du fabricant en cas de défaut du produit qu’est la source radioactive (responsabilité civile exploitation – dommages du fait des interventions effectuées chez les clients ou les tiers - et responsabilité civile après livraison – dommages résultant d’un vice de matière ou d’une erreur dans sa conception, son stockage, sa livraison).
- le contrat Responsabilité Civile détenteur de sources radioactives comprend une garantie de base couvrant la responsabilité civile extra contractuelle du détenteur de sources en cas de dommages corporels, matériels ou immatériels consécutifs causés par cette source ainsi que les dommages causés par des radioéléments perdus ou volés.

Outre ces garanties de Responsabilité Civile, ASSURATOME propose les garanties optionnelles suivantes :

- garantie frais de décontamination qui vise à racheter l’exclusion prévue généralement par une police Incendie et visant notamment les dommages ou
l’aggravation des dommages causés par les rayonnements ionisants provenant des sources détenus par l’assuré ainsi que les frais de décontamination ;
- garantie de dommage pour les radioéléments utilisés : en effet, en fonction de la valeur des sources et/ou appareils générateurs de rayonnements ionisants, il peut être utile de les garantir en dommages ;
- garantie responsabilité civile pendant le transport de ces matières par l’assuré.
- un contrat individuelle accident garantissant pour les métiers exposés comme le métier de pompiers ou les personnels en mission dans des sites à risque une somme forfaitaire en cas d’accident corporel entraînant un décès, une incapacité permanente ou temporaire, des frais médicaux, chirurgicaux et pharmaceutiques.

3. La sinistralité :

Les sinistres liés à la fabrication ou à la détention de sources radioactives sont plus nombreux dans le monde industriel et médical que dans le monde du nucléaire des INB plus imprégné de la culture de radioprotection.

On peut citer des accidents très divers comme :
- les dommages corporels causés à des sapeurs-pompiers intervenant à la suite d’un incendie en présence de sources radioactives ; une déclaration de sinistre a été faite sur le contrat « individuelle accident » des pompiers et le dossier est en cours d’instruction ;
- un dommage survenu en Espagne du fait d’un incinérateur défectueux ;
- surexposition de plusieurs personnes ayant entraîné leur mort du fait d’un mauvais entretien de l’appareil (Espagne) ;
- l’accident d’irradiation causé par un accélérateur d’électrons.

La sinistralité de ces contrats est peu fréquente sur ce type de risque mais la survenance de sinistres entraîne une majoration de la prime de l’assuré qui permet de sensibiliser au problème lié à la gestion des sources radioactives et à la radioprotection.

4. Evolution de la couverture assurances des risques liés aux sources radioactives :

■ la couverture du terrorisme :

Au plan assurantiel, les conséquences du 11 septembre 2001 ont donné lieu à d’apres négociations pour maintenir ou exclure cette garantie dans les contrats de Responsabilité Civile Nucléaire.

Un compromis a finalement été trouvé entre les parties (assureurs et réassureurs, exploitants, Etat) : les contrats responsabilité civile réassurés par Assuratomé accordent une garantie terrorisme seulement pour les assurances obligatoires relevant du régime de la Convention de Paris et de la loi française de 1968 modifiée. A l’inverse, la garantie terrorisme est exclue de tous les contrats d’assurances facultatives : RC Opérateur, RC fournisseur, RC détenteur de sources...ainsi que les réclamations droit commun des contrats RC Exploitants Nucléaires et RC Transports Nucléaires.
Il convient de s’interroger quant au devenir de cette garantie terrorisme pour les assurances obligatoires compte tenu de l’importante augmentation des plafonds de garantie prévus dans le Protocole de révision de la Convention de Paris.\(^9\)

- la Directive EURATOM du 22 décembre 2003.\(^{10}\)

Cette Directive Européenne prévoit dans son article 10 une obligation de garantie financière pour les sources orphelines. Les États membres veillent à établir, selon les modalités qu’ils arrêtent, un système de garantie financière ou un moyen équivalent pour couvrir les frais d’intervention afférents à la récupération des sources orphelines et les frais d’intervention en cas de récupération, de gestion et d’élimination des sources radioactives ainsi que les recherches dans les archives d’autorités telles que les douanes, les instituts de recherche, les laboratoires d’essais de matériaux ou les hôpitaux.

Cette Directive non encore transposée en droit français aura pour conséquence d’établir un système de garantie financière obligatoire en vue de couvrir les coûts d’intervention se rapportant à la récupération des sources orphelines.

Cependant, il convient de préciser que cette Directive vise à établir un système de garantie financière uniquement pour couvrir la responsabilité civile de fabricants ou détenteurs en cas de dommages causés par des sources radioactives.

- la Directive Environnement du 21 avril 2004.\(^{11}\)

Cette directive a été adoptée après 15 ans de travaux.

Un régime de responsabilité dérogant au droit commun ayant été mis en place, s’est alors posé la question de la mise en place d’un régime de garantie financière, et notamment d’assurance.

Après de nombreux débats, il a finalement été choisi que la Commission devra établir un rapport sur l'application effective de la directive et notamment faire des propositions pour un système de garantie financière harmonisé (à l’instar des dispositions de la Convention de Paris).

Ainsi, les détenteurs et utilisateurs de sources ainsi que les opérateurs et exploitants nucléaires auront-ils dans quelques années l’obligation de souscrire une garantie RC Environnement.

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\(^9\) Protocole de révision de la Convention de Paris adopté le 12 février 2004.


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AIDN - INLA

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CODE OF CONDUCT ON THE SAFETY AND SECURITY OF RADIOACTIVE SOURCES, AND THE ASSOCIATED GUIDANCE ON THE IMPORT AND EXPORT OF RADIOACTIVE SOURCES

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ABSTRACT

The paper covers the history of the negotiation of the Code during the period 2000-03, and the content of the Code. The Code is perhaps the first major instrument in the nuclear field to address security and safety issues in the same document. In particular, the paper will address the novel mechanism adopted by the 2003 IAEA General Conference to encourage wide adherence.

The paper will also discuss the Guidance for the Import and Export of Radioactive Sources negotiated and adopted in 2004. The Guidance constitutes the first universally agreed export control system, and its implementation from 31 December 2005 will mark a significant step in improving international controls over radioactive sources.

1 INTRODUCTION

The Code of Conduct on the Safety and Security of Radioactive Sources (the Code of Conduct)1 provides guidance, reflecting international consensus, on how states should safely and securely manage radioactive sources. It is perhaps the first major instrument in the nuclear field to address safety and security issues together. But what is the Code of Conduct? What does it say? What is the Guidance on Import and Export about? And, lawyers will ask, what is their legal status?

The drafting of the Code was an exercise in two parts – its initial drafting in 2000, and the extensive revision in 2002-03. Between the two were, of course, the events of September 11 2001. Whilst much of the original 2000 Code is still there in the 2003 Code, the revised Code is more substantive, particularly in the areas of security and international trade. In addition, the state level commitment requested by the General Conference takes the Code beyond the status of a mere recommendation, although it is not legally binding.

2 SCOPE OF THE CODE

The Code applies only to sealed radioactive sources, rather than to the wide range of radiation sources covered by the Basic Safety Standards. At the meetings organized by the

1 IAEA/CODEOC/2004
IAEA Secretariat where the Code was drafted in 2000, there were lengthy discussions about its scope. While noting that radiation generators had caused a certain number of accidents, it was recognized that most of the accidents with serious consequences had been caused by radioactive sources. The Code therefore focused on “…radioactive sources that may pose a significant risk to health and the environment”. In order to quantify what was meant by ‘significant risk’, the Code recommended that States should give highest priority to the radioactive sources belonging to Category 1 of the IAEA’s “Categorization of Radiation Sources” (i.e.: teletherapy sources, irradiators and industrial radiography sources). The Code did not cover nuclear materials (the protection of which is subject to a separate international regime) or radioactive sources within military or defence programmes (which are often not subject to the same sort of regulatory structure as sources in civilian use).

When the time came to revise the Code, states were concerned that given its more focused content and the importance of harmonised implementation, there should be a common understanding as to what sources it did and did not apply to. The revised Code focuses on sealed radioactive sources of Categories 1, 2 and 3 of the revised Categorization of Radioactive Sources\(^2\) – that is, sources that could, if not under control, give rise to exposure sufficient to be fatal or life threatening, or result in a permanent injury that reduces quality of life. Indeed, the Code goes so far as to provide a list of typical uses of sources, radionuclides and activity levels of sources included within its scope. Furthermore, although the Code generally applies to sources in Categories 1, 2 and 3, those recommendations that relate to national registers and export/import controls are limited to sources in Categories 1 and 2. The exclusions referred to above continue to apply.

Given that the IAEA (the Agency) is an organisation of states, and that the Code is primarily concerned with regulatory and administrative issues, the Code is addressed to States. I understand that many of the major manufacturers and suppliers of radioactive sources are currently negotiating among themselves on a draft Code of Good Practice intended to complement the Code of Conduct.

3 PROVISIONS OF THE CODE

The Objectives of the Code of Conduct\(^3\) are to:

(i) achieve and maintain a high level of safety and security of radioactive sources;
(ii) prevent unauthorized access or damage to, and loss, theft or unauthorized transfer of, radioactive sources, so as to reduce the likelihood of accidental harmful exposure to such sources or the malicious use of such sources to cause harm to individuals, society or the environment; and
(iii) mitigate or minimize the radiological consequences of any accident or malicious act involving a radioactive source.

To achieve those objectives, every State should:

- Establish an effective legislative and regulatory system, including a regulatory body. The system should, \textit{inter alia}, place the prime responsibility for safety on the user, and minimize the likelihood of loss of control\(^4\). Paragraphs 18 and 19 of the Code provide detail of the recommended content of such a system, whilst paragraphs 20-22 set out the recommended powers of the regulatory body;
- Ensure that appropriate facilities and services for radiation protection and safety are available, including those needed for searching for missing sources and securing found

\(^2\) IAEA TECDOC 1344
\(^3\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraph 5
\(^4\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraph 8
sources, for intervening in the event of an accident or incident and for personal dosimetry and environmental monitoring\(^5\);

- Ensure that adequate arrangements are in place for appropriate training of staff of the regulatory body, customs officers, police and staff of other law enforcement agencies\(^6\); and

- Encourage bodies or persons likely to encounter orphan sources during normal operations to implement monitoring to detect such sources\(^7\).

A range of provisions of the Code are relevant to maintaining control over sources. Some of those provisions explicitly refer to the needs of “security”. When the Code was first drafted, the focus of the Experts’ Group in this regard was very much on the prevention and mitigation of thefts in ignorance of the hazard, such as persons stealing objects for scrap metal resale – as had happened in Goiânia and a number of other places. At that time, high activity sources were thought to have a degree of ‘self-protection’, and the Group gave no consideration to the possible deliberate acquisition of radioactive sources for malicious use.

When the Code was revised in 2002-03, the situation was obviously very different. In the Technical Committee, there was – understandably – a high level of concern regarding the potential for malicious use of radioactive sources. Proposals for strengthened controls which had received little support in 2000 were now embraced. Consequently, the revised Code included new provisions relating to:

- National registers\(^8\);
- The international trade in radioactive sources\(^9\);
- Strengthened security requirements;
- Confidentiality of information\(^10\); and
- The prompt notification to potentially affected states of incidents of loss of control or with potential transboundary effects\(^11\).

The strengthened security provisions are wide-ranging. Among the new or amended provisions are:

- States should ensure that radioactive sources within their territory, or under their jurisdiction or control, are safely managed and securely protected during their useful lives and at the end of their useful lives\(^12\);
- States should promote security culture\(^13\);
- States should establish an effective national legislative and regulatory system of control, recognizing that prime responsibility for the safe management of, and the security of, radioactive sources remains on the persons being granted the relevant authorizations\(^14\);

- Designers, manufacturers, suppliers, users and those managing disused sources have responsibilities for the safety and security of radioactive sources\(^15\).

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\(^5\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraph 9
\(^6\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraph 10
\(^7\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraph 13
\(^8\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraph 11
\(^9\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraphs 23-29
\(^10\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraph 17
\(^11\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraph 12
\(^12\) Code of Conduct on the Safety and Security of Radioactive Sources, sub-paragraph 7(a)
\(^13\) Code of Conduct on the Safety and Security of Radioactive Sources, sub-paragraph 7(b)
\(^14\) Code of Conduct on the Safety and Security of Radioactive Sources, sub-paragraph 8(a)
\(^15\) Code of Conduct on the Safety and Security of Radioactive Sources, paragraph 15

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National legislation and regulations should include requirements relating to the verification of the safety and security of radioactive sources\(^\text{16}\); The regulatory body should consider the need for an assessment of the security of the source and/or the facility, in the light of the current national threat assessment\(^\text{17}\); The importance of safe and secure management of disused sources\(^\text{18}\); The need to establish the trustworthiness of individuals involved in the management of radioactive sources\(^\text{19}\); and The need to protect information relating to the security of sources\(^\text{20}\).

4 IMPORT/EXPORT GUIDANCE

The Code contains a general provision to the effect that imports and exports should be undertaken consistent with the provisions of the Code and with international transport standards. For Category 1 and Category 2 sources, there are provisions for explicit authorization, as appropriate, by both the importing and exporting States of the import/export. The Code recommends that the importing State consent to an import only if:

(a) the recipient of the source is legally authorised to receive and possess the source; and
(b) the State has the appropriate technical and administrative capability, resources and regulatory structure needed to ensure that the source will be managed consistent with the provisions of the Code.

The exporting State has the obverse obligations to assess the receiving State’s authorization of the recipient and its regulatory capability. The Code also contains a provision allowing for exports and imports to take place otherwise than in accordance with the above provisions in exceptional circumstances.

Given the need to secure consensus in the Technical Committee, those provisions are somewhat general in nature. The potential for inconsistent interpretation – particularly in regard as to when prior consent from the importing state was required and as to the application of the “exceptional circumstances” provision - gave rise to concerns regarding the maintenance of a level playing field between the exporters of radioactive sources. In order to address those concerns, and to develop mechanisms for exchange of information between the importing and exporting States, more detailed Guidance was developed by Member States and endorsed at the General Conference in 2004\(^\text{21}\).

This Guidance establishes the mechanisms that should allow the import/export provisions of the Code to be applied in a consistent manner by Member States. They clearly set out procedures for the international transfer of sources under three heads:

- Transfer of Category 1 sources;
- Transfer of Category 2 sources; and
- Transfer of Category 1 or 2 sources in exceptional circumstances.

The export of a Category 1 source requires the prior, explicit, consent of the importing State. The routine export of a Category 2 source requires prior notification, but there is no need for prior consent. Any export under the “exceptional circumstances” provision requires the consent of the importing State. These provisions should assist national regulators in

\(^{16}\) Code of Conduct on the Safety and Security of Radioactive Sources, sub-paragraph 19(h)  
\(^{17}\) Code of Conduct on the Safety and Security of Radioactive Sources, sub-paragraph 20(b)  
\(^{18}\) Code of Conduct on the Safety and Security of Radioactive Sources, sub-paragraph 20(e)(vii)  
\(^{19}\) Code of Conduct on the Safety and Security of Radioactive Sources, sub-paragraph 20(e)(viii)  
\(^{20}\) Code of Conduct on the Safety and Security of Radioactive Sources, sub-paragraph 20(e)(ix)  
\(^{21}\) GC(48)/RES/10.D
ensuring that they are aware of the presence of all Category 1 and 2 sources on their territory – something which has not always been the case in the past.

The Guidance repeats the provisions of the Code concerning authorisation and assessment of the importing State’s capacity cited above. The question as to whether the proposed recipient of a source is authorized by the importing State is fairly straightforward. On the other hand, the judgement by the exporting State as to whether the importing State has the appropriate infrastructure to manage the source safely and securely could be more difficult. The Guidance allows for information provided by States to the IAEA on a voluntary basis to be taken into consideration, if agreed by the importing State. This information includes:

(a) responses by the importing State to a brief ‘Self Assessment Questionnaire’;
(b) whether the importing State has written to the Director-General indicating that it is working toward following the guidance contained in the Code;
(c) whether an importing State that participates in the IAEA Model Project has met Milestone 1, which requires establishment of basic legal and regulatory infrastructure. The recent replacement of the Model Project by a number of regional and national projects – although it has a range of benefits - has introduced some uncertainty in relation to this factor. That uncertainty may go beyond the replacement of the term “Milestone” by “Thematic Safety Area”. It is not clear to me whether States participating in such projects will still, once they satisfy the objectives for each Thematic Safety Area, be accredited as such. I hope that the project managers within the IAEA Secretariat are advising participating States that, should they satisfy the objectives of Thematic Safety Area 1, they should answer “yes” to the question concerning Milestone 1 in the Model Project in the Self-Assessment Questionnaire.

In recognition of today’s security concerns, the Guidance also calls upon both the exporting and the importing State to assess the risk of diversion of the source to malicious uses. The application of these provisions will necessarily be somewhat subjective; nevertheless, the Guidance’s provisions relating to consultation (see below) and the reality of the commercial market place should mean that judgements are not made arbitrarily. In September 2004, the IAEA General Conference and Board of Governors underlined the importance of exporting States, in applying the Guidance, in particular these provisions, carrying out the information exchange and consultations foreseen in its paragraph 21.

It must be stressed that the Guidance is not intended to hamper legitimate international trade in, and the range of beneficial uses of, radioactive sources. Indeed, the manufacturers of radioactive sources have recognised that continued accidents involving, or the deliberate misuse of, radioactive sources would lead to further restrictions on their use and have therefore strongly supported both the Code and the Guidance.

5 THE LEGAL STATUS OF THE CODE AND THE GUIDANCE

The Code had its genesis in one of the major findings of the Dijon Conference, subsequently taken up in the Agency’s Action Plan on the Safety and Security of Radioactive Sources (the Action Plan), calling for the creation of an “international undertaking” on the safety and security of sources. In implementation of this part of the Action Plan, meetings of legal and technical experts were held in March and July 2000. Those meetings developed the first Code of Conduct on the Safety and Security of Radioactive Sources. But whatever had been the views of those at Dijon and of the drafters of the Action Plan, there was no
enthusiasm in the Technical Committee for any level of national commitment to the Code. The September 2000 meeting of the Board of Governors requested the Director-General to organize consultations on the application and implementation of the Code and make recommendations to the Board. The subsequent General Conference invited Member States to take note of the Code of Conduct and to consider, as appropriate, means of ensuring its wide application. One would have been forgiven for believing that, like the Code of Practice on the International Transboundary Movement of Radioactive Waste adopted in 1990, this Code would largely gather dust on bookshelves.

However, two factors intervened. One was the determination of the IAEA Secretariat to strengthen national controls, particularly in developing countries, in order to prevent the recurrence of incidents such as those in Brazil, Thailand and elsewhere, where unsafe management practices had led to deaths, injuries and substantial economic loss. To that end, the Code was incorporated in the then Model Technical Co-operation Project to Upgrade National Radiation Protection Infrastructure, in which most developing Member States took part. In that way, the Code’s provisions were incorporated into national law in a number of states.

Secondly, as referred to above, the events of September 2001 galvanised developed states into realising that inadequate controls over radioactive sources could pose a threat to them too. This meant that when the Technical Committee met again in 2002-03, it was a much larger group than the 2000 Committee, and perhaps also more purposeful.

The text of the revised Code was finalised in July 2003. It was presented to the IAEA Board of Governors in September 2003. The Board approved it and decided that it should be provided to the IAEA General Conference. Later that month, the General Conference welcomed the Board’s approval of the revised Code of Conduct, and endorsed the objectives and principles set out in the Code, while recognizing that the Code was not a legally binding instrument. Furthermore, the General Conference urged each State to write to the Director General, stating:

- that it fully supported and endorsed the IAEA’s efforts to enhance the safety and security of radioactive sources; and
- that it was working towards following the guidance contained in the revised Code and encouraged other Countries to do the same.

In addition, the General Conference requested the Director General, subject to the availability of resources, to compile, maintain and publish a list of States that made a political commitment by writing to him as urged by the General Conference. At the time of writing this paper, 78 States had made such a commitment. Although encouraging, there are some regions where that commitment has not been widely made, and of course the making of such a commitment is just the start – the key lies in the practical implementation of the Code. The Agency’s projects to upgrade national protection infrastructures remain vital.

Clearly, the effectiveness and practicability of these arrangements will be tested in the international marketplace. The General Conference in 2004 noted that more than 30 countries had committed themselves to implementing the Guidance from 31 December 2005, and encouraged States to implement it on a harmonized basis and to notify the Director

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25 Perhaps the different fate of the two instruments reflects a real difference; in contrast to the outstanding safety record of transport of radioactive material, there had been a number of serious incidents involving radioactive sources (see footnote 20).


27 Resolution GC(47)/RES/7

28 An updated list of these countries can be found at: [http://www-ns.iaea.org/home/rtws.asp](http://www-ns.iaea.org/home/rtws.asp)
General of their intention to do so. Without harmonization, the implementation of the Guidance could lead to confusion and the application of inconsistent standards to decision-making about exports. This could in turn lead to the breakdown of the system brought into being by the Guidance. Only nine countries have yet written to the Director-General committing themselves to implement the Guidance. It is to be hoped that those many other States which have already made political statements in support of the Code of Conduct will write to the Director-General soon, especially those among the 30 countries referred to in the General Conference resolution.

6 CONCLUSION

Radioactive sources provide many benefits to society, but at the same time serious accidents have occurred in the past. Whilst their continued use should be encouraged, it must be accompanied by efforts to prevent or minimise such accidents. The Code and the Guidance represent a concerted attempt by IAEA Member States to address the failings which led to those accidents. They also represent an attempt to grapple with the threat of the malicious use of sources in radiological dispersal devices. Although people will inevitably be able to identify areas where the instruments could be further improved, I do not believe that that is a priority. The priority must be the effective implementation at national level of these standards – something which could be assisted by a process of peer review.
AN APPROACH TO THE CONTROL OF RADIOACTIVE SOURCES AND THE PRECAUTIONARY PRINCIPLE

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ABSTRACT

The Precautionary Principle is a new legal concept which first appeared in the 1970s, at the time of an awakening to environmental protection. This concept gradually came to be recognized as a major general law principle in many international, European Community and national texts.

However, nuclear law did not formally integrate the Precautionary Principle, even if several provisions seem to be inspired from it implicitly. The main reason owing to the fact that the conditions of management and the control of the radioactive sources already make it generally possible to control the incurred risks well enough. Moreover, the legal texts currently applied appear sufficiently protective.

The opponents of the Precautionary Principle consider that the application of this principle would be likely to cause a technological regression. As for public opinion, it is increasingly demanding compared to the social acceptance of the risks.

As a result, a legal debate can appear useful to analyze the possible influence of the Precautionary Principle on the control of radioactive sources.

1 INTRODUCTION

The Precautionary Principle is the subject of debates among lawyers and scientists as well as in public opinion. This relatively recent concept is often used together with other concepts such as those of the principle of prudence, prevention, optimization and compensation for damage. By doing so, this protocol would create obligations to implement upstream any damage incurred. In the field of nuclear law, the various regimes of liability set up by the revised Paris, Brussels, Vienna Conventions and the Joint Protocol already largely and satisfactorily cover any compensation for damage. Nevertheless, an interrogation remains in the interest of taking into account the Precautionary Principle in the management and the control of radioactive sources.

The idea of prudence, which the Precautionary Principle implies, is likely to induce perverse effects and to have disastrous consequences on future innovation and progress. Scientists who are accustomed to controlling risks are, however, not unaware of the necessary measure of precaution or prevention to be set up to ensure the development of science.
In the field of nuclear law, the Precautionary Principle presents, therefore, a particular character because of the nature of the risks controlled and of the idea public opinion holds of this general principle.

Henceforth this may present an opportunity to analyze the possible bonds that the Precautionary Principle is likely to have with the control of the management of the radioactive sources.

To try to answer this issue, it is first of all advisable to seek the ethical basis and the various possible approaches of this concept before analyzing the legal recognition of this general principle of law in the major international texts with an aim of then studying the possible incidences of the Precautionary Principle on the control and the management of radioactive sources.

2 THE ETHICAL BASIS AND VARIOUS POSSIBLE APPROACHES OF THE PRECAUTIONARY PRINCIPLE

2.1 Ethical basis

The concept of precaution comes from the Latin verb praecavere, literally to take guard. It indicates an attitude vis-a-vis a danger, and constitutes an effective act of prudence. Prudence is conceived in ancient philosophy as a general virtue of which precaution would be the effective consequence.

Aristote made prudence one of the fundamentals of his ethics. On the contrary and with the triumph of positivism, science is perceived as being an absolute authority without constraint. The modern design of the Precautionary principle would thus return to a synthesis between the necessary development of science and the taking into account of moral obligations in particular with respect to future generations.

By doing this, the famous thought of Rabelais in the XVI century whereby Science without conscience is only ruin of the soul, thus finds all its sense in this debate.

Taking into account the risks related radioactive sources, the Precautionary Principle is thus likely to appear legitimate in its ethical basis.

2.2 The various possible definitions

The idea of precaution approaches that of prevention. But this latter concept refers more to a notion of unquestionable risks. On the other hand, the Precautionary Principle implies taking measures even before the danger is known and is connected to the facts by a bond of causality. Its role is to be applied when science is impotent to establish all the consequences of an act and it is in this way that this principle makes problems concerning the real and proven control of nuclear risk and the economic consequences which can result from an excess of precaution.

2.3 The contents of the public discussion concerning nuclear power

Public opinion often perceives the Precautionary Principle as Manichian. To integrate scientific doubt in the equation of decision-making is likely to create an obstacle to progress. It would be a matter, in fact, of acceptance of the proverb When in doubt, abstain. The Precautionary Principle is thus likely to generate a principle of inaction, full of consequences for the development of science because it is impossible to make knowledge progress without experimentation. To put aside the Precautionary Principle would risk on the contrary, letting technologies or products spread and discover the dangers too late.
2.4 The birth of the legal Precautionary Principle

It was in the 1970’s that the Precautionary Principle appeared for the first time in Germany. This country had serious environmental problems following the deterioration of the forests which were decaying because of air pollution. By means of judicial law-making, Vorsorgeprinzip (Precautionary Principle not being distinguished from that of the Principle of Prevention) imposed recourse to public management in potentially serious situations of risks to health and environment. It would thus not be necessary to wait to take preventive action, even in the absence of scientific certainty.

The United Kingdom undertook to define the Precautionary Principle in a White Paper on environment in 1990. This definition takes into account the cost of measurements taken and subjects its application to an assessment of the costs and probable benefits of action.

The United States does not explicitly recognize the Precautionary Principle, even if various federal provisions seem to refer to it implicitly (Clean Air Act, 1993) or force the manufacturer in certain cases, to prove the safety of the product (Federal Food, Drugs and Cosmetics Act).

3 THE LEGAL RECOGNITION OF THE PRECAUTIONARY PRINCIPLE

The idea of precaution was around for a long time before the ability to constitute a policy was acknowledged. The evolution of the world and ideas then brought a recognition of this concept in the form of a principle integrated in the large international texts of the law of the environment, the Community legislation and the French national law.

3.1 The integration of the Precautionary Principle in the large international texts

3.1.1 The first approaches

- The final declaration of the Conference of the 1972 United Nations Conference on the Human environment held in Stockholm

3.1.2 The legal recognition in the international law

- The Vienna Convention for the Protection of the Ozone Layer (1985)
- The Montreal Protocol on Substances that deplete the Ozone Layer (1987)
- The Declaration of the Second International Conference of the Protection of the North Sea in London on 24 and 25 November 1987
- The Bergen ECE Ministerial Declaration on Sustainable Development of 15 May 1990
- The United Nations Framework Convention on Climate Change (1992)
- The United Nations Conference on Trade and Development (UNCTAD - Rio de Janeiro, 3-14 June 1992), principle 15, Precautionary approach
- The Convention on Biological Diversity, 5 June 1992
- The Convention of the Protection of the Marine Environment of the Baltic Sea Area on 22 September 1992
- The Second Earth Summit (New York, June 1997)
3.2 The Community texts

- Maastricht Treaty on 7 February 1992 (Article 130 R) devotes the first European recognition

- Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to prevention and remedying of environmental damage established a community system for prevention and compensation for environmental damage (J.O.U.E. of April 30, 2004, n° L 143/56). This directive should apply, as regards damage to protected species, natural habitats, water and air. This directive provides in particular that every owner whose activity creates an imminent threat of such a damage or cause such a damage, will be held for person in charge financially, and will have to discharge costs implemented to prevent and repair them, pursuant to the Polluter Pays Principle.

But this Directive shall not apply to such nuclear risks or environmental damage or imminent threat of such damage as may be caused by the activities covered by the Treaty establishing the European Atomic Energy Community or caused by an incident or activity in respect of which liability or compensation falls within the scope of any of the international instruments listed in Annex V (article 4.4). Particularly concerned by this exclusion are the revised Conventions of Paris, Vienna and Brussels, as well as the joint protocol adopted on September 21, 1988.

3.3 French national regulations

- The formal integration of the precautionary principle was put into law concerning the reinforcement of environmental protection (Act N° 95-101 of February 2, 2005), known as the Barnier Act which incorporated the precautionary principle into article L 200-1 of the rural Code, from now on codified with article L 110-1 of the environmental Code (Ordinance N° 2000-91, September 18, 2000).

- Article 5 of the Charter of Environment (on March 2005), states and defines the precautionary principle in environmental matters and specifies the conditions of implementation. This principle applies only to damage whose cause is suspicious in so far as scientific knowledge is concerned. It must be distinguished from the action of prevention which aims at dealing with an unquestionable risk of damage. An additional condition is necessary: the possible damage must be serious and irreversible.

- When these conditions are met, it remains for the national public authorities to provide for the adoption of provisional and proportional measures, taken either by these authorities, or by other actors, to avoid damage. This formulation was retained in order to avoid an improper use of the precautionary principle paralysing any initiative, in particular economic activities and scientific research. It is also advisable to mention that the development of the research tasks intended to raise uncertainly must take place in a transparent way, so that they are not unnecessarily prolonged.
At this point in the analysis, the precautionary principle thus seems to have been the subject of broad legal recognitions as a general law principle, but it does not appear as such in any text of nuclear law. And yet, this concept does not appear completely absent from the spirit of nuclear law and texts concerning management and control of radioactive sources, in the absence of a formal inscription in the texts.

4 THE POSSIBLE INCIDENCES OF THE PRINCIPLE OF PRECAUTION ON THE CONTROL AND THE MANAGEMENT OF RADIOACTIVE SOURCES

The precautionary principle can thus be analyzed taking into account the risks related to radioactive sources as well as with its recognition and its implicit integration into nuclear regulation.

4.1 Taking into account the risks related to radioactive sources.

The economic development has brought about the production and the diffusion of numerous radioactive sources in fields as varied as those of scientific research, or the industrial and medical sector. Several million radioactive sources were distributed in the world over the last fifty years.

States generally took measures necessary to ensure the control and the management of radioactive sources, even if all did not set up lawfull structures. And yet, inevitable risks remain. In the United States, NRC (Nuclear Regulatory Commission) receives about 200 recordings of sources lost, stolen or abandoned per annum. In addition, NRC estimates that American companies have lost the trace of approximately 1500 sources since 1996 and that more than half will never be found. In the European Union, one estimates that each year, approximately 70 sources are no longer under control of a national authority (orphan sources). The risks inherent in the very nature of radioactive sources are also reinforced by the new international context and the dangers related to terrorism. Henceforth, the precautionary principle is likely to take all of its meaning as concerns its recognition as well as its implicit integration in the spirit of several nuclear law regulations.

4.2 The implicit recognition of the precautionary principle.

The sector of nuclear activities did not discover the spirit of the precautionary principle with the effect of mode which currently surrounds this concept. To be convinced one needs only refer to the ALARA principle (As Low As Reasonably Achievable) developed starting from a recommendation of the ICPR in 1977, which translates in a certain way the precautionary principle in the field of protection against radiation, as well as the principles of justification and limits of personal doses.

Moreover, the problems of risks related to natural radioactivity and low doses also refer implicitly to the precautionary principle.

Lastly, the concept of irreversible risks necessary according to the Charter of the environment for the application of the precautionary principle must give place to debates and divergent interpretations.

Thus, in case of a pollution following an accident involving low level contamination, radioactivity will inevitably decrease and disappear in time. The precautionary principle is not therefore of great interest in these concrete cases. On the other hand, the question of the management of radioactive waste finds all its importance in concerning the principle of
precaution, because of the choice of the method of storage, whether final, irreversible, at great depth or on the contrary reversible manner and immediately available.

4.3 The implicit reference of the precautionary principle in the spirit of two texts of Community nuclear Acts

- Concerning the protection of exposed people, title IV of the Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers from ionizing radiation, first of all took again the three fundamental principles of protection against radiation based on the recommendations of the ICPR (principle of justification, optimization, ALARA and limitation of the personal doses).

- As for the Council Directive 2003/122/Euratom of 22 December 2003 on the control of high-activity sealed radioactive sources and orphan sources, it appears to take as a starting point the same provisions. Concerning the authorization arrangement of the sealed radioactive sources of high activity, the preliminary authorization arrangement is an essential element of a sure management of the sources, including with regards to suitable measurements which must be taken by the petitioner when the sources are withdrawn from use. Concerning control measures, the obligation for holders to keep records reinforces tracking of the radioactive sources (Article 5). Moreover, the movements of sources must be accompanied by written information including a unique identification number, photographs of the source, source container, transport packaging, device and equipment as appropriate (Article 7).

- Member States shall encourage the establishment of systems aimed at detecting orphan sources in places such as large metal scraps yards and major metal scrap recycling installations, at significant nodal transit points such as Customs posts, etc... (Article 9).

- Lastly, the obligation for the Member States to exchange information quickly and to cooperate as regards losses, removal and theft contributes to reinforcing security and safety (Article 10).

5 CONCLUSION: THE REAL RANGE OF THE PRECAUTIONARY PRINCIPLE

The precautionary principle is a recent legal concept which has a certain success in public opinion. This general principle of law has a variable legal influence according to the definition which is given by it and its insertion in normative law. But on the other hand international nuclear law did not recognize the precautionary principle in the texts in application, in spite of the risks caused by radioactive sources whose management and control seem not be controlled.

The principal reason of this formal absence appears to come from the idea that the precautionary principle would be likely to lead to immobilism. Vis-a-vis the real risks caused by management and uncontrolled radioactive sources, it is obviously necessary not to make an inappropriate application of the precautionary principle or to over control. Such an attitude would undermine the principles of well reasoned management and would not fail to have penalizing financial consequences. Moreover, the various controlling authorities (nuclear, administrative, police, and customs) would not fail to see their true missions misdirected by disproportionate controls and thus inoperative.
But the precautionary principle could likely reinforce the domaine range of many protective devices which already exist in the field of nuclear law. Concerning the management and the control of radioactive sources, let us quote in particular the principle of proportionality with regard to incurred dangers, of the right to information, the legal obligation to make impact studies, the presentation of technical dossiers at the time of the public investigations and the repairing of polluted sites.

The precautionary principle calls for behaviours which are already largely integrated in risk management inherent to nuclear activities. In addition, many international conventions and several domestic laws recognize the precautionary principle expressly. In French law, a constitutional value will even be recognized in the Environmental Charter. However this principle is not integrated as such in nuclear law.

The protection of people’s health already relies on two principles of justification and optimization stated in the Code of the public health.

And yet, public opinion seems more and more to require taking into account the precautionary principle in its broadest acceptance and spheres of the most varied activities. The precautionary principle intends to control the risks in order to make them sociably acceptable. There would not be a priori any basic opposition between precaution and technological progress.

So, the nuclear law can with difficulty elude the debate on the possible recognition of the precautionary principle, in spite of the difficulties of interpretation and application which it poses. There results from it necessarily a new field of investigation for nuclear lawyers.

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This approach expresses only the personal opinion of its author and in no way of engages the responsibility of the organizations and the quoted administrations.
REFLEXIONS SUR LE CONTROLE DES SOURCES RADIOACTIVES ET LE PRINCIPE DE PRECAUTION

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RESUME

Le principe de précaution est une notion juridique nouvelle apparue dans les années 1970, à l’occasion d’une prise de conscience de la protection de l’environnement. Ce concept s’est progressivement imposé comme un grand principe général du droit reconnu dans de nombreux textes internationaux, communautaires et nationaux.

Toutefois, le droit nucléaire n’a pas intégré formellement le principe de précaution, même si plusieurs dispositions semblent s’en inspirer implicitement. La raison principale proviendrait du fait que les conditions de gestion et le contrôle des sources radioactives permettent déjà généralement de bien maîtriser les risques encourus. De plus, les textes juridiques en vigueur apparaissent suffisamment protecteurs.

Les opposants au principe de précaution estiment que l’application de ce principe risquerait d’occasionner une régression technologique. Quant à l’opinion publique, elle est de plus en plus exigeante par rapport à l’acceptation sociale des risques.

En conséquence, un débat juridique peut paraître utile pour analyser les incidences éventuelles du principe de précaution sur le contrôle des sources radioactives.

1 INTRODUCTION

Le principe de précaution fait l’objet de débats parmi les juristes et les scientifiques ainsi que dans l’opinion publique. Ce concept relativement récent est souvent utilisé en concours avec d’autres notions comme celles du principe de prudence, de prévention, d’optimisation et de réparation des dommages. Ce faisant, ce principe serait créateur d’obligations à mettre en œuvre en amont de tout dommage. Dans le domaine du droit nucléaire, les différents régimes de responsabilité mis en place par les conventions révisées de Paris, de Bruxelles, de Vienne et du Protocole commun couvrent déjà largement et de manière satisfaisante la réparation des dommages. Néanmoins, une interrogation demeure sur l’intérêt de prendre en compte le principe de précaution dans la gestion et le contrôle des sources radioactives.

L’idée de prudence qu’implique le principe de précaution est de nature à induire des effets pervers et d’avoir des conséquences désastreuses sur l’innovation et les progrès futurs. Les scientifiques qui sont habitués à maîtriser les risques n’ignorent cependant pas les
nécessaires mesures de précaution ou de prévention à mettre en place pour assurer le développement de la science.

Dans le domaine du droit nucléaire, le principe de précaution revêt donc un caractère particulier tant en raison de la nature des risques maîtrisés que de l’idée que se fait l’opinion publique de ce principe général.

Dès lors il peut apparaître opportun d’analyser les liens éventuels que le principe de précaution est susceptible d’avoir avec le contrôle de la gestion des sources radioactives.

Pour tenter de répondre à cette interrogation, il convient tout d’abord de rechercher les fondements éthiques et les différentes approches possibles de ce concept avant d’analyser la reconnaissance juridique de ce principe général du droit dans les grands textes internationaux dans le but d’étudier ensuite les incidences éventuelles du principe de précaution sur le contrôle et la gestion des sources radioactives.

2 LES FONDEMENTS ÉTHIQUES ET LES DIFFÉRENTES APPROCHES POSSIBLES DU PRINCIPE DE PRÉCAUTION

2.1 les fondements éthiques

La notion de précaution est issue du verbe latin præcavere, littéralement prendre garde. Elle désigne une attitude face à un danger et constitue un acte effectif de prudence. La prudence est conçue dans la philosophie antique, comme une vertu générale dont la précaution serait la conséquence effective.

Aristote a fait de la prudence un des fondements de son éthique. Au contraire et avec le triomphe du positivisme, la science est perçue comme étant un pouvoir absolu sans contrainte. La conception moderne du principe de précaution renverrait donc à une synthèse entre le nécessaire développement de la science et la prise en compte d’obligations morales notamment vis-à-vis des générations futures. Ce faisant, la célèbre pensée de Rabelais au XVIe siècle, suivant laquelle Science sans conscience n’est que ruine de l’âme, retrouve ainsi tout son sens et son actualité dans ce débat.

Compte tenu des risques liés aux sources radioactives, le principe de précaution est donc susceptible d’apparaître légitime dans ses fondements éthiques.

2.2 les différentes définitions possibles

L’idée de précaution se rapproche de celle de prévention. Mais ce dernier concept fait plus référence à une notion de risques certains. En revanche, le principe de précaution conduit à prendre des mesures avant même que le danger ne soit connu et relié aux faits par un lien de causalité. Il a vocation a recevoir une application lorsque la science est impuissante à établir toutes les conséquences d’un acte et c’est en ce sens que ce principe pose problème par rapport à la maîtrise réelle et avérée du risque nucléaire et des conséquences économiques qui peuvent résulter d’un excès de précaution.

2.3 le contenu du débat public par rapport au nucléaire

L’opinion publique perçoit souvent de manière manichéenne le principe de précaution. Intégrer le doute scientifique dans l’équation de la prise de décision risque de faire obstacle au progrès. Il s’agirait en fait de l’acceptation de l’adage Dans le doute abstiens toi. Le principe de précaution est donc susceptible d’engendrer un principe d’inaction, lourd de conséquences pour le développement de la science car il est impossible de faire progresser la connaissance.
sans expérimentation. Éviter le principe de précaution risquerait au contraire de laisser se diffuser des technologies ou des produits dont on découvrirait trop tard les dangers.

2.4 La naissance du principe juridique de précaution

C’est dans les années 1970 que le principe de précaution est apparu pour la première fois en Allemagne. Ce pays connaissait de graves problèmes d’environnement à la suite de la détérioration des forêts qui dépérissaient en raison de la pollution de l’air. Par le biais d’une construction jurisprudentielle, le Vorsorgeprinzip (prince de précaution) ne se distinguant pas de celui du principe de prévention a imposé le recours à la gestion publique dans des situations de risques potentiellement graves pour la santé et l’environnement. Il n’y aurait ainsi pas lieu d’attendre pour mener des actions de prévention, même en l’absence de certitudes scientifiques.


Les États-Unis ne reconnaissent pas explicitement le principe de précaution, même si diverses dispositions fédérales semblent y faire référence implicitement (Clean Air Act, 1993) ou imposent dans certains cas au fabricant de prouver la sécurité du produit (Federal Food, Drugs and Cosmetics Act).

3 LA RECONNAISSANCE JURIDIQUE DU PRINCIPE DE PRECAUTION

L’idée de précaution est donc ancienne avant même d’être apparue comme pouvant constituer une ligne de conduite. L’évolution du monde et des idées a ensuite amené une reconnaissance de ce concept sous la forme d’un principe intégré dans les grands textes internationaux du droit de l’environnement, du droit communautaire et du droit national français.

3.1 L’intégration du principe de précaution dans les grands textes internationaux

3.1.1 Les premières approches

- charte mondiale de la nature adoptée par l’Assemblée générale des Nations Unies le 28 octobre 1982

3.1.2 La reconnaissance juridique dans le droit international

- convention de Vienne du 22 mars 1985 pour la protection de la couche d’ozone
- protocole de Montréal adopté en 1987 sur les substances qui appauvrissent la couche d’ozone
- déclaration ministérielle de la seconde Conférence internationale de la Mer du Nord en 1987
- déclaration, adoptée lors de la réunion de la Commission économique des Nations unies pour l’Europe sur le développement durable, réunie à Bergen en Norvège le 16 mai 1990
- convention cadre sur les changements climatiques du 9 mai 1992
- conférence des Nations Unies pour l'environnement et le développement (CNUCED) de Rio de Janeiro de juin 1992 (principe n° 15 constituant la première consécration internationale)
- convention sur la diversité biologique du 5 juin 1992
- deuxième Sommet de la terre tenu à New York en juin 1997
- convention sur la biosécurité de Carthagène du 28 janvier 2000

3.2 dans les textes communautaires

- le Traité de Maastricht en février 1992 (art. 130 R) consacre la première reconnaissance européenne

Mais l’article 4 de cette directive mentionne expressément qu’elle ne s’applique pas aux risques ni aux dommages environnementaux nucléaires ni à la menace immédiate de tels dommages qui peuvent résulter d’activités relevant du traité instituant la Communauté européenne de l’énergie atomique ou d’un incident ou d’une activité à l’égard desquels la responsabilité ou l’indemnisation relèvent du champ d’application d’un des instruments internationaux énumérés à l’annexe V. Sont notamment concernées par cette exclusion les Conventions de Paris, de Vienne et de Bruxelles révisées, au même titre que le protocole conjoint du 21 septembre 1988.

3.3 dans les textes de droit national français

- L’article 5 de la Charte de l’environnement (mars 2005) énonce et définit le principe de précaution en matière environnementale et précise les conditions de mise en œuvre. Ce principe s’applique uniquement à un dommage dont la réalisation est incertaine en l’état des connaissances scientifiques. Il doit être distingué de l’action de prévention qui vise à faire face à un risque certain de dommage. Une condition supplémentaire est nécessaire : le dommage éventuel doit être grave et irréversible.
Lorsque ces conditions sont réunies, il appartient aux autorités publiques de veiller à l’adoption de mesures provisoires et proportionnées, prises soit par ces autorités, soit par d’autres acteurs, dans l’objectif d’éviter la réalisation du dommage. Cette formulation a été retenue afin d’éviter qu’un usage abusif du principe de précaution ne paralyse toute initiative, en particulier les activités économiques et la recherche scientifique. Il convient également de relever que le développement des travaux de recherche destinés à lever l’incertitude doit avoir lieu de manière transparente, afin que celle-ci ne soit pas inutilement prolongée.

A ce stade de l’analyse, le principe de précaution apparaît donc comme ayant fait l’objet d’une large reconnaissance juridique en tant que principe général du droit, mais il n’apparaît dans aucun texte de droit nucléaire en tant que tel. Et pourtant, ce concept ne paraît pas totalement absent de l’esprit du droit nucléaire et des textes concernant la gestion et le contrôle des sources radioactives, à défaut d’une inscription formelle dans les textes.

4 LES INCIDENCES EVENTUELLES DU PRINCIPE DE PRECAUTION SUR LE CONTROLE ET LA GESTION DES SOURCES RADIOACTIVES

Le principe de précaution peut donc être analysé tant par rapport à la prise en compte des risques liés aux sources radioactives qu’à sa reconnaissance et à son intégration implicite dans le droit nucléaire.

4.1 la prise en compte des risques liés aux sources radioactives

Le développement économique a entraîné la production et la diffusion de très nombreuses sources radioactives dans des domaines très variés comme ceux de la recherche scientifique, du secteur industriel et médical. Plusieurs millions de sources radioactives ont été distribuées dans le monde durant ces cinquante dernières années.

Les États ont généralement pris les mesures nécessaires pour assurer le contrôle et la gestion des sources radioactives, même si tous n’ont pas mis en place des structures réglementaires. Et pourtant, des risques inévitables demeurent. Aux États-Unis, la NRC (Nuclear Regulatory Commission) reçoit de l’ordre de 200 enregistrements de sources perdues, volées ou abandonnées par an. La NRC estime par ailleurs que les compagnies américaines ont perdu la trace d’environ 1500 sources depuis 1996 et que plus de la moitié ne seront jamais retrouvées. Dans l’Union Européenne, on estime que chaque année, environ 70 sources ne sont plus sous le contrôle d’une autorité nationale (sources orphelines).

Les risques inhérents à la nature même des sources radioactives sont encore renforcés par le nouveau contexte international et les dangers liés au terrorisme.

Dès lors le principe de précaution est susceptible de prendre tout son sens tant à l’égard de sa reconnaissance que de son intégration implicite dans l’esprit de plusieurs textes du droit nucléaire.

4.2 la reconnaissance implicite du principe de précaution

Le secteur du nucléaire n’a pas découvert l’esprit du principe de précaution avec l’effet de mode qui entoure actuellement ce concept. Pour s’en convaincre, il suffit de se reporter au principe ALARA (As Low As Reasonably Achievable) développé à partir d’une recommandation de la CIPR en 1977, qui traduit d’une certaine façon le principe de précaution dans le domaine de la radioprotection, au même titre que les principes de justification et de limites de doses individuelles.

De plus, la problématique des risques liés à la radioactivité naturelle et aux faibles doses fait également appel implicitement au principe de précaution.
Enfin, la notion de risques irréversibles nécessaires selon la Charte de l’environnement pour l’application du principe de précaution donne nécessairement lieu à des débats et à des interprétations divergentes.

Ainsi, dans le cas d’une pollution consécutive à un accident entraînant une contamination de faible niveau, la radioactivité décroîtra et disparaîtra inévitablement au fil du temps. Le principe de précaution ne présente donc pas un grand intérêt dans ce cas d’espèce. En revanche, la question de la gestion des déchets nucléaires retrouve toute sa portée par rapport au principe de précaution, en raison du choix du mode de stockage, qu’il soit définitif, irréversible, à grande profondeur ou au contraire de manière réversible et à portée immédiate.

4.3 3.3. la référence implicite du principe de précaution dans l’esprit de deux textes de droit nucléaire communautaire :

- Concernant la protection des personnes exposées, le titre IV de la Directive 96/29/Euratom du Conseil du 13 mai 1996 fixant les normes de base relatives à la protection sanitaire de la population et des travailleurs contre les dangers résultant des rayonnements ionisants, a tout d’abord repris les trois principes fondamentaux de la radioprotection basés sur les recommandations de la CIPR (principe de justification, d’optimisation ALARA et de limitation des doses individuelles).

- Quant à la directive 2003/122/Euratom du Conseil du 22 décembre 2003 relative au contrôle des sources radioactives scellées de haute activité et des sources orphelines elle paraît s’inspirer des mêmes dispositions. Concernant le régime de l’autorisation des sources radioactives scellées de haute activité, le régime de l’autorisation préalable est un élément essentiel d’une gestion sûre des sources, y compris à l’égard des mesures appropriées qui doivent être prises par le pétitionnaire lorsque ces sources seront retirées du service. Au titre des mesures de contrôle, l’obligation pour les détenteurs de tenir un registre renforce la traçabilité des sources radioactives (art. 5). De plus, les mouvements de sources doivent être accompagnés d’informations écrites (numéro d’identifiant, photographies de la source, de son contenant et de l’emballage de transport (art. 7).

- Dans le domaine des sources radioactives orphelines, les Etats-membres doivent encourager leur recherche par la mise en place de systèmes de détection dans les lieux où elles sont susceptibles de se trouver : grands parcs à ferrailles, grandes installations de recyclage des métaux, dans les nœuds de transport importants tels que les postes de douane, etc…(art. 9).

- Enfin, l’obligation pour les Etats-membres d’échanger rapidement des informations et de coopérer dans les cas de pertes, de déplacements et de vol contribue à renforcer les mesures de sécurité (art. 11).

5 CONCLUSION : LA PORTEE REELLE DU PRINCIPE DE PRECAUTION

Le principe de précaution est un concept juridique récent qui connaît un certain succès auprès de l’opinion publique. Ce principe général du droit a une portée juridique variable suivant la définition qui en est donnée et son insertion dans le droit normatif. En revanche force est de constater que le droit nucléaire international n’a pas reconnu le principe de précaution dans les textes en vigueur, malgré les risques occasionnés par les sources radioactives dont la gestion et le contrôle ne seraient pas maîtrisés.
La raison principale de cette absence formelle proviendrait de l'idée que le principe de précaution risquerait de conduire à l'immobilisme. Face aux risques réels occasionnés par la gestion et le contrôle des sources radioactives mal maîtrisées, il convient manifestement de ne pas faire une application déraisonnée du principe de précaution et de surréagir. Une telle attitude porterait atteinte aux principes de bonne gestion raisonnée et ne manquerait pas d’occasionner des conséquences financières pénalisantes. De plus, les différentes autorités de contrôle (nucléaires, administratives, policière et douanières) ne manqueraient pas de voir leurs véritables missions dévoyées en fait par des contrôles disproportionnées et donc inopérants.

Mais le principe de précaution pourrait être de nature à renforcer la portée de nombreux dispositifs protecteurs qui existent déjà dans le domaine du droit nucléaire. Concernant la gestion et le contrôle des sources radioactives, citons notamment le principe de proportionnalité à l’égard des dangers encourus, du droit à l’information, l’obligation légale de procéder à des études d’impact, la présentation de dossiers techniques lors des enquêtes publiques et la remise en état des sites pollués.

Le principe de précaution fait appel des comportements qui sont déjà largement intégrés dans la gestion des risques inhérents aux activités nucléaires. Par ailleurs, de nombreuses conventions internationales et plusieurs textes nationaux reconnaissent expressément le principe de précaution. En droit français, une valeur constitutionnelle sera même reconnue dans la charte de l’environnement. Toutefois le droit nucléaire n’a pas intégré ce principe en temps que tel.

La protection de la santé des personnes repose déjà sur les deux principes de justification et d’optimisation énoncés dans le Code de la santé publique.

Et pourtant, l’opinion publique semble de plus en plus exiger la prise en compte du principe de précaution dans son acceptation la plus large et dans les domaines d’activités les plus variés. Le principe de précaution entend maîtriser les risques afin de les rendre socialement acceptables. Il n’existerait a priori aucune opposition de fond entre précaution et progrès technologique.

De ce fait, le droit nucléaire peut difficilement échapper au débat sur la reconnaissance éventuelle du principe de précaution, malgré les difficultés d’interprétation et d’application qu’il pose. Il en résulte nécessairement un champ d’investigation nouveau pour les juristes du droit nucléaire.

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*Ces réflexions n’expriment que l’opinion personnelle de l’auteur et elles ne sauraient en aucune manière engager la responsabilité des organisations et des administrations citées.*
THE OPTIMISATION APPROACH OF ALARA IN NUCLEAR PRACTICE: AN EARLY APPLICATION OF THE PRECAUTIONARY PRINCIPLE? SCIENTIFIC UNCERTAINTY VERSUS LEGAL UNCERTAINTY AND ITS ROLE IN TORT LAW

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ABSTRACT

The late health effects of exposure to low doses of ionising radiation are subject to scientific controversy: one view finds threats of high cancer incidence exaggerated, the other view thinks the effects are underestimated. Both views have good scientific arguments in favour of them. Since the nuclear field, both in industry and medicine, has had to deal with this controversy for many decades, one can argue that the optimisation approach to keep the effective doses as low as reasonably achievable, taking economic and social factors into account (ALARA), is a precautionary approach, because for stochastic effects of low doses, no conclusive scientific proof can be provided. This paper explores how ALARA and the Precautionary Principle are influential in the legal field and in particular in tort law, because liability should be a strong incentive for safer behaviour.

This so-called “deterrence effect” of liability seems to evaporate in today’s technical and highly complex society, in particular when dealing with the late health effects of low doses of ionising radiation.

Two main issues will be dealt with in the paper:

1. How are the health risks attributable to “low doses” of radiation regulated in nuclear law and what lessons can be learned from the field of radiation protection?
2. How can ALARA inform the discussion of the Precautionary Principle and vice-versa, in particular so far as legal sanctions and liability are concerned?

It will be shown that the Precautionary Principle has not yet enough been implemented into nuclear law. Another conclusion is that the meaning given to technical and legal terminology, used in general principles, differs fundamentally, giving rise to more legal uncertainty and possibly to a lack of appropriate legal consequences and sanctions.

Key words
ALARA; Precautionary Principle; causation; liability; low doses; risk regulation; scientific uncertainty.
1 INTRODUCTION

The last decade is characterised by an evolution to more techno-scientific regulation\(^1\), giving rise to discussions on how to formulate and monitor the rules for optimisation of safety.

These new challenges to the regulatory system can be illustrated by the difficulties in interpretation of the ALARA principle which has been formulated originally by the ICRP (the International Commission on Radiological Protection) and means that doses have to be kept as low as reasonably achievable, taking social and economical factors into account. The terminology used by ICRP can be confusing because it seems to refer also to the “reasonably practicable” qualification in common law negligence actions and to the measuring of the duty of care. In contrast, the ICRP defines ALARA as “a judgemental decision making process based on quantitative and qualitative approaches to select the appropriate protection solution”.

Defined as such it is a risk management procedure which is applicable to a group of people or at a workplace, and not a measurement (in tort law) of the duty of care.

In case of a risk management procedure, ALARA is a tool for the ad-hoc risk assessment and decision making, in one specific case.

ALARA as a legal tool for measuring the duty of care is comparative, which in Common Law is outlined in case law. ALARA indeed has an Anglo-Saxon origin. The UK regulators, since 1842 and the passage of the factory laws introducing the term “Best Practice”, have held the belief that regulation should be as flexible as possible. In 1974, following the Health and Safety at Work etc. Act, the “As Low As Reasonably Practicable (ALARP)” test became the UK standard\(^2\). In Civil Law countries exist many more prescriptive rules, of which the breaking makes the wrongdoers liable in tort. The duty of care is measured through another abstract principle of comparison, the “bonus pater familias”, i.e. how would a normal reasonable person, placed in the same situation, have acted.

The clear distinction between prescriptive rules of law and general principles of good behaviour have been replaced by a “regulatory mix” of Command and Control Regulation, Economic Instruments, Self-Regulation and Voluntarism.

Within the category of Command and Control belong Performance Standards, which are outcome-focussed, and Process Standards, such as ALARA, which address procedures and parameters for achieving a desired result. These are mostly used in respect of hazards that do not lend themselves to easy measurement\(^3\). In this way ALARA is a good example of the evolution of the regulatory system which has to cope with a lot of scientific and technical uncertainty, as for the effects of the low doses of ionising radiation.

Also the legal qualification of “prevention” and “precaution” often leads to confusion. While the notion of prevention is used when scientific certainty exists about the harmful consequences of a product or activity and one tries to avoid these effects, the notion of precaution is used in cases where no scientific certainty exists. The Precautionary Principle finds its origins in environmental protection law, but its scope of application has been widened to health and consumer protection.

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One of the main reasons why it is so difficult to implement the Precautionary Principle in the legal system is its difference with the rule of law. The Precautionary Principle is not a rule which is binding for a defined group of subjects and which leads to an obligatory result.

In this way the Precautionary Principle and ALARA have a common denominator: they are general principles for decision makers on risk assessment and risk management under scientific uncertainty.

The applicability of the principles differ however. The ALARA principle is addressed both to the regulators (and control bodies) and to the nuclear operators and hospitals (radiotherapy, nuclear medicine and imaging), written down in law and in regulation (i.e. the operating licensing process). The Precautionary Principle in its formulation in law deals mostly with prior regulation and decisions by authorities on high risk industrial activities.

An example of this would be the prohibition on the import of genetically modified food stuff in the EU or the refusal of an operating license because of a potential major risk.

As such the similarities between ALARA and the Precautionary Principle end where the ultimate goal is fundamentally different: the first is a risk management principle in a particular field (“horizontal” amongst people in this field), the latter belongs to a political field (“vertical” from regulators to subjects of law), i.e. the decision making process for governments and authorities on societal risks (important risks for health and the environment). In nuclear law, ALARA is by all means a risk management principle, while in the EU Commission Communication paper on the Precautionary Principle ALARA is qualified as merely a risk assessment tool. This is clearly a confusion with the Linear No Threshold hypothesis, also developed by ICRP, while this is the risk assessment part of radiation protection, i.e. following the hypothesis that there is no scientific threshold under which exposure is absolutely safe, at every level of exposure a risk assessment is necessary.

We can examine the similarities and differences of both principles in the particular field of ionising radiation, and in particular when dealing with so-called “low doses”.

When speaking about low and high doses of radiation, only for doses higher than 100 mSv received at the adult age, stochastic effects such as cancer and genetic damage are considered by UN Peer review as significant.

From medical and epidemiological results are derived dose limits for stochastic and for deterministic effects. In particular the dose levels for stochastic effects and the area of low doses are the subject of this paper. Deterministic damages are those for which physical evidence can be obtained. Scientific thresholds above which these effects occur, can easily be established. The low doses are generally positioned below 100 mSv.

Later in this paper we explain the applicability of tort law and liability for having caused late health effects of exposure to low doses.

One of the main dilemmas when dealing with tort law is causation, i.e. the victim has to prove that a given radiation has caused the later illness, even when at the time of the harmful event there was no scientific certainty about the effects.

The legal aspects of tort law discussed in this paper are used as concepts, and not in a comparative sense, which is an approach which would need much more context.

Outline

In this first section we will present the 3 elements constituting the Basic Safety Standards embedded in nuclear law: Justification, ALARA and dose-limits.

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4 Communication from the Commission on the precautionary principle, Brussels, 02.02.2000, COM(2000)1, p. 15: “Risk evaluators accommodate these uncertainties by incorporating prudential aspects such as … adopting the “ALARA” (as low as reasonably achievable) level as a basis for certain toxic contaminants”.

In the second section we will consider the question whether violation of the ALARA and the Precautionary Principle are a legal basis for liability.

In the third section we will examine the scientific uncertainty giving rise to legal uncertainty, in particular on causation (the causal relation between the exposure and the damage).

At the end we formulate our conclusions.

2 THE 3 BASIC SAFETY STANDARDS IN NUCLEAR LAW

Inspired by the scientific work of the International Commission on Radiation Protection (ICRP), the European Directives and national laws have introduced the triple system of the Basic Safety Standards in nuclear law: Justification, Optimisation (ALARA) and dose-limits.

Every new nuclear practice has to be justified i.e. the benefits have to outweigh the possible detriments. The application of this principle in practice has already been considered by the UK High Court.

In this case the decision by the Secretary of State for Environment, Food and Rural Affairs and the Secretary of State for Health by which the MOX plant of BNFL in Sellafield, UK, was licensed for operation, was challenged by Greenpeace and Friends of Earth, as being not “justified in advance”.

It was thereby established that Justification is a legal duty on the Authorities on the moment they have to decide on a building- or operating license. In the UK “The Justification of Practices involving Ionising Radiation Regulations 2004” came into force after an initial consultation on 2nd August 2004 which have further enshrined the international radiological protection principle of “generic justification” of classes of practices involving exposure to ionising radiation.

It remains an open question how to understand the “generic” justification, because in every licensing procedure for a new (nuclear) installation the justification is implied and since the Precautionary Principle is enshrined in EU law, it is a legal duty on the authority.

The second Basic Safety Standard is optimisation, or the so-called ALARA Principle.

The ALARA principle requires the nuclear operators and hospitals to organise a safety management which limits the radiation risk as low as reasonably achievable, taking social and economic factors into account.

This is a utilitarian approach which still requires dose limits for the individual protection, being the third Basic Safety Standard.

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Article 6:
1. Member States shall ensure that all new classes or types of practice resulting in exposure to ionizing radiation are justified in advance of being first adopted or first approved by their economic, social or other benefits in relation to the health detriment they may cause.
2. Existing classes or types of practice may be reviewed as to justification whenever new and important evidence about their efficacy or consequences is acquired.
3. In addition each Member State shall ensure that:
   a. in the context of optimisation all exposures shall be kept as low as reasonably achievable, economic and social factors being taken into account;
   b. without prejudice to Article 12, the sum of the doses from all relevant practices shall not exceed the dose limits laid down in this Title for exposed workers, apprentices and students and members of the public.


Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
The dose limits are legal thresholds for protection of the workers and the general public (20 mSv for nuclear workers and 1 mSv for the members of the public per year, under normal circumstances).

Dose limits for specific deterministic effects are set at 500 mGy/organ and 150 mGy for the lens of the eye, for workers (and at 1/10 for the public).

In a Judgement of the European Court of Justice\(^8\), it was ruled that Belgium was allowed to set, for apprentices and students aged between 16 and 18 years, stricter dose limits than those which were prescribed in the Directive 80/836.

Following the considerations of this Judgment, the Recommendations of the ICRP were accepted as the legal basis for the interpretation of the EU Directives, and even Recommendations which were published after the said Directives. Moreover the Court gave a clear preference to the optimisation duty, over the dose limits:

“… it is apparent in particular from ICRP Publication 60 that all ionizing radiation, in excess of natural background radiation, involves dangers for human health and that, whilst it is accepted for economic and social reasons, such acceptance merely represents a balance between its advantages and disadvantages”.

“It follows that the dose limits fixed by the ICRP are not absolute values but are published merely for guidance and that the principle underlying them is that of the optimization of protection”.

With this example we can show how in nuclear law techno-science regulation (or soft law) is entering the legal system through jurisprudence. It also shows the dangers of interpretation involved.

Indeed this position of ICRP on the legal thresholds of dose limits is not discussed with a larger public than with experts, while such legal thresholds are put in operation through EU Directives and national laws without such elaboration as proposed by ICRP. From the context of the commented judgment of the European Court, it follows that the dose limits can only be stricter than the legal thresholds.

Moreover this judgment was only decisive on regulation policy and should not be used in liability cases. It seems that the Court has made a mixture of the ideas behind dose limits and those behind optimisation: the first is meant to protect individuals, the second to protect a group of people (because the focus is on the collective dose).

The “three-tier” system of the Basic Safety Standards has been the cornerstone of the safety management in the nuclear sector starting from a global justification process at the outset over safety management by optimisation of doses (ALARA) to the protection of the individuals (dose limits)\(^9\).

Later in this paper we will concentrate on ALARA, which perhaps can be considered an early application of the precautionary approach (now defined under the Precautionary Principle) because there is no proven health risk beneath an effective dose of 100 mSv, and for the developing organism below 10mSv, be it that the “Linear No Threshold” hypothesis of the ICRP is still in place, meaning that there is no scientific threshold under which exposure is absolutely safe.

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\(^8\) ECJ, 25 November 1992 (Case C-376/90), ECR 1992, I-06153

\(^9\) Vlek (2004). Environmental versus individual risk taking: perception, decision, behaviour. C. Spielberger (Ed.): Encyclopedia of Applied Psychology. San Diego (Cal.): Acad. Press. The legal system has been positively commented by Prof. Vlek (Social Psychology): “Risk-benefit weighing, the testing of risk acceptance standards and subsequently trying to get risks ALARA may constitute an effective combined strategy for risk management. For involuntary risks to radiological workers (e.g. in hospitals and nuclear energy laboratories), the International Commission on Radiological Protection has recommended the use of such a joint set of safety principles”

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
We call it a precautionary approach because the precautionary principle itself was only embodied in the legal system through the Rio Declaration on Environment and Development, and the Maastricht Treaty of the EU, while the ALARA principle dates back to 1950.

The discussion on the binding force of principles of law such as the Precautionary Principle and ALARA10 divides legal scholars11.

For simplifying the discussion about the definition of principles of law, we can amplify that to the contrary of a rule of law such a principle is not applicable to a specific set of facts and gives more flexibility to the law and in particular to the judges12.

The Precautionary Principle is nevertheless an important source of law, not in the least in the field of public and administrative law. Such principles are meant to give the rules of law a philosophical and ethical interpretation and are more and more used to cover the lack of precise rules, or to cover the backlog in defining the rules for new developments13.

The binding force, and hence the sanctions, of such principles of law are an unresolved legal issue.

As for the Precautionary Principle the major opposition to the ALARA principle consists in the lack of criteria to implement and to judge the compliance. As the ICRP has put it in 1996:

“… the competent authority should specify the general criteria needed to implement the optimisation procedure …”.

It is remarkable that it seems that only in the UK, Germany and Spain exist regulatory guidance on how to apply the ALARA principle.

In the UK the Radiation Protection regulation is supported by an Approved Code of Practice (ACoP) and by guidance material which gives a strong indication of what is practically needed to demonstrate compliance.

In Germany, the Radiation Protection Ordinance was supported by Guidelines issued by the Federal Ministry for the Environment.

In Spain the Nuclear Regulatory Authority has approved a Guidebook which comprises the ALARA responsibility assignments to all the involved parties, with a set of actions, called ALARA program, addressed to the licensee14.

To judge compliance, a QA/QC system should be put in place with the certification of standards, after benchmarking of best practices. Moreover, the management of environmental protection, safety and quality control are more and more being integrated in one risk management model.

In the UK, following the inquiry of the Sizewell B nuclear reactor, the Health and Safety Executive (HSE) published in 1988 the study “Tolerability of Risk from Nuclear Power Stations” as an attempt to attach numerical values to the ALARP principle15.

10 ALARA is defined in such a manner that it works like a legal principle. When a vague or general notion such as “reasonable”, “carefulness” or “general interest” is included in the formulation of a rule, the courts are obliged to judge between different principles and / or rules.


13 Rivero (1985). Droit administratif, Paris, Dalloz.”Il y a à la racine de tout système de droit une conception de l'homme et du monde qui implique un certain nombre de postulats; c'est à ce fond éthique que se rattachent les principes généraux; mais la constatation opérée par le juge est en réalité largement créatrice: en affirmant l'existence d'un principe, le juge lui attache la sanction dont il était dépouvu et l'insère par là dans le droit positif”.


In such a way, self-regulation and self-control are put in place which is another way of making principles of law more binding and more based of the broader perspective of the other risks ("risk matrix") and in particular also the environmental risks.

3 ALARA AND THE PRECAUTIONARY PRINCIPLE AS A LEGAL GROUND FOR LIABILITY?

As opposed to the dose limits, which in our view set forth an obligation to achieve a result, the optimisation principle creates typically an obligation of reasonable care.

For liability cases, both can be at stake. But legal rules also deal with the clarity- and security of law for all legal subjects, the risk-takers included. In case of unlimited burdens of claims, industry but also medicine would be made impossible.

The difficulty which exists between ALARA as an obligation of reasonable care in the generic sense, and the measuring of the legal standard of reasonable care (cfr. Point 2) will be addressed later in this paper.

Because of the justification process, nuclear operators can argue that the residual risk, the risk not covered by the dose limits, is not the responsibility of the licensed operator.

This has been accepted in the US under what is called “the O’CONNOR DOCTRINE”:

“In a highly technical field such as this, although a plaintiff should be provided a very high level of protection from excessive exposure from radiation, a defendant public utility should also be provided with some clear statement regarding how it may limit a worker’s dose without exposing the worker to injury or itself to liability”.

In the US, this doctrine is firmly established so that the duty owed to a plaintiff (the standard of care) is not based on ALARA but on the dose limits set forth in the law and the operating license. In the nuclear sector, the “three-tier system” of justification, ALARA and dose limits should offer a protection to victims which already incorporates the precautionary approach through the justification process and the dose limits. Indeed, the dose limits are already by a factor of 10 lower than the doses at which stochastic damage has been scientifically shown. But this techno-scientific way of setting thresholds in the law dates back to scientific and legal positivism. Before the Precautionary Principle was incorporated in the legal system, it was common practice that technical regulation was only based on science, as if it was objective and true (“value-free”).

In case such laws have been made without going through a democratic process (i.e. just transferring the ICRP Recommendations into European and national law) it is highly questionable if such dose limits represent the legal threshold under which the risk has been accepted by society (the public). As argued earlier (point 11), ICRP stated in its Recommendations that “the dose limits fixed by ICRP are not absolute values but are published merely for guidance …”. This interpretation goes against the idea that legal thresholds are established to guarantee a certain result. Such guarantee should protect better potential victims, while a liability claim is easier to prove, but it also entails legal security for the risk-taker. Because of the lack of democratic acceptance of such thresholds, the dose limits are giving a “double message”: a message of risk, since there seems to be a clear need

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to limit exposure, and a message of safety because the citizen is assured that this level of radiation is harmless\textsuperscript{17}.

So at least there should be procedural guarantees that the acceptance of risk (beneath certain legal thresholds) by the larger public is taken into account.

Condition-sine-qua-non for this acceptance of risk is the “informed consent”, i.e. transparency regarding the way the risks are estimated.

There might be two other drawbacks to the application of the “O’Connor doctrine”, i.e. limiting the liability to the standard imposed by regulation.

First the courts can provide for higher standards in particular circumstances so that an individual court decision may destroy the uniformity provided by regulation\textsuperscript{18}.

Secondly, if the tort system imposes standards that are higher than those under regulation, than we leave the idea that the regulatory system and the justification process can provide levels of protection where benefits and costs are properly balanced\textsuperscript{19}.

Also for the Precautionary Principle many legal scholars are of the opinion that it doesn’t change the existing liability regime much, because a major element of liability is the foreseeability of damage (or at least that it could have been reasonably foreseeable)\textsuperscript{20}. Furthermore, the collective dimension of the Precautionary Principle cannot easily be reconciled with a liability regime that is based on the individual relationship between wrongdoer and victim.

Moreover, even specific strict liability regimes allow the “development risk defence”\textsuperscript{21}.

The European Court of Justice has not yet ruled on a more strict interpretation of this defence, which would be more in line with the Precautionary Principle. In this interpretation the conditions for the defence are not fulfilled when scientific data produce serious indications about the possible risks of putting a product on the market.

It was until now judged that the possibility to discover the harmful effect has to be judged on the basis of the most advanced knowledge on such risks at that time\textsuperscript{22}.

The main legal argument against the use of the Precautionary Principle in individual liability cases is its vagueness. Already in the experience with ALARA, it was noted that more criteria are needed in law, to make it applicable as “rule of law”.

A breach of a rule of law leads to liability if it causes damage. As mentioned in the introduction, by its nature a Process Standard such as ALARA has a high level of abstraction and difficulty to measure. The level of abstraction contained in a rule can be illustrated with the use of “reasonable” in legal terminology (as in ALARA)\textsuperscript{23}.


\textsuperscript{20} Faure and Hartlief (2002). “Nieuwe risico’s en vragen van aansprakelijkheid en verzekering”, Recht en Praktijk, December 2002. In The Netherlands, 2 cases were brought before the “Hoge Raad” (highest court), giving rise to the NATRONLOOG and the TAXUS Court Decisions, dealing with the foreseeability of the damage a different way.

\textsuperscript{21} European Directive on Product Liability; G. G. HOWELLS and M. MILDRED, “Is European products liability more protective than the restatement (Third) of torts: products liability?”, Tennessee Law Review 1998, p. 1022: “As liability is predicated on the “foreseeable risks of harm”, liability should not be imposed for development risks, which, by definition, are unforeseeable at the time of supply”.

\textsuperscript{22} ECJ, 29 May 1997, (case C-300/95), ECR 1997, I, 2649.

If the Precautionary Principle is not prescriptive enough to involve liability and the possibilities of defence for the industry are well established, what is then its influence on the “state of the art and the industry” and the evolving standard of care?

The licensing authority has an important legal duty to examine the risks at first instance. Also during the licensed exploitation there might be changes of circumstances that necessitate the authority to withdraw a license\(^\text{24}\).

In nuclear (safety) law, article 6.2 of the EU Council Directive 96/29 Euratom clearly stipulates that justification is an on-going process: “Existing classes or types of practice may be reviewed as to justification whenever new and important evidence about their efficacy or consequences is acquired”.

To our knowledge, justification as a recurring review, including the necessity of safety measures, has not yet been applied and the possibility for third parties to claim a new justification procedure remains unclear. In our view, it is therefore clear that given the fact that risks also evolve and the regulatory systems in nuclear law do not give enough strength to a recurring appraisal of benefits and costs, the optimisation duty of ALARA comes automatically to the forefront, as the general duty of care applicable in the nuclear sector, which is also applicable in individual (liability) cases.

As ALARA as a legal duty is also directed to the regulatory and control bodies, it is in our opinion unacceptable that when Justification is only a rather passive confirmation of a license proposal for nuclear activities at high risk without implication of the stakeholders and without review, then it is the more unacceptable that ALARA is not further defined as to what “best practices” it is orientated towards.

Of course a formal system can be contradictory to the goal expressed by IRCP: “it is important not to let a formal approach to optimisation detract from the basic principles of doing what is reasonable to improve protection”.

But at least there should be transparency on the control measures and the possible sanctions.

As a comparison with another domain one can refer to the IPPC Directive (Integrated Pollution Prevention and Control Directive) 96/61/EC.

In the framework of this IPPC Directive an Information Exchange Forum (IEF) has been created and a permanent IPPC Bureau in Sevilla, Spain.

In this IPPC Bureau, the EU country experts decide on the so-called BREFS, being BAT (Best Available Techniques) reference documents, such as “Waste Treatments”, “Treatment of Metals and Plastics” etc. In total, since 2003 already 18 BREFS have been agreed upon.

The application of the Precautionary Principle introduces the need for such a follow-up and further risk characterization. In any case where authorities make a decision on the basis of this principle, they should also include the scientific research needed for the follow-up of their decision and the measures to be taken when new scientific elements become available about major risks to health and the environment. As an example, the testing in the chemical sector seems to be focussed on the licensing path, while in the real world the risks often show up during the use of the chemicals.

This follow-up is now expressly formulated in the “Environmental Charter” (Art. 5) which is now part of the Constitution in France\(^\text{25}\).

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\(^{25}\) “Art. 5.- Lorsque la réalisation d'un dommage, bien qu'incertaine en l'état des connaissances scientifiques, pourrait affecter de manière grave et irréversible l'environnement, les autorités publiques veillent, par application du principe de précaution, à l'adoption de mesures provisoires et proportionnées afin d'éviter la réalisation du dommage ainsi qu'à la mise en œuvre de procédures d'évaluation des risques encourus ». See D.
As a first conclusion we can again highlight that the use of ALARA in individual liability cases depends largely on the quality of the regulatory process and the justification. Notably when the dose limits (or dose constraints for individual sources of radiation) are set after a transparent and reflexive process, we can argue that a degree of “public involvement” is obtained. In such case the further optimisation through ALARA cannot put a higher standard (for liability) on the regulated person because then the whole regulatory process would be useless.

Furthermore ALARA is too vague and it cannot help judges in liability cases when there is no further benchmarking of the safest practices, instead of just establishing a “safety culture”. The standard of care can only be deduced from a comparison of safe practices in comparable situations, while a “safety culture” remains difficult to define in the positive sense. In nuclear medical practice, the further development of diagnostic reference levels can enhance such a comparison. Only a QA/QC system can give further guidance as to what level the “safety culture” is really guided and controlled.

The Precautionary Principle has never had such a direct impact on liability of individuals but it can induce rules of law, such as the obligations contained in the Environmental Impact Assessment which introduce sanctions at an individual level.

Although EU directives on Environmental Impact Assessment are now in part also applicable to nuclear power installations, nuclear law seems reluctant to apply the Precautionary Principle to other domains, such as health and safety. It can be argued that the duty of Justification for all new classes or types of (nuclear) practice, and in particular also the review as to justification whenever new and important evidence is acquired, embodies the Precautionary Principle, but clear guidelines are once more lacking.

For the countries which adopted the Convention on Nuclear Safety\(^{26}\) the lack of implementing the Precautionary Principle in nuclear regulation is the more pregnant because of the “priority to safety” which is embodied in article 10 of this Convention.

From the Convention is all the more clear that the recurring justification process cannot be a purely cost/benefit appraisal. Furthermore article 6 stipulates:

“When necessary in the context of this Convention, the Contracting Party shall ensure that all reasonably practicable improvements are made as a matter of urgency to upgrade the safety of the nuclear installation”.

After an important decision by the Court of Justice of the EU on December 12\(^{\text{th}}\) 2002, confirming the legislative competences of the EU Commission in the field of nuclear safety (and to subscribe to the Nuclear Safety Convention\(^{25}\)), the Commission has started drafting the so-called “Nuclear Package”.

The now revised nuclear safety directive proposal defines basic obligations, general principles, and a system of review by a committee of national safety authority representatives with the Commission acting as a secretariat. This is surely the way forward whereas before the proposed EURATOM directives were lacking a further requirement to follow-up on compliance in more detail.

4 SCIENTIFIC UNCERTAINTY LEADING TO LEGAL UNCERTAINTY - TORT

Chagnollaud, « Le principe de précaution est-il soluble dans la loi ? A propos de l’article 5 de la Charte de l’Environnement »


Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
LAW AND THE CAUSALITY DILEMMA

The classical syllogism of tort law consists of fault, damage and causal link.

At first view it might seem as if the first element is difficult to prove in highly technical and complex sectors, such as nuclear industry, nuclear medicine and radiotherapy.

Although it seems a better protection to accept a general rule on strict liability or no-fault liability for “long term risks”, the PhD theses of Geneviève Schamps and Steven Lierman didn’t find a legal foundation for such a general rule.

Where the problem really lies, in particular for the “long term risk”, is with causation. Indeed toxic tort requires three elements to prove agent-disease causation: exposure, general causation and specific (or individual) causation.

Epidemiological studies can be indications for (the lack of) general causation. However, inherent shortcomings urge courts to be reluctant when interpreting these statistical data. First, controlled groups have to be homogenous and sufficiently large.

Furthermore, only results which are statistically significant can be taken into consideration: in general the chance to be mistaken has to be under 5%.

Finally, such scientific data have to be evaluated with regard to other facts surrounding the case, such as: other possible causes, the latency period and the link with other scientific data.

The legal rule for proving specific or individual causation differs in the common law countries ("more likely than not") from most civil law countries ("conditio sine qua non rule") but in both cases the judge has to rely on expert witnesses, who are for "long-term risk" or possible “late health effects” automatically confronted with the scientific controversy as described above. Despite the fundamental differences, both systems have an interest in a clear procedure to evaluate reliability and independence of scientific reports and experts.

In case the information and scientific reports are not available to the claimant, there is a tendency for the courts to accept proof “beyond reasonable doubt” and to deduct conclusions from general studies for its use in an individual case. The conditions for this “reversal of the burden of proof” consist in a strong combination of indirect proof and reasonable presumptive evidence.

Another problem to deal with in tort law is whom to collect compensation from, as we are all exposed to many sources of radiation in our life. The so-called problem of the indeterminate plaintiff leads in several countries to jurisprudence in favour of the victims. The English House of Lords argued in this regard “That such injustice as may be involved in imposing liability on a duty-breaking employer (who had not caused damage) is heavily outweighed by the injustice of denying redress to a victim”.

30 With regard to the acceptance of epidemiological results in the courtroom, see: Raffensperger, Carolyn, “When the law of tort causes harm”, the Environmental Forum, 2002, Science and Environmental Health Network, Ames, Iowa, USA, see http://www.sehn.org
To overcome the causation difficulties, both regulation and jurisdiction can make innovative steps to come to new legal sanctions which include the monitoring and the health control of possible victims. This was the case in Goiânia, Brasil, where a caesium 137 source was stolen together with the radiotherapy device, from a hospital which was no longer in use (1987). Four people died immediately after being in contact with the radioactive substances when the device was dismantled by scrap metal dealers. The tragedy left many people contaminated and it caused a general panic and emotional shock to the population of Goiânia.

As a compensation measure, the responsible institutions and persons were sentenced to pay important amounts of money into a fund so that the money was available for the further monitoring and medical follow-up of the victims.\(^{35}\)

By defining new sanctions or new categories of damage, tort law “de lege ferenda” can help victims, confronted with such new kind of risks, to counter the causality problems.

Another way forward is to stipulate rules which create obligations of result instead of obligations of means (such as ALARA). A “technology based regulation” such as BAT (“Best Available Techniques”) or the obligation to search for the “Safest Alternative” are more stringent obligations, e.g. when other measures were at the time available, to avoid the (level of) damage.\(^{36}\)

In such a way liability could regain its role of deterrence.

5 CONCLUSIONS

The combination in a risk management system of the duty of Justification, an Optimisation duty (ALARA) and legal thresholds (Dose Limits) seems to combine the advantages of different kinds of risk regulation ("regulatory mix").

But in this highly technological field the difference in meaning of the similar terminology, as used by technocrats and lawyers, is far reaching. For the one, Justification is a purely cost/benefit analysis proposed by experts and addressed to the regulating authority, while Justification in our opinion should comprise the risk assessment, promoted by the Precautionary Principle. For the one, ALARA is a risk management tool for ad-hoc situations on the work floor, for the second ALARA holds the measurement of the standard of care.

For the one, dose limits are scientifically obtained indicators, for the second they are legal thresholds, representing a societal consensus on the level of risk to be taken by society and individuals.

To illustrate this gap even stronger: the legal principle “reasonably practicable” is sometimes explained by others as “pragmatic”, as regards the safety level of nuclear power plants to achieve.

Benchmarking and “Best Practices” are of common use in QA management but differ considerably when the same terminology is used in regulation or licensing (in particular the difference between obligations guaranteeing a result versus obligations of best efforts).

When BAT or Best Practices are used in industry, it is clear that the duty of optimal care is applicable, which is a stronger obligation than the duty of reasonable care.

ALARA is in that respect “weaker” because the courts have no standards to compare the level of safety obtained in an individual case.


Scientific uncertainty on the effect of low doses and in particular on causation makes it unrealistic to base legal concepts of liability and sanctions on what is so uncertain. Worse, it is questionable if the dose limits are taking into account the requirement of a democratic process to come to a sound regulatory and justification process. This is one of the main objections to the classical risk assessments and the techno-scientific regulation.

Since the Precautionary Principle has been introduced into our legal system, it should be a stimulus for nuclear law to come to a more democratic way of regulating nuclear risks, including the possible long-term effects of low doses, which cannot be measured today.

It has to be said that the Precautionary Principle has been put into operation through other legal prescriptions, as for partly product safety, cleaner production techniques and the environmental impact assessment and transparency.

The Precautionary Principle is in essence an ethical principle which promotes a better use of public participation in risk regulation, where the purely cost/benefit analysis has failed. The main cause for this failure is the perception of the (nuclear) risk, which cannot be measured that way.

As for optimisation principles, such as ALARA and BAT, the legal system is not yet adapted to these new regulation techniques based on safety standards and self-regulation, which are derived from Soft Law.

It necessitates a shift in paradigm, from positivism to reflexivity and more procedural regulation, so that stakeholders are more included in the decision making process.

Nuclear law as a whole seems reluctant to apply the Precautionary Principle in nuclear safety and radiation protection. In the dose limits a risk factor has been taken into account, but without confronting these limits with a public debate. It is regrettable that the Justification process is not further developed in such a way that the stakeholders are involved in the balancing of benefits and potential harm of a new nuclear practice or a new major risk, occurring during the licensed operation.

What remains is a “horizontal” precautionary approach, which is embedded in ALARA. The legal duty of risk management under scientific uncertainty is already formulated in ALARA in the field of radioprotection. It is, however, doubtful if this approach gives enough protection by lack of control mechanisms and benchmarking of the safest practices.

As a result of the application of ALARA and the Precautionary Principle, we believe that the standard of care is already more restrictive and should be more and more refined, following the risk characterisation and –assessment which has to be introduced once a scientific or societal problem occurs with regard to practices which were already subject to the legal duty of Justification, as in the nuclear field. It has to be stated that while ALARA seems to have the legal wording of a measurement (in Common Law) of the duty of care, it was never the intention to give ALARA such a meaning and by lack of benchmarking of the safest practices it is not a real tool for judging the duty of care.

For low doses of ionising radiation the process of taking societal aspects into consideration is in principle implied in the ALARA approach, which means that a


38 Ost (1999). Le temps du droit. Ed. Odile Jacob, Paris, pp. 310-331, as cited in Deblonde and Warrant (2000). Science and Precaution in Interactive Risk Evaluation: Theoretical framework (Flemish and French), see http://extranet.ufsia.ac.be/MTT/STEM/docs/352.pdf. “Très nombreux sont en effet les auteurs qui considèrent qu’en temps où l’indécidable fait sens, il n’est plus de rationalité que procédurale et de légitimité que négocié” (a great deal of scholars are considering that since today’s society has to deal with the impossibility to decide, there is no other rationality than the one which is procedural and no other legitimacy than the one which is reflexive).
conservative attitude of nuclear operators, hospitals and medical doctors cannot be maintained.

In all cases of major risks, societal choices are at stake, starting from transparent information duties on risks over participation, to informed consent about priorities in protecting human health and the environment.

REFERENCES

LA SECURITE DES SOURCES RADIOACTIVES AU MAROC, VERS UN RENFORCEMENT DU CADRE LEGAL ET INSTITUTIONNEL

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ABSTRACT

Au Maroc, l’utilisation des sources radioactives se développe dans l’ensemble des secteurs socio-économiques tels que la santé, l’agriculture, la médecine, l’industrie, l’énergie et la recherche…

La protection des travailleurs, du public et de l’environnement constitue un souci majeur des pouvoirs publics. Aussi l’exposition aux rayonnements ionisants se soumet-elle aux normes de sûreté et de sécurité radiologique internationales.

Tandis que l’obligation de se conformer aux normes de radioprotection incombe au premier chef à l’exploitant de l’installation abritant des activités mettant en œuvre des sources de rayonnements ionisants, l’État, quant à lui, est en charge de veiller au respect des prescriptions énoncées dans ces normes, par le biais, notamment d’infrastructures nationales réglementaires et techniques.

La présente communication se propose de dresser, dans un premier temps, un état des lieux des principaux intervenants dans le domaine de la radioprotection au Maroc : utilisateurs et opérateurs, autorités réglementaires et de contrôle et leurs services d’appui ou de support, ONG…

Dans un deuxième temps, cet exposé se propose de traiter de la démarche de restructuration et de mise à niveau entreprise par les pouvoirs publics qui vise un renforcement du cadre légal et institutionnel, notamment par l’unification des autorités réglementaires compétentes en matière de sûreté nucléaire et de sécurité radiologique, l’objectif étant d’introduire une séparation entre les fonctions de promotion et les fonctions de réglementation et de contrôle.

Une telle mise à niveau traversera, très certainement, une zone de turbulences, en termes de refonte de textes réglementaires, de statut et de forme juridique de l’organe unique de contrôle, de transfert d’attributions conférées initialement aux autorités de l’Energie et de la Santé et enfin de transfert des compétences. Il y aura lieu d’apprécier cette phase de transition.
1 CONTEXTE REGLEMENTAIRE NATIONAL DANS LE DOMAINE DE L’ENERGIE NUCLEAIRE

L’utilisation des rayonnements ionisants au Maroc se développe de plus en plus dans les différents secteurs socio-économiques du pays, le Maroc verra, courant de l’année 2006, la mise en service de la première installation nucléaire à travers le réacteur de recherches de type triga mark II de puissance 2 megawatts, réalisé par le centre national de l’Energie, des sciences et des techniques nucléaires (le CNESEN) et basé à la Maâmora (le CENM) dans la région de Rabat. Par ailleurs, les pouvoirs publics, par le biais de l’Office National de l’électricité (ONE), continuent de se préparer à l’introduction de l’énergie nucléaire dans le cadre d’un programme électronucléaire, afin de pallier au déficit de ressources énergétiques et soutenir le développement du pays en répondant à ses besoins énergétiques. A cet effet, le rôle du CENM est d’importance considérable, il vise la promotion de l’utilisation des techniques nucléaires au Maroc et constitue d’une part, un soutien au programme électronucléaire national et d’autre part un appui technique à l’état en matière de sûreté et de sécurité nucléaire et radiologique ; il est en charge, également, de la gestion des déchets radioactifs au niveau national et s’active en recherche développement.

A l’échelle nationale, les applications basées sur l’utilisation des sources de rayonnements ionisants concernent les secteurs :

- de la Santé, à travers le radiodiagnostic, la médecine nucléaire et la radiothérapie
- l’industrie, à travers la radiographie gamma, les jauges et les traceurs ?
- l’enseignement et la recherche,
- l’agriculture, à travers notamment l’irradiateur de l’institut national de la recherche agronomique de Tanger (irradiation des aliments)
- l’énergie, à travers le projet de dessalement de l’eau de mer et surtout le projet d’un programme électronucléaire

Ces applications nécessitent un accompagnement réglementaire et technique en matière de protection contre les rayonnements ionisants. Aussi, a-t-il été élaboré au Maroc, dès les années 80, en application des engagements internationaux auxquels il a souscrits en matière de non prolifération nucléaire, par le Ministère de l’énergie et des Mines, avec l’assistance de l’Agence Internationale de l’Energie Nucléaire (AIEA) et en collaboration avec le CEA, ainsi qu’avec les organismes nationaux concernés, un ensemble de textes qui constituent la réglementation nucléaire nationale de base, à même d’assurer le développement des utilisations et activités nucléaires tout en assurant la protection de l’homme et de l’environnement.

Il faut préciser que cette réglementation constitue une composante du programme nucléaire national qui comprend aussi bien les études pour la production de l’électricité que la réalisation du projet du Centre d’Etudes Nucléaires de la Maâmora.

1.1 SUR LE PLAN INTERNATIONAL


L’ensemble des conventions signées par notre pays quant à elles portent sur l’assistance en cas d’accidents nucléaire ou de situation d’urgence radiologique, sur la notification rapide d’un accident nucléaire, sur la protection physique des matières nucléaires, sur la sûreté
nucléaire et la gestion des déchets radioactifs, sur la responsabilité civile en matière de dommages nucléaires.

1.2 SUR LE PLAN NATIONAL

La loi n° 005 du 12 octobre 1971 relative à la protection contre les rayonnements ionisants a édicté les principes fondamentaux destinés à régir toute activité impliquant des risques radiologiques à des fins de prévention et de protection des travailleurs et de la population contre de tels risques. Cette loi prescrit l’établissement d’un régime d’autorisation ou de déclaration préalable pour ces activités, les modalités d’application devant être fixées par voie réglementaire. En application de cette loi, il a été adopté les décrets ci-après :

Décret n° 2-94-666 du 04 rejeb 1415 (07 décembre 1994) relatif à l’autorisation et au contrôle des installations nucléaires : Ce décret désigne le Ministère de l’Energie et des Mines comme étant l’autorité compétente en matière de sûreté nucléaire. Il établit un processus d’autorisations préalables devant permettre de procéder à un contrôle effectif des aspects de sûreté et de sécurité des installations nucléaires destinées au développement technologique et énergétique, ainsi que celle du cycle du combustible


La loi n°12-02 du 7 janvier 2005 relative à la responsabilité civile en matière de dommages nucléaires. Ce texte a été élaboré sur la base et en application des dispositions de la convention de Vienne relative à la responsabilité civile en matière de dommages nucléaires de 1963 et de ses amendements intervenus en 1997. Cette loi conditionnant l’opération du transfert du combustible au CEN de la Maâmora, le CNESTEN a engagé, auprès du Ministre des Finances, la procédure d’octroi de la garantie de l’Etat, pour couvrir sa responsabilité civile pour les dommages nucléaires ;

En projet, on citera le décret relatif à la gestion des déchets radioactifs, élaboré sur la base d’un projet modèle préparé sous l’égide de l’AIEA dans le cadre d’un projet de coopération régionale entre les pays de l’Afrique, portant sur la gestion des déchets radioactifs. Il a pour objet de définir le cadre réglementaire dans lequel doit évoluer la gestion des déchets radioactifs et précise les responsabilités des producteurs et détenteurs de déchets radioactifs et des autorités réglementaires, en l’occurrence, le Ministère de la Santé Publique, le Ministère de l’Energie et des Mines. On citera, également, le décret relatif au transport des matières radioactives qui établit les normes de sûreté visant à assurer la maîtrise des risques radiologiques associés au transport des matières radioactives. Les autorisations requises pour ces activités de transport seront délivrées conjointement par le Ministère de l’énergie et des Mines, le Ministère des Transports et le Ministère de la Santé.
2 LA SURETE RADIOLOGIQUE AU MAROC :

2.1 CADRE INSTITUTIONNEL

Sur le plan réglementaire, comme précisé précédemment, la loi de 1971 et le décret de 1997 pris en application de cette loi ont permis d’instaurer un cadre législatif et réglementaire qui régit les applications nucléaires au Maroc en désignant le Ministre de la Santé en qualité d’autorité nationale réglementaire en matière de sécurité radiologique.

Sur le plan technique, le centre national de radioprotection relevant du Ministère de la Santé assure principalement les services de la dosimétrie, de l’étalonnage des appareils de radioprotection, de la gestion des déchets radioactifs, de la surveillance de l’environnement, de la formation et de l’expertise.

Dans le respect de la réglementation et des normes internationales admises en matière de sécurité des sources radioactives, le centre national de radioprotection marocain (CNRP) a vocation de service public et s’est vu investir de missions spécifiques en matière de contrôle des installations médicales, industrielles et des laboratoires scientifiques et de recherche. Il agit donc, par secteur, Le secteur médical et dentaire, le secteur industriel abritant des sources radioactives (sucreries, cimenteries, papeteries, raffineries, pétrochimie, métallurgie …)

En matière de délivrance des autorisations d’importation ou d’exportation de radioéléments artificiels, l’entrée d’une source radioactive ou d’un appareil émettant des rayonnements ionisants sur le territoire est soumise à l’autorisation préalable du centre national de radioprotection

Le Centre National de l’Energie, des sciences et des techniques nucléaires (CNESTEN) quant à lui, s’est vu conférer par sa loi de création, la mission d’appui technique à l’État en matière de sûreté radiologique et agit en qualité de prestataire de services à la demande de l’État et des opérateurs.

2.2 EFFORTS DE PROMOTION DE LA CULTURE DE LA SURETE RADIOLOGIQUE

le CNESTEN compte à son actif, l’organisation de plusieurs ateliers et manifestations scientifiques. Je rappellerai l’atelier régional tenu à Rabat, en 2002, sur l’évaluation de l’exposition professionnelle due aux rayonnements externes, organisé sous l’égide de l’AIEA, en collaboration avec l’institut national des sciences et des techniques nucléaires (France), du Centre National de Radioprotection marocain et de l’AIEA.

La formation de spécialistes en radioprotection a fait l’objet, également, d’un cours post-universitaire régional en radioprotection dont la direction est confiée, par l’AIEA, au Maroc, via le CNESTEN, en collaboration avec l’Institut National des Sciences et des Techniques Nucléaires (CEA-France), l’Ecole Mohammadia des Ingénieurs et la faculté de médecine de Rabat. Ce cours, basé sur le syllabus de l’AIEA, est sanctionné par un DESS, il vise la formation d’un noyau de spécialistes et l’émergence d’une expertise locale et régionale dans le domaine de la radioprotection

La sécurité des sources radioactives en termes de protection physique, fera l’objet d’un séminaire pour l’Afrique Francophone, abrité par le CNESTEN, portant sur la protection et le contrôle des sources radioactives, organisé à Rabat, du 06 au 08 décembre 2005, par le département de l’énergie Américain, avec l’appui de l’AIEA.

Sur le plan scientifique et de la recherche, le Maroc adopte une politique de recherche qui accompagne son développement économique et social. Aux côtés des pouvoirs publics, les ONG mènent des actions de sensibilisation à même de permettre de suivre l’évolution, au niveau international, en matière de sûreté radiologique. La dimension scientifique de la
radioprotection devant être constamment améliorée en terme de pertinence des mesures et des moyens de contrôles, requiert nécessairement un travail de recherche scientifique sur les diverses techniques de détection notamment, sur les effets biologiques et les études d’impact. Il est fait appel pour ce faire, à la physique nucléaire, à la radiochimie, à la biologie, à l’électronique et à la modélisation. D’où la nécessité de créer une synergie entre l’université, les opérateurs tels que le CNESTEN et les organismes publics en charge du contrôle.


2.3 L’EVOLUTION EN MATIERE DE SURETE RADIOLOGIQUE AU MAROC

La sécurité des sources radioactives étant devenue une préoccupation importante dans l’ensemble des pays, les références internationales les invitent à prendre, conformément à leur cadre législatif et réglementaire, les mesures appropriées pour assurer une indépendance effective des fonctions de réglementation et de contrôle par rapport aux fonctions de promotion.

Partant du cadre et de la structure réglementaire existants en matière de sûreté et de sécurité des sources radioactives telle que décrite, le Maroc a opté, à cet effet, pour une mise à niveau de ses structures réglementaires et de contrôle. Aussi, a-t-il été créé, auprès du Premier Ministre, une commission permanente de suivi des affaires nucléaires (COPSAN) dont la réflexion a intégré la recommandation internationale visant la séparation des fonctions de promotion, des fonctions de réglementation et de contrôle en matière de sûreté nucléaire et radiologique.

En matière de sûreté des installations nucléaires, il y a lieu de préciser que si l’Office National de l’électricité (ONE) est placé sous la tutelle du Ministère de l’Energie et des Mines, le CNESTEN quant à lui, bien que soumis au contrôle réglementaire du Ministère de l’Energie et des Mines qualifié d’autorité réglementaire en matière de sûreté nucléaire, sa tutelle est assurée par le Ministère chargé de la Recherche Scientifique.

En matière de sûreté radiologique, le Ministère de la Santé est l’autorité réglementaire en matière de sûreté radiologique via le Centre National de radioprotection. La confusion des deux fonctions est apparente de l’avis de la COPSAN. D’un côté le Ministère abrite, sous son autorité, les utilisateurs des techniques nucléaires dont les hôpitaux et les cabinets de radiologie notamment et d’autre côté, il les soumet à son contrôle réglementaire et à son processus d’autorisations.

Afin de pallier à cette confusion, il a été élaboré un projet de loi nucléaire, tendant essentiellement à créer un organe unique de sûreté nucléaire et radiologique, rattaché au Premier Ministre, appelé à intégrer les attributions actuellement dévolues aux deux Ministères de l’Energie et de la Santé.

2004 et aux normes fondamentales internationales de protection contre les rayonnements ionisants et de sûreté des sources radioactives.

COMMENTAIRES :

Bien qu’incitatifs, le code de conduite et les NFI n’imposent pas la l’unicité de l’organe de sûreté, ils renvoient à « un réseau d’organisation ou d’entités investies par le gouvernement de pouvoirs juridiques nécessaires pour exercer son contrôle réglementaire des sources radioactives, y compris la délivrance d’autorisations ».

La résolution 1540 de l’ONU, bien que pouvant constituer un motif à considérer, est couverte par la loi nationale 03-2003 relative à la lutte contre le terrorisme.

Si cette restructuration du cadre réglementaire à travers un nouveau projet de loi retient comme objectif la séparation de ses fonctions de promotion de celles du contrôle et de la réglementation, il y aura lieu de doter cet organe des moyens nécessaires pour effectuer ses missions, qui concernent en premier lieu les autorisations et le contrôle réglementaire. Les services et l’assistance ne relèvent pas généralement des missions de base de l’organisme réglementaire.

QUID DU CONTROLE REGLEMENTAIRE ET DE L’ORGANISME OU ORGANE DE REGLEMENTATION :

Le principal objectif de la réforme des structures de contrôle réglementaire ayant concerné principalement la sécurité des sources radioactives, en se référant au code de conduite sur la sécurité desdites sources, ce contrôle s’entend « de toute forme de contrôle ou de réglementation appliquée à des installations ou à des activités par un organisme de réglementation pour des raisons liées à la radioprotection ou à la sûreté et à la sécurité des sources radioactives ».

L’organisme de réglementation quant à lui, s’entend « d’une entité ou d’une organisation ou d’un réseau d’organisation investi par le gouvernement d’un Etat des pouvoirs juridiques nécessaires pour exercer son contrôle réglementaire sur les sources radioactives, y compris la délivrance des autorisations ».

Le glossaire du texte des normes précitées, définit en outre l’organisme réglementaire comme « tout organisme, unique ou non, désigné ou reconnu de toute autre façon par les pouvoirs publics à des fins de réglementation en matière de protection et de sûreté. Quant au terme « réglementation », au sens des conventions et normes internationales, il doit être entendu dans son sens large comme un ensemble de dispositions régissant les conditions générales ou particulières d’exercice d’une activité ou les conditions d’ouverture et de fonctionnement d’un établissement et par conséquent, les modalités de leur contrôle. Au demeurant, ces dispositions peuvent être de nature législative ou réglementaire, ces dernières étant, de par la constitution, édictées par le Premier Ministre ou les autorités gouvernementales déléguées par lui.

On retiendra que dans sa préface, le texte sur les normes fondamentales internationales de protection contre les rayonnements ionisants précise que lesdites normes « ne sont pas appliquées telles quelles dans tous les pays et dans toutes les régions, mais elles sont interprétées compte tenu des conditions locales des ressources techniques, de la taille des installations notamment…. ».

S’agissant de l’organisation, au Maroc, du contrôle et de la sécurité des sources radioactives et des utilisations desdites sources radioactives, deux questions se posent :

- doit-on unifier sous une seule structure les contrôles actuellement dévolus aux deux Ministères de l’Energie et de la Santé ?
- Comment assurer à cet organisme l’autonomie effective dont il doit disposer vis à vis des utilisateurs d’énergie nucléaire, étant acquis que le principe selon lequel un contrôle crédible ne peut être réalisé par celui qui lui est soumis ?

Sur le 1er point, on peut considérer qu’une réunification des services de contrôle et de la réglementation serait de nature à rendre plus efficace l’application de ladite réglementation. Cet impératif est d’autant plus pertinent que l’on doit désormais intégrer le contrôle en question dans le cadre plus général de la lutte contre le terrorisme qui implique une vision et une appréhension globale de l’activité concernée.

Sur le 2ème point, le degré d’autonomie à accorder à l’organisme réglementaire doit dépendre de l’implication de l’État dans la production et la promotion, autrement dit, si l’État n’est ni producteur, ni transporteur, ni utilisateur, on se pose la question de savoir quelle est la raison qui justifie la création d’un organisme indépendant de l’État.

S’agissant de l’indépendance de l’organisme de réglementation et de contrôle, le préambule du texte des normes précise à ce sujet, qu’il y a lieu de doter cet organisme de pouvoirs et de ressources suffisants à même d’assurer son indépendance des départements ministériels et organismes chargés de promouvoir et de développer les pratiques réglementées. Il doit être, également indépendant des titulaires d’enregistrement ou de licences ainsi que des concepteurs de sources radioactives. La séparation effective des attributions de l’organisme de réglementation et de celles de toute autre partie doit être définie clairement de façon à assurer audit organisme une indépendance de jugement et de décision en tant qu’autorité de sûreté.

En admettant qu’un seul organisme de réglementation serait chargé de tous les aspects de protection et de la sûreté radiologiques dans un pays, le type de système réglementaire dans un pays, dépendra de l’ampleur ou de la taille des pratiques et sources réglementées, de leur complexité et de leurs incidences sur la sûreté. Les mécanismes par lesquels sont remplies les fonctions réglementaires peuvent varier, certaines autorités étant totalement autonomes, alors que d’autres déléguent des tâches d’inspections, d’évaluation ou autres à d’autres administrations ou organismes publics ou privés, l’organisme de réglementation peut être aussi autonome pour ce qui est des compétences spécialisées ou recourir aux services de conseillers et de comités consultatifs.

En conclusion, on peut avancer qu’il peut être envisagé, parmi les solutions de restructuration du cadre légal et institutionnel au Maroc, la création d’un organisme qui regrouperait l’ensemble des directions et des services actuellement en charge des contrôles et qui serait placé sous la tutelle du Premier Ministre, ce qui nécessitera la mise en place du niveau de compétences requis à même d’assurer la transition et la continuité du processus réglementaire et ce qui imposera très certainement un transfert des compétences déjà existantes au niveau national. Cet organisme, pourrait, outre les missions de contrôle et d’inspections, avoir pour compétence, les avis préalables nécessaires aux autorisations actuellement prévues par la législation en vigueur et qui continuerait d’être délivrées par les autorités gouvernementales concernées.

Une telle contrainte découlerait du fait que les diverses obligations internationales seraient trop larges pour pouvoir être adaptées aux divers droits internes. Pour ce qui est du Maroc, il y aura lieu de réaliser cet effort d’adaptation. Aussi serait-il opportun, de prévoir, quelles que soient les dispositions législatives, des dispositions transitoires.

La mise au point du projet de loi nucléaire au Maroc est actuellement en cours. Néanmoins et compte tenu de ce qui précède, il demeure que la réalisation effective de l’unicité d’un organe de sûreté nucléaire et de sécurité radiologique, sous quelque forme juridique que ce soit, pourrait constituer un critère déterminant en terme de renforcement de la sûreté et de la sécurité des sources radioactives.
PRESUMPTION OF ENVIRONMENTAL RADIOACTIVE CONTAMINATION IN THE AREA OF INFLUENCE OF THE EZEIZA ATOMIC CENTRE IN ARGENTINA

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1 INTRODUCTION

A federal criminal court investigates the possible radiological contamination of groundwater by releases from wells located in the vicinity of the Ezeiza Nuclear Research Center, the CAE, - located 40 kilometers from the Argentine capital and next to the international airport of the same name.

The federal criminal judge nominated a geologist professional as an expert witness to carry out the testing. The samples of water were analyzed in the Nuclear Regulatory Authority’s laboratories. The expert witness submitted his results in late December 2004. His report wrongly concluded that the water consumed by close to a million people living near that nuclear facility is contaminated with radioactive elements, not fit for human consumption.

Within the framework of a lawsuit \[1\] the Argentine government, through its embassy in Vienna and at the request of Argentina’s Nuclear Regulatory Authority (ARN), has asked the International Atomic Energy Agency (IAEA), in compliance with the functions established in Article III.A.6. of its Statute, to provide for the application of the international safety standards for radiation protection of the public in the area of influence of the Ezeiza Atomic Centre (CAE), located in the Buenos Aires Province, Argentina.

In response to the Argentine government’s request, the IAEA sent a “Fact Finding Mission” to Argentina.

It should be noted that an expert appraisal report for the case (called “Expert Appraisal Report No. 6”) was made public. This report stated that the drinking water for the population in the area surrounding the CAE was contaminated with man-made radioactive material and that, in particular, it contained enriched and depleted uranium. This information had major public repercussions and caused great anxiety in the population, giving rise to hundreds of public meetings, not only at official Argentine organizations and non-governmental organizations, but also at the PAHO office in Buenos Aires.

In the light of this situation, the ARN prepared a rebuttal to Expert Appraisal Report No. 6 and requested from the IAEA an evaluation of this ARN’s rebuttal with respect to the Expert Appraisal Report No. 6. In response to this formal request, the IAEA issued an initial
report based on the international radiation safety standards for ensuring the radiation protection of the public from exposure to radiation (as might be attributable to operation of the CAE).

The IAEA’s evaluation, which was sent immediately to the Argentine Federal Judiciary by the ARN, established that: the ARN’s report is technically sound ... and it presents credible conclusions related to the radiological public and environmental protection”. With respect to Expert Appraisal Report No. 6, the IAEA indicated that it contained deficiencies ... which compromise the conclusions of the expert. Among the deficiencies of Expert Appraisal Report No. 6, the IAEA identified the most serious as inappropriate use of dose assessment methodology for radiation protection and incorrect use of international radiation protection standards and international health guidelines.

Furthermore, in view of the mention in Expert Appraisal Report No. 6 of the presence of enriched and depleted uranium (on the basis of incorrectly interpreted measurements) and by virtue of the possible impingement on international obligations with respect to the non-proliferation of nuclear weapons, the ARN asked the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) for an analysis of the water in the area. Specifically, ABACC was asked to provide its unquestionably independent evaluation and conclusion on Expert Appraisal Report No. 6. This was done on the grounds that the CAE is subject to the Common System of Accounting and Control of Nuclear Materials (SCCC) that has been applied by ABACC since the start of the 90s. ABACC performed an isotopic analysis of the water samples that had been taken to substantiate Expert Appraisal Report No. 6 and concluded that the results obtained do not indicate the presence of enriched or depleted uranium in any of the samples.

More over the ARN also asked technical opinion to national and international scientific institutions as Universities and Environmental academies. The collateral effects imply that other organizations have taken the expert reports conclusions and initiate legal suits. Also environmental activists initiate unfounded criminal suit because the misinterpretation of the witness report related to uranium samples.

In this legal case national e international connotations such as, radiological protection, regulatory activities, public information, environmental aspects, safeguards an non-proliferation are involved.

2 IMPLEMENTATION OF THE IAEA MISSION

The IAEA Mission was briefed on the situation by the ARN. During this presentation, the ARN told the IAEA mission that Argentina will probably request an International Expert Appraisal. This request is originated in a judicial petition issued by the Argentine Federal Judiciary to the National Executive Authority (the judge responsible for the investigation in the lawsuit made the petition to the Office of the President of the Cabinet of Ministers, and it was referred to the ARN by the Subsecretariat and the General Secretariat of the Office of the President of the Nation). The Argentine Federal Judiciary also issued a similar judicial request directly to the ARN.

In particular, the Argentine Federal Judiciary requested the Argentine Government that the offer made to the ARN by the IAEA in its report dated 28 April 2005 be taken up, namely that — by virtue of the statutory power vested in it — the IAEA organize a definitive and independent expert appraisal by means of an international mission with the participation of such competent organizations as the World Health Organization (WHO), the Pan American Health Organization (PAHO) and the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR)
The mission was informed of the Judiciary’s request details, part of which is set down below:

The expert appraisal should answer, as accurately as demanded by modern standards, the following substantive questions:

A) Whether there is any contamination due to the presence of radioactive elements in the topsoil, in the undersoil, in the surface and ground waters, or in the air, in the area encompassing the districts of Ezeiza, Esteban Echeverría and La Matanza in the province of Buenos Aires.

If so, the nature of the hazard caused should be determined, and whether the contamination could be attributable to activities that have been and/or are being carried out on site of the Ezeiza Atomic Centre, which comes under the National Atomic Energy Commission, in such a way as to have generated a health risk.

B) Checks should be made to find out whether the water for consumption (human and/or industrial) supplied to the population of the aforementioned localities is contaminated with radioactive elements and thereby rendered harmful to health.

C) In the event that contamination under the given circumstances is detected and it cannot be attributed to the activity at the aforementioned atomic centre, its possible origin should be determined.

To that end, an appropriate work plan should be prepared, as soon as possible, covering the aforementioned questions, specifying in particular the activities foreseen to meet the probative requests and expressly mentioning the laboratories abroad where the radiochemical analytical determinations will be made.

The IAEA Mission conducted an inspection at the following locations:

- the ARN laboratories;
- some of the water sampling sites;
- the Radioactive Waste Management Area at the Ezeiza Atomic Centre (CAE); and
- the installations belonging to the Argentine Nuclear Fuels Ltd. company, CONUAR, the only industrial plant at the CAE where uranium is handled for the fabrication of fuel.

During these inspections the opportunity was taken to discuss, directly with those immediately responsible, technical aspects of the procedures for environmental monitoring, laboratory measurements and waste and effluent management.

The Mission also received a detailed explanation of the region’s hydrogeological system from the National Institute for Water (INA), which comes under the Subsecretariat for Water Resources in Argentina’s national government.

An “Exit Meeting” was held with officials from the ARN at which preliminary agreement was reached on the mission’s terms of reference.

3 INTERNATIONAL EXPERT APPRAISAL

On the basis of what was seen and assessed during the mission, confirmed the conclusions arrived at by the IAEA in its initial report. The IAEA therefore considers that the international expert appraisal requested is unnecessary given that there is no evidence that the international standards for radiation protection of the public have been violated and the ARN has the technical capability to make its own independent assessments. However, in view of the request from the Argentine Judiciary and the consideration given to this request by the Argentine government, the IAEA — in the context of its statutory responsibilities — is
prepared to organize the expert appraisal asked for by the Argentine government as an
extrabudgetary project.

To that effect and bearing in mind what the Argentine Judiciary had asked for, a work
plan is attached for determining whether there is contamination with radioactive elements in
the topsoil, in the undersoil, in the surface and ground waters and in the air of the area
encompassing the districts of Ezeiza, Esteban Echeverría and La Matanza in the Province of
Buenos Aires, Republic of Argentina and, if so, the nature of the hazard and its origin.

4 CONCLUSIONS

At the request of Argentina’s Nuclear Regulatory Authority and by virtue of the level of
social commotion caused by disclosure of Expert Appraisal Report No. 6 regarding the
presumed radioactive contamination of potable water in the area of influence of the Ezeiza
Atomic Centre, in May 2005 the IAEA produced an initial report in which it concluded that
the assessment of the radiation safety of the population carried out by the ARN was consistent
with the relevant international techniques and standards, and thus that the affirmation that
there was no risk to the population was credible.

On the contrary, it concluded that the analysis in Expert Appraisal Report No. 6 contains deficiencies that call into question its conclusions and that the author did not apply
the dose assessment methodology properly and made incorrect use of the international
radiation protection standards and the international health guidelines.

Subsequently, at Argentina’s request, the “Fact Finding Mission” described in this
report was sent, during which the validity of the technical appraisals in the rebuttal prepared
by the ARN and which [the technical appraisals] serve as the basis for confirming that there
are no technical indicators to support that there is a risk to the population were verified.
Similarly, it is confirmed that the ARN has the necessary resources and technical experience
to ascertain the situation in Argentina with regard to the protection of individuals from
ionizing radiation.

Nevertheless, despite reiteration of this conclusion, the Argentine Judiciary deems an
international mission necessary, and the national government also considers it advisable. The
IAEA will be the organization which will lead a mission of experts from various international
agencies, such as the IAEA itself, WHO, PAHO and UNSCEAR.

REFERENCES

[1] Legal Case, entitled “Proceedings instituted to inquire into presumed infringement of
articles 200 and 207 of the Penal Code” (Argentine), brought before the Lomas de Zamora
Federal Criminal and Correctional Federal Court of First Instance No. 1, Lomas de Zamora,
Buenos Aires Province, Argentina.

[2] The Argentine Republic is a signatory to, amongst other international instruments,
the Treaty on the Non-Proliferation of Nuclear Weapons and the Tlatelolco Treaty. The
government of Argentina, the government of Brazil, ABACC and the IAEA have signed a
quadripartite agreement for the application of safeguards. Under these instruments, in essence,
the Argentine Republic is committed to the exclusively peaceful use of nuclear materials and
nuclear installations, and is obliged to inform the international control bodies about all the
sensitive activities it carries out, such as for example uranium enrichment. From the
information contained in Expert Appraisal Report 6, it could be deduced incorrectly that the
Argentine Republic could have violated these international obligations.
The Office of the President of the Cabinet of Ministers is the body that assists the President of the Argentine Nation directly in policy management of the country’s general administration and exercises the powers delegated to it by him. Its functions include: processing information stemming from bodies in the National Public Administration and from the National Legislature; supervising the follow-up of activities to manage the various areas of the National Executive Authority; coordinating relations between the various Ministries and Secretariats of the National Executive Authority; coordinating relations between the National Executive Authority and the National Legislature.
COMPTE RENDU DE LA 3ème SESSION : PROTECTION RADIOLOGIQUE ET RADIOISOTOPES

Présidente : Madame Blanca Andrés Ordax
Luxembourg
Monsieur Didier Pezennec
France

La présidente a souhaité que les commentaires et questions interviennent après chaque exposé.

1 RAPPORT DU GROUPE DE TRAVAIL 6 : RESPONSABILITES ET COUVERTURE ASSURANTIELLE DES DETENTEURS DE SOURCES RADIOACTIVES

Ce rapport a été présenté par Madame Danielle Degueuse (France), présidente du groupe de travail 6, ainsi que par Monsieur Jean-Noel Delabrousse-Mayoux (France), secrétaire, ainsi que par Mademoiselle Elise Jacubert (France).

À l’issue de la présentation du rapport, les questions suivantes ont été posées :
Madame Blanca Andrés Ordax, Présidente de la session, demande s’il existe une volonté d’harmonisation de la gestion des sources radioactives dans le monde.

Madame Danielle Degueuse indique que l’Agence pour l’Energie Nucléaire (AEN) a entrepris un travail en ce sens. L’AEN a fait parvenir aux pays de l’OCDE un questionnaire général sur l’utilisation des sources radioactives. Il n’est donc pas exclu qu’il y ait un jour un texte harmonisant cette gestion dans les pays occidentaux. Il faut ainsi encourager le travail de l’AEN, pour lequel le groupe de travail a apporté sa contribution.

1.1 Monsieur Steven McIntosh (Australie) : «Code of Conduct on the Safety and Security of Radioactive Sources, and the associated Guidance on the Import and Export of Radioactive Sources»

À l’issue de l’exposé de Monsieur Steven McIntosh, les questions suivantes ont été posées :

Monsieur Jussi Manninen (Finlande) note qu’au printemps 2004, le conseil de sécurité de l’ONU a adopté la Résolution 1540 qui énumère toutes les questions et exigences en matière de terrorisme. Monsieur Jussi Manninen demande si cette Résolution est de nature à renforcer le Statut du Code.

Monsieur Steven McIntosh répond que le Code est reconnu comme instrument pertinent pour la mise en œuvre de la Résolution 1540.

Monsieur Jean-Léo David (France) fait remarquer que les efforts de l’AIEA sont louables et indispensables. Mais selon lui, le droit positif est ailleurs. À titre d’exemple, le fabricant de sources s’appuie sur un code de bonne pratique. Monsieur Jean-Léo David
demande si le Code de bonne conduite de l’AIEA prend en compte suffisamment les attentes des utilisateurs et des fabricants.

Monsieur Steven McIntosh indique que les producteurs de sources ont créé une association de producteurs de sources qui a participé aux discussions sur l’élaboration du Code de bonne conduite. L’association a d’ailleurs été créée à la lumière de l’élaboration du Code de bonne conduite. Les producteurs de sources sont conscients qu’un accident ou un incident grave entraînerait des restrictions auprès des utilisateurs ce qui ne manquerait pas d’avoir un impact sur les fabricants.

1.2 Monsieur Jean-Paul Montmayeul (France): «Réflexions sur le contrôle des sources radioactives et le principe de précaution»

A l’issue de la présentation de Monsieur Jean-Paul Montmayeul, Monsieur Pierre Strohl (France) fait part de ses propres réflexions sur cette question difficile qu’est la définition du principe de précaution. Il note d’ailleurs que l’on parle beaucoup du principe de précaution et pourtant il semble que personne ne s’accorde sur son champ d’application. A l’examen des textes internationaux, communautaires et français, le principe de précaution est un instrument de gestion des risques incertains.

Ce principe s’applique lorsque l’on peut répondre à la question suivante : « le risque est-il incertain ? ».

Quels sont les risques incertains en matière nucléaire ? La Commission Internationale de Protection Radiologique (CIPR) a reconnu que le principe de précaution a été appliqué à l’occasion de l’édition des normes de base.

1.3 Rapport du groupe de travail 4 : protection radiologique

Ce rapport a été présenté par Monsieur Fabricio Nocera (Italie), Président du groupe de travail 4, ainsi que par Monsieur James Peter Percival (Royaume-Uni).

1.4 Monsieur Ludo Veuchelen (Belgique): «The Optimisation Approach of ALARA in Nuclear Practice: an Early Application of the Precautionary Principle. Scientific Uncertainty Versus Legal Uncertainty and its Role in Tort Law»

A l’issue de l’exposé de Monsieur Veuchelen, les questions suivantes ont été posées :

Monsieur Mariano Molina (Espagne) estime que la fixation de normes sur la base du principe de pourrait devenir une exigence de la société.

Par ailleurs, Monsieur Mariano Molina s’interroge sur la définition du principe de précaution. Cette définition peut-elle être cantonnée dans cette formule : « dommage potentiel sérieux » ? Aujourd’hui, les bonnes pratiques sont données par des organismes ad hoc. Dans l’avenir, quelle sera la perception publique du risque ? Que deviendra le principe de précaution au regard du développement nucléaire ?

Monsieur Ludo Veuchelen pense que ces questions peuvent trouver des réponses dans des textes juridiques. Lorsqu’est mis en place un bon système de réglementation, alors l’application d’ALARA n’est plus réellement nécessaire.

Monsieur Ludo Veuchelen indique qu’en Belgique, il n’y a pas eu de débat public sur le nucléaire car le risque nucléaire est considéré comme un risque parmi les autres risques de la société.

Monsieur Herbert Schattcke (Allemagne) pense que le principe de précaution est un principe très large et donc dangereux. Il estime nécessaire de le cantonner.

Monsieur Ludo Veuchelen rappelle que le principe de précaution doit être appliqué au regard d’un autre principe important : le principe de proportionnalité.
Monsieur Pierre Strohl rappelle ce qu’il a dit précédemment sur le principe de précaution : le risque c’est le risque acceptable. Il note que cette notion précède aussi le principe de prévention.

Madame Blanca Andrés Ordax indique que la Cour de justice des communautés européennes a jugé que le principe de précaution ne peut être pris isolément. L’estimation du risque incertain doit être analysée de manière proportionnée.

1.5 Madame Latifa Zidi (Maroc): «La sécurité des sources radioactives au Maroc/Vers un renforcement du cadre légal et institutionnel»

A l’issue de l’exposé de Madame Latifa Zidi, les questions suivantes ont été posées :
Mademoiselle Marianne Lavergne (France) demande quels sont les organismes qui vont être regroupés au sein de l’établissement public que le Maroc envisage de créer pour gérer notamment les contrôles de l’utilisation des sources radioactives.

Madame Latifa Zidi précise que cet établissement public devrait regrouper le Centre national de radioprotection ainsi que le Centre national de l’énergie.

Madame Blanca Andrés Ordax demande si des Organisations Non Gouvernementales participent au processus de gestion des sources radioactives et à l’élaboration de nouvelles réglementations.

Madame Latifa Zidi répond positivement et cite en particulier l’action de l’Association Marocaine de Radioprotection qui a beaucoup travaillé avec des associations professionnels, notamment les ingénieurs en génie atomique.

L’Association Marocaine de Radioprotection est intervenue dans les secteurs industriels, de la santé et de la recherche.

1.6 Madame Cristina Alejandra Domínguez (Argentine): «Presumption of environmental radioactive contamination in the area of influence of the EZEIZA Atomic centre in Argentina»

A l’issue de l’exposé de Madame Cristina Alejandra Domínguez, les questions suivantes ont été posées :

Monsieur Steven McIntosh se demande comment est-il possible que le rapport de l’expert soit erroné. Madame Cristina Alejandra Domínguez répond que dans le cas d’espèce, le géologue désigné comme expert n’était pas spécialisé en protection radiologique. Les résultats étaient bons. En revanche, les interprétations tirées des résultats étaient erronées. L’AIEA a notamment constaté que l’expert n’avait pas correctement appliqué les normes internationales de radioprotection ainsi que les directives internationales en matière de santé.


Madame Blanca Andrés Ordax s’interroge sur les pouvoirs donnés au juge, dans le cas d’espèce, pour nommer un expert qualifié. Pourquoi le juge n’a-t-il pas choisi un expert qualifié ?

Madame Cristina Alejandra Domínguez répond que le juge choisit librement les experts qu’il désigne. Dans le cas présent, il a choisi l’expert sur une liste après examen de son curriculum-vitae.

* * *

Les auditeurs n’ayant plus de questions la Présidente lève la séance après avoir remercié chaleureusement les personnes ayant participé aux travaux et débats de la session.
REPORT BY WORKING GROUP 4

Chairman: F. Nocera,
Italy

Working Group members

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INTRODUCTION

Nuclear law is always evolving worldwide, and protection against ionising radiation is an area where developments are constant and very significant. This is true beyond and independently of the guiding role of international standards and recommendations, since the development of national legislation is a function of several factors, such as the adoption and entering into force of international instruments (conventions, regulations, directives etc.), the obligation to bring such national legislation in line with those instruments, the need for updating and improving it, including by covering certain activities/operations not considered by them, and so on and so forth.

The Group has always endeavoured to address issues and topics of the widest possible interest, as well as of current consideration and concern. In pursuing this effort, some given issues and topics are revisited in the light of further analysis and developed accordingly, others are dealt with for the first time and may well be the subject of further consideration. The present report reflects the analysis carried out by the Group in some areas believed to be particularly important and of a special momentum from the legal angle, i.e. regulating natural radioactivity in Europe and the relevance of radiation protection in inspection under the Comprehensive Test Ban Treaty. Besides, the report focuses on possible ways of preserving a successful international nuclear regime, an issue which is assumedly of the utmost importance to all those who believe in the peaceful use of nuclear energy as a beneficial resource for humankind. Finally and in keeping with a tradition followed by the Group, various case law are discussed drawing both on European Court of Justice and national courts’ ruling. This case law touches upon environment, nuclear safety and liability at work. It is noted that the bearing of the Court of Justice’s ruling is relevant also beyond the geographical area concerned, which by now has become considerably vaster following the recent enlargement of the European Union. The Group hopes that this report will at least equal the success encountered by its reports at previous conferences and that the ensuing debate will involve a high number of participants.
CHAPTER ONE

1. Natural radioactivity and European regulation of norm industries
2. The development of a radiation protection doctrine for CTBT inspectors

Para 1 of this Chapter expands on the regime of NORM (Naturally Occurring Radioactive Materials) based on the distinction between exposure to them at work and as resulting from natural background; it also points out the existing differences in national regulations, exemptions-clearance levels and disposal options, and brings some examples of how NORM are addressed by such regulations. Although natural radioactivity has been the subject of previous WG 4’s reports, it is resumed here bearing particularly in mind that at the European level its having being regulated for the first time and in a comprehensive way by the 1996 Euratom Basic Standards, has marked a very significant step in the enrichment process of EU legislation on radiation protection.

Para 2 is concerned with radiation protection as relevant to On Site Inspections (OSI) under the Comprehensive Test Ban Treaty (CTBT). This issue is new and challenging for the Working Group. The illustration and remarks pertaining to this paragraph are intended to highlight the links, both conceptual and operational, between the two areas in point to the extent that radiation protection as such is not traditionally and immediately associated to non-proliferation needs.

1. Natural radioactivity and European regulation of norm industries

The UNSCEAR 2000 report [1, references are listed in Annex 1, Part 3] has evaluated the worldwide occupational exposures from all human activities. Many of these activities simply enhance the exposure from natural radiation sources. The collective effective dose to workers is estimated to be about 20 % from man-made sources and 80 % from natural sources. The largest single component, 40 %, comes from radon exposure significantly above background levels. The other natural sources are:

- coal mining (18 %);
- other mining operations (14 %) (excluding uranium mining, which is dealt with in the nuclear fuel cycle);
- aircrew exposure from cosmic radiation (6 %) and;
- mineral processing industries (2 %).

In the context of the European Basic Safety Standards directive (EU BSS) [2], work activities leading to a significant increase in exposure due to natural radiation sources are divided into three broad categories:

- radon in workplaces;
- aircraft operation and;
- human activities with enhanced natural radioactive substances.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
The last category is often referred to by the acronym NORM (naturally occurring radioactive materials). Sometimes the acronym TE-NORM is used (technologically enhanced naturally occurring radioactive materials).

Dealing with enhanced natural radioactivity means that one has a good idea of the normal natural radiation background. Annex 1, Part 1 gives an overview of the average radiation dose from natural sources and some information on the origin of NORM.

**Overview of NORM industries**

According to Radiation Protection 95 [6], the most significant industries within the European Union where processing of NORM can cause increased exposure of workers are:

- the phosphate industry;
- processing of metal ores;
- zircon sands and refractory materials;
- manufacture of rare earths;
- manufacture and use of thorium compounds;
- the titanium dioxide pigment industry and;
- oil and gas extraction.

These industries use raw materials containing naturally occurring uranium-238 and thorium-232 in secular equilibrium with their progeny. Processing of the raw materials may lead to the selective concentration of certain radionuclides in by-products, residues or product streams, because of their chemical or physical properties.

Other industries, such as the electricity production by coal burning, may also give rise to a radiological risk under some circumstances. In fact, almost every industry with a large turnover of materials has some problems with NORM. Another type of problems with NORM occurs in scrap yards that have installed large radiation monitors at the entrance for control on radiation sources in the scrap. Most of the incidents relate to NORM materials such as residues and scales from the oil and gas extraction industries or the fertiliser industries.

Within the NORM industries three broad categories of materials can be identified [6]:

- **Mineral ores** containing a wide range of naturally occurring radionuclides. Such ores are typically extracted and processed in very large quantities. Most ores with high specific activities are now imported into the EU from developing countries.

- **By-products, scales and residues** from physical phenomena, such as mass separation in processing mineral sands or the volatilisation of lead and polonium in high temperature furnaces, or by chemical reactions, for example the precipitation of radium containing scales in the oil and gas industry. The specific activity of the by-products, scales and residues may be very high but the quantities are often much smaller than the ores.

- **Some products** intentionally contain high levels of naturally radioactive elements such as thorium, although not for the radiological properties of the elements. Thoriated welding
rods and gas mantels are examples of such a use. The specific activity of such materials is generally very high.

European regulation

The EU BSS directive [2] deals with occupational exposure from natural radiation sources in a different way than ICRP 60 [7]. The EU BSS makes distinction between practices, which are functional applications of ionising radiation, such as the use of radionuclides in view of their radioactive, fissile or fertile properties, and work activities where the unintentional presence of natural radioactivity lead to a significant increase in the exposure of workers or members of the public. The reason for the separate treatment of work activities in the EU BSS is the awareness that the strict regulation of artificial sources cannot be applied to the vast non-nuclear industry in the presence of a considerable and variable natural background. Aircrew exposure or radon in workplaces is outside the scope of this report.

The directive sets up a stepwise system in which the Member States are required:

- to make by means of surveys or by any other appropriate means a national inventory of NORM activities;
- to categorize the compiled data on the basis of exposure level, specific activity and generated waste in order to make a distinction in the degree of radiological concern;
- to implement, if necessary, corrective measures to reduce exposure;
- to apply, if necessary, all or part of the system of radiological protection for practices or interventions.

Exemption, clearance and exclusion

The exemption levels in article 3 of the EU BSS directive are derived for practices with moderate scale use of artificial radio-nuclides (and natural radio-nuclides when they are processed in view of their radioactive, fissile or fertile properties). The exemption levels do not apply to work activities where the amounts of material to be considered are in general very large. Large amounts are also assumed for derivation of general clearance levels for practices. Therefore the concepts of exemption and clearance for work activities converge and

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1 The European legislation on NORM materials is deliberately kept flexible in view of the fact that in most Member States there is little experience with the regulation of natural radiation sources and that most of them must set up a new legal framework for this purpose. Flexibility is also offered because of the wide range of possible exposure scenarios and protective measures between and even within the same industry, and of the higher probability for future population exposure than for most artificial sources of radiation. There is also a vast legacy from past NORM practices. Many of the NORM sites were contaminated before present standards of radiological protection were developed.

2 “A human activity that can increase the exposure of individuals to radiation from an artificial source, or from a natural radiation source where natural radionuclides are processed for their radioactive, fissile or fertile properties, except in the case of an emergency exposure”.

3 “A human activity that prevents or decreases the exposure of individuals to radiation from sources which are not part of a practice or which are out of control, by acting on sources, transmission pathways and individuals themselves”.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
similar values may be used. There is still no international consensus on approaches to
determine exemption-clearance levels for NORM materials\textsuperscript{4}.

The radiological model for derivation of general exemption-clearance levels must account for
a wide range of exposure pathways including recycling, reuse or disposal of the materials. In
Radiation Protection 122, part II [8] enveloping scenarios and parameter values were
developed on expert opinion for the combined exposure pathways: ingestion, inhalation and
external gamma radiation. In each case the most restrictive of the enveloping scenarios was
adopted. The exemption-clearance levels recommended by the European Commission are
given in Annex 1, Part 2 [8].

Recently, the IAEA and ICRP released documents for consultation proposing a simple system
of only two exemption-clearance levels, using the concept of exclusion to limit the scope of
regulatory control for natural radionuclides. They were selected considering the upper end of
the worldwide distribution of specific activity in soil provided by UNSCEAR [1]. The
simplicity of the proposed system looks very attractive, but it ignores the basic fact that
natural radionuclides are as diverse as artificial radionuclides and have comparable
radiotoxities\textsuperscript{5}. Radiotoxicity and waste volumes are important considerations in setting
exemption-clearance levels, resulting in a more balanced set of values like in Radiation
Protection 122, part II (Annex 1, Part 2).

In order to avoid problems with the internal market and the transboundary transport of
materials within the European Union it is highly desirable to decide on an internationally
agreed set of exemption-clearance levels.

**Implementation of the European directive: differences and examples in some Member
States**

In spite of the extensive guidance by the European Commission, there are still large
differences in the regulations, exemption-clearance levels and disposal options between the
Member States. What is allowed in one country may be forbidden in another country,
disturbing the internal market and favouring migration of industries to countries with less
stringent regulations.

\textsuperscript{4} Applying the trivial risk criteria for practices of 10 µSv/y individual dose and 1 mSv/y collective dose to
NORM activities would bring large areas of the world under regulatory control. Moreover, it is in general not
possible to implement a control scheme for such a small increment to the natural background, in fact far below
the natural variability. In Radiation Protection 122, part II [8], an individual dose criterion in addition to
background exposure of 300 µSv per year is suggested. The choice of a 30 times higher dose criterion was
justified on the following grounds:
- it is comparable to or smaller than the regional variation in total effective dose from the external natural
  radiation background (excluding radon);
- it corresponds to the exemption level proposed for building materials in Radiation Protection 112 [9];
- it is coherent with the dose constraints for the control of effluents recommended by ICRP;
- it is below the level of regulatory control in work activities suggested in Radiation Protection 95 [6].

\textsuperscript{5} Therefore, releasing large amounts of material with specific radium-226 and thorium-232 activities just below
the suggested exclusion level can result in doses exceeding those limits normally used for the public (use as bulk
building material, land use of a dump site (residential, agriculture...)). On the other hand, the lower of the two
exemption-clearance levels applying to the volatile lead-210 or polonium-210 is quite low as one finds limited
amounts of material with higher specific activities at many places (chimneys, filters...).
The Netherlands is one of the most advanced countries in the implementation of Title VII of the EU BSS. All the NORM activities in the Netherlands were classified in dose ranges\textsuperscript{6} in normal and unlikely situations \cite{12} with the methodology described in Radiation Protection 95 \cite{6}. Exemption-clearance levels for NORM materials (Annex 1, Part 2) and for atmospheric and liquid discharges of natural radio-nuclides from work activities were published in the Dutch Radiation Protection Decree \cite{10}. The levels are also used for establishing the system of exemption, reporting and authorisation of work activities \cite{11}.

In Belgium, work activities are regulated by Royal Decree of 20 July 2001 \cite{5}. A dose evaluation is required for the following NORM activities:

- production of phosphates;
- handling zircon sands;
- tin foundry;
- extraction of rare earths;
- manufacture of thoriated welding rods;
- any other work activity defined and listed by the Belgian Federal Agency for Nuclear Control and published in the Belgian State Gazette.

When, in spite of protective measures, the dose assessment is still above the value of the dose limit normally used for the public, the Belgian Federal Agency for Nuclear Control shall impose all or part of the system of radiological protection for practices.

\* \* \*

2. \textit{The development of a radiation protection doctrine for CTBT inspectors}\textsuperscript{7}

The on-site inspections

The objective of an on-site inspection is to gather, on a site localised by the International Data Centre, after detection of a suspect event, complementary information likely to corroborate or not the theory of a nuclear explosion. It is an investigative task. In any event, states remain the final judge as regards the conclusion. This component of the verification regime raises both political and tactical questions.

An inspection is of an intrusive nature as it takes place on the territory of the inspected state party (ISP). Depending on the object of the inspection, that state can attempt to protect issues which it considers to concern national security. The Treaty is very specific as regards the available techniques and on the rights and obligations of inspectors. The Treaty defines clearly the main features of an inspection:

\textsuperscript{6} The dose ranges in Radiation Protection 95 are the following <1, 1-6, 6-20 and >20 mSv/y

\textsuperscript{7} The framework of this part of the report is given in Annex 2.
- maximum size of the inspection zone: 1000 km²
- maximum size of the inspection team (IT): 40 inspectors
- maximum duration of an inspection: 130 days (in two phases).

Tactical issues are very much conditioned by a “race against the clock” during each inspection. Signatures of a nuclear explosion have a very short lifespan. The most telling indicators are those which are detected by the simplest means but which disappear quickly. These time restraints are amplified by the fact that potential inspectors will not be members of the CTBTO but rather will come from national “pools” thereby rendering their mobilisation more complicated and therefore longer. Finally, the delays necessary for preliminary negotiations leading to a decision to carry out an inspection slow down implementation considerably.

**Proposal for an OSI Radiation Protection Regime**

**Introduction**

The inspection area of an OSI is the site where an ambiguous event occurred that might or might not be a nuclear explosion. That means that there is a radiological risk throughout an OSI – should the inspection activities reveal a non-nuclear cause for the ambiguous event, the OSI would in fact end – and should therefore be taken into account both in the preparation and response phases of an OSI. While there are many scenarios conceivable to assess different kinds of exposure in advance, predictions are difficult since an OSI is essentially event- and site-specific. Thus, radiological risk assessment and associated monitoring and protection need to be an integrated process of any OSI.

An IT comprises experts who in their home institutions are specialised for activities and techniques which are defined by the Treaty for OSI. Many of these activities and techniques are unrelated to radiation detection and radionuclide identification. Accordingly, most IT members have no radiation-related background, thus, they have no experience in their normal occupational career in radiation protection. Therefore, with a view to their radiation training background, they can be considered as “members of the public”, a category commonly used in the context of ionizing radiation exposure. Obviously, some OSI activities and techniques are related to radiation detection and radionuclide identification. Hence, some IT members are experts in this area, their radiation protection expertise being provided by their occupation and normal professional career. Therefore, with a view to their radiation protection training background, they can be considered as “radiation workers”, the other category commonly used in the context of ionising radiation exposure in normal situations.

According to the CTBT, the IT has the obligation to respect the safety and health regulations of the ISP. This certainly also applies to radiation protection issues. However, in respecting local regulations it is equally important that the IT ensures at any time that (a) remaining risk levels are acceptable and (b) no undue restrictions to the inspection process are imposed. An OSI Radiation Protection Regime is necessary to prepare and guide inspectors as well as to facilitate resolution of differences between the IT and ISP on how to perform inspection activities. Such a radiation protection regime should be operational and for that as simple as possible.
World-wide most national regulations on ionising radiation originate from the International Commission on Radiological Protection (ICRP) recommendations and also those from the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) through a process managed by the International Atomic Energy Agency (IAEA) aiming to convert these recommendations into operational standards. Considering the main characteristics of an OSI described above, it is obvious that the relevant basic ICRP, UNSCEAR and IAEA documents do not explicitly foresee CTBT OSI. Nevertheless, since ICRP Publication 60\(^8\) and 63\(^9\) as well as IAEA Safety Series No. 115\(^{10}\) are the source for most national radiation protection regimes, it is appropriate to also refer to these documents in the context of CTBT OSI in order to stay within the existing consensual world-wide process for establishing regulations. As a matter of fact, this approach has direct impact not only on CTBT OSI activities but also would remain compatible with most national regulatory frameworks both of an ISP and of the countries of inspectors’ citizenship.

**OSI Radiation Protection Regime (OSI/RPR)**

Activities involving exposure to ionising radiation other than exposure to natural background radiation require provisions for radiation protection and radiological safety. In this context, ICRP and IAEA documents distinguish between practices and interventions for which different protection regimes are being recommended.

IAEA Safety Series No. 115 define practices and interventions, while ICRP and IAEA documents describe also three principles which summarise the fundamentals of radiation protection\(^{11}\).

In view of these definitions and the purpose of the CTBT, an OSI should be considered an intervention. This conclusion derives from the following:

- According to a proposal by the then Prime Minister of India, Jawaharlal Nehru, for a "Standstill Agreement" on Nuclear Test Explosions in 1954 (Nehru Statement), exposure of world populations can only be averted if all nuclear test explosions worldwide are eliminated.
- Carrying forth the idea of the Nehru Statement, the CTBT bans nuclear weapon test explosions anywhere. Therefore, the CTBT verification regime aims to reduce and avert exposure in line with the fundamentals of radiation protection. Following from this, an OSI, being the only measure of this verification regime where there is a radiological risk to be taken into account, is an intervention.

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\(^{9}\) Principles for Intervention for Protection of the Public in a Radiological Emergency, ICRP 1993.

\(^{10}\) International Basic Safety Standards for the Protection against Ionising Radiation and for the Safety of Radiation Sources, IAEA 1996.

\(^{11}\) Justification: “No practice … should be authorized unless the practice produces sufficient benefit to the exposed individuals or to society to offset the radiation harm that it might cause …”

Limitation: “The normal exposure of individuals shall be restricted so that neither the total effective dose nor the total equivalent dose to relevant organs or tissues, caused by the possible combination of exposures from authorized practices, exceeds any relevant dose limit …”.

Optimisation: “… protection and safety shall be optimized in order that the magnitude of individual doses, the number of people exposed and the likelihood of incurring exposures all be kept as low as reasonably achievable (ALARA) …”.

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Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
Ethical considerations suggest that OSI activities contribute significantly to reducing and averting exposure not only of current but also of future generations. This duty of care for future generations also is a key concern expressed in ICRP and IAEA documents.

*Reductio ad absurdum:* if an OSI was considered a practice, a nuclear explosion ought to be considered a practice as well, which contradicts the fundamentals of radiation protection.

Based on the above, the OSI Radiation Protection Regime (OSI/RPR) is adapted from ICRP publications and IAEA standards related to interventions:

- All members of the inspection team are considered members of an intervention team. Accordingly, people from both categories identified in normal situations, i.e. “members of the public” and “radiation workers”, may be selected as inspectors and inspection assistants.
- Justification and optimisation principles are applicable while the limitation principle is not. Accordingly, an OSI is justified if it is expected to achieve more good than harm with due regard to health, social and economic factors. Operational dose levels result from the optimisation process taking account of event- and site-specific conditions. OSI/RPR reference dose levels indicate the magnitude of acceptable exposure during an OSI and shall serve as a guideline.

As mentioned before, these values are guidelines and are subject to event- and site-specific risk assessments. The IT Leader is obliged to continuously consider additional, new information as part of OSI/RPR management to ensure that optimization takes place and that cost/benefits are balanced. In this context, every effort shall be made not to exceed the above reference dose levels and to keep individual doses, the number of inspectors exposed, and the likelihood of their incurring exposures as low as reasonably achievable (optimization principle). ALARA procedures should be developed accordingly.

The application of the OSI/RPR and its implementation implies the following:
- Training of inspectors on radiation protection and the OSI/RPR;
- Inspectors’ awareness of potential risks and their voluntary participation at an OSI;
- Comprehensive dosimetry including pre- and post OSI dose measurements.
- CTBTO acceptance of responsibility for inspectors beyond their participation at an OSI, i.e. regarding long-term detrimental health effects. This particular issue is an essential part of the definition of the status of inspectors, currently being developed by the PTS.

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12 The OSI Reference Dose Levels during an OSI are:

- for Base of Operation site selection: **2 mSv per OSI** (Note: This level represents about the average annual natural global background plus a maximum constraint of 1 mSv for situations having societal benefit but without individual direct benefit. *2005 ICRP Recommendations*).
- for any activity within the inspection area including pre-planned missions to hot-spots: **10 mSv per OSI** (Note: This level derives from the exposure limit applicable to radiation workers in normal situations).
- for radiological exposure resulting from emergency situations that might occur: **150 mSv per OSI** (Note: This level derives from the exposure level applicable to radiation workers in emergency situations).
CHAPTER TWO

HARD LAW VS. SOFT LAW: IS THERE A THIRD WAY?

The debate that a report is meant to stimulate among INLA members and beyond, often begins at the time of its elaboration, when discussions between WG members may also result in different points of view which are reflected in the final version of the report. This lively approach is to be welcomed, and the issues dealt with in this Chapter are a good example of it. Yet, the remarks developed here are not actually targeted to arousing a controversy, but rather to suggesting a possible alternative to an apparent counter-position between the so called hard law and soft law, and to attract further suggestions in this respect.

Introduction

At the Nuclear Inter Jura 2003 in Cape Town, South Africa, a member of the Association submitted a paper by way of commentary upon the Report of Working Group IV presented at that Inter Jura ("the Commentary"). Another member of the Association then produced a response to the Commentary which was circulated to members of the Working Group ("the Response"). Copies of each of the Commentary and the Response are attached as Annex 3 to this Report.

The purpose of this Chapter of the report is to record observations upon this interesting exchange of views with the ultimate aim of identifying what would appear, on reflection, to be the substantial degree of agreement between these two authors in relation to the true role for "subjective" concepts such as "optimisation" and "justification", and for stakeholder participation, in the process of "legal" regulation of the nuclear industry.

The "controversy"

In the Commentary, the author makes a series of comments in response to the scope and content of the Report of INLA Working Group IV which are prefaced by a personal statement in the following terms:

"Nuclear Lawyers tend to believe in Don Quichote when they try to bring together economical, environmental and legal values in one regulation. In the fast changing world of high technology and high risk (high magnitude but low probability risk) the rule making process is both too slow and too hierarchical and conflicts with technocratic and soft-law alternatives."

He notes that, in his view, there is a paradox at the heart of the law relating to Radiation Protection, namely the need for "stable and consistent" rules alongside the announcement of new ideas from ICRP relating to "a new system of protection of man and the environment".
This leads the author of the Commentary on to argue, in the light of a review of recent successes in the nuclear field\textsuperscript{13}, that "the keywords" for international nuclear law for the future are "Transparency", "Participation" and "Environmental concern and Liability".

He argues that the paradox he identifies can only be resolved through what he calls "reflexive regulation" and "procedural justice", which might perhaps be otherwise described as the participation of stakeholders in the regulatory decision-making process.

In reply, the author of the Response takes issue with what he sees as the "unwise suggestion" that the law should be encouraged to use "justification and optimisation judgments", for the sake of transparency. In his view, "such transparency and citizen participation would lead to confusion, conflicting legal judgments and impossible burdens placed on the nuclear industry".

The thrust of this objection to the Commentary seems to be that concepts such as justification and optimisation are too vague and subjective to form the basis of legal requirements or rules, compliance with which by operators is mandatory and will ultimately be enforced via the courts. The use of such "vague concepts" in lieu of "simple numerical standards" in legally enforceable requirements placed upon operators would be unworkable.

**A possible resolution?**

At first glance, this appears therefore to be a fairly polarised disagreement between proponents of what the author of the Commentary might describe respectively as "hard law" and "soft law". He appears to view "hard law" as too slow and too hierarchical a basis for regulation in this high technology/high risk field; The author of the Response, in contrast, appears to suggest that recourse to soft law would be unworkable.

However, on further analysis, it may be said that, to a certain extent at any rate, the two authors are talking at cross-purposes and may be addressing somewhat different issues. Their respective views may not, therefore, be necessarily regarded as diametrically opposed as they at first sight appear.

Certainly from the perspective of the party subject to regulation, the operator of a nuclear installation perhaps, it is essential that legally enforceable constraints upon their operations are objectively clear and intelligible, setting obligations which are prospective, not retrospective, in nature\textsuperscript{14}.

If that is the general basis for the remarks in the Response, one may be sure that most would accept the validity of that perspective. It is surely inconceivable that the actual content of legally enforceable rules and obligations imposed in this field should be constituted solely or

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\textsuperscript{13} notably the decision by the English Court of Appeal to uphold the decision of the relevant UK Secretaries of State that the practice of manufacture of Mixed Oxide Fuel in the UK (at the Sellafield MOX Plant) was justified in accordance with the requirements of Council Directive 96/29/Euratom of 13 May 1996 (the \textit{1996 BSS Directive}).

\textsuperscript{14} All fairly uncontroversial requirements of legal obligations. Indeed some have gone so far as to deny the label "law" to rules or norms which fail to display such fundamental features - see e.g. Fuller "The Morality of Law", Chapter 2.
substantially by language or concepts which are so vague or ill-defined as to result, in effect, in the need for retrospective determination of those requirements in the courts.

To leave it to the courts to determine retrospectively the legality or otherwise of an operator's conduct by reference to such concepts alone, with judges or juries "apply[ing] their own judgment of optimisation or justification" in the light of conflicting expert testimony, would indeed be an unworkable approach to day to day legal regulation of the field of radiation protection.

However, it should be noted that the author of the Commentary acknowledges the need for "stable and consistent rules". Indeed, were he to discount such in favour of such open-ended concepts as optimisation and justification standing alone, then he would not conclude that this very requirement is one limb of the "paradox" which he describes in his paper.

It would appear, therefore, that the thrust of the Commentary's thesis is not to propose that the courts be faced with the task of applying such open-ended concepts, but is instead directed at the regulatory decision-making process which gives rise to tangible and enforceable legal obligations, e.g. in the form of conditions upon regulatory consents, authorisations and other such instruments. It is in this procedural sense that the author sees the need for transparency and participation - "procedural justice and reflexive regulation" - rather than in the substantive sense of the language and wording used in the actual legal instrument in which specific obligations upon operators are to be found.

If this is correct, and various comments in the Commentary would suggest that it is, then it would not necessarily suffer from the serious practical and jurisprudential difficulties which are envisaged in the Response, and which would certainly apply to any move to effective retrospective regulation by the courts.

On this reading of the Commentary’s thesis, then this view would correspond entirely with the concluding view in the Response that "the place for 'transparency' and 'citizen participation' is ... at the regulatory level when the numerical legal standards are being developed".

The key to this lies in a recognition that the application of such "subjective" concepts as "optimisation" and "justification" rests primarily not with the courts, but with expert decision-makers such as Regulatory Authorities, including governmental bodies. The role of the courts in this regulatory context should therefore be confined to limited, largely procedural, review of the decision-making process - as is for example the case with English judicial review proceedings - rather than a substantive reassessment of its very outcome.

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15 See for example: "Procedural justice refers to social science research that shows that people are not influenced by the results of the legal process as much as they are influenced by their opinion of whether the system was fairly administered, their participation in the process, and the dignity and trust of the system." (emphasis added); and "Those that are worried should be involved in the decision making process".

16 It might be noted that this is indeed illustrated at the level of European Law also. The concept of "justification", incorporated into the corpus of relevant European law by what is now Council Directive 96/29/Euratom of 13 May 1996 (the 1996 BSS Directive), is recognised as being a matter for determination by the authorities of the individual Member States and not something to be determined substantively at the European level.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
The application of these concepts by such regulatory bodies must, however, be within the context of a constructive, prospective and ongoing dialogue between regulator and operator. Whilst this may lead to the informed\(^{17}\) development of expertise and best practice on the part of the operator, which might form what the author of the Commentary would describe as "technocratic and soft-law alternatives" to hard legal rules, it is the hard legal product of the regulatory process, in terms of consents, authorisations, licences etc. (and their respective conditions), which will provide the basis for regulatory enforcement measures via the courts. The legal basis of regulation in this sense would therefore be recognisable as what the Commentary would describe as hard law.

By the point at which recourse may therefore be had to the courts to assess the lawfulness of the conduct of an operator in the sense of compliance with legal/regulatory requirements, concepts such as "optimisation" and "justification" should already have been translated, via the regulatory decision-making process described above, into a much more readily quantifiable form, capable of ready assessment by the courts without the need for them to engage in the sort of judgmental application of such "subjective" concepts to which the author of the Response would rightly take exception.

Provided that this is the case, the development of these concepts into actual compulsory requirements backed by judicial enforcement powers (if required) will be the product of a prospective dialogue with the operator and the final binding legal requirements will be in a form which is comprehensible to the operator.

In a modern, democratic society, there is indeed both a role and a requirement for such public authorities' decisions to be taken in a fair and transparent manner, no doubt involving, where appropriate, participation in the form of informed public consultation. The Response expressly acknowledges this. Stakeholders' views (including those of the operator) will be actively sought by such decision-makers in advance, and reflected as appropriate in their decision.

This should be a rather uncontroversial statement. It is, for example, borne out in the reality of the regulatory process in the UK, and amply reflected in the history leading up to and content of the decision of the Court of Appeal in the MOX Plant case\(^{18}\) which is referenced in the Commentary.

It enables our industry to be the subject of effective regulatory scrutiny and control, informed by developments in scientific understanding but not stymied by developing scientific debate, translating scientific judgment, via the prism of socio-economic and political judgments of tolerability of risk etc, into meaningful and workable regulation of this important industry.

**Concluding remarks**

Whether one seeks then to use terms such as "technocratic" or "soft law" to describe this regulatory decision making process and any non-legally binding norms of behaviour and best

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\(^{17}\) Informed, that is, by reference to such conceptual requirements as the need for "optimisation" and "justification" and an understanding of the approach taken by the regulator(s) in their application of the same to the determination of "hard" regulatory requirements.

\(^{18}\) R on the application of Friends of the Earth v Secretary of State for Environment Food and Rural Affairs and others [2001] EWCA Civ 1847.
practice which may be derived from such co-operation is, perhaps, more of an academic matter than something which need unduly concern practitioners in the field.

The key to a consensus view regarding the resolution of the "paradox" identified at the heart of this debate may rest, instead, upon an acknowledgement that, whatever terminology is used to describe it, the place for the expression of concepts such as “justification and optimisation” is at the level of the regulatory decision-making process itself, rather than the courts.
CHAPTER THREE

RECENT CASE LAW: PROTECTION OF THE MARINE ENVIRONMENT, EU COMPETENCES IN NUCLEAR SAFETY, LIABILITY OF THE EMPLOYER

1. Discussion of issues raised by the Sellafield MOX Plant case
2. Euratom competences in the field of nuclear safety
3. The liability of the head of the undertaking in respect of workers’ protection

The variety of case law tackled in this Chapter pursues a twofold objective: drawing attention to its importance whether it is concerned with national or supranational ruling, and to the different issues addressed within the framework and for the purpose of radiation protection.

The first case entails consideration of the reliance upon the United Nations Convention on the Law of the Sea in an international tribunal in a challenge to the commencement of operations at a nuclear fuel production facility, while the second one is of special importance in that it marks a significant development in the extent of competences assigned to such an international entity as the European Union; the third one provides a picture of a national judicial system and steps relating thereto.

1. Discussion of issues raised by the Sellafield MOX Plant case

Introduction

The proposed commissioning by British Nuclear Fuels plc of a plant, at its nuclear licensed site at Sellafield in Cumbria, England, for the production of Mixed Oxide (MOX) fuel was the subject of a number of significant legal challenges, both in the English courts and in international legal tribunals19.

The purpose of this paper is to consider the broader implications of one particular legal challenge, namely that brought by the Government of the Republic of Ireland against the United Kingdom on the grounds that the authorisation of the Sellafield MOX Plant (the MOX Plant) constituted a breach by the United Kingdom of its obligations under various Articles of the United Nations Convention on the Law of the Sea (UNCLOS) - "The MOX Plant Case"20.

Reliance by Ireland on the provisions of UNCLOS in this regard was certainly novel, and has led to separate proceedings being issued before the European Court of Justice (ECJ) by the

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19 These included judicial review proceedings before the English High Court and Court of Appeal brought by Friends of the Earth, and international law arbitrations commenced by Ireland against the United Kingdom under the OSPAR Convention and the UNCLOS Convention respectively.

20 For full copies of the written case documentation, transcripts of the oral proceedings and all orders made in the proceedings, see: http://pca-cpa.org/ENGLISH/RPC/#Ireland%20v.%20United%20Kingdom%20("MOX%20Plant%20Case")
European Commission against Ireland. Those proceedings concern the specific issue of whether the relevant Treaty provisions are matters within the exclusive external competence of the EU. Indeed, the commencement of those proceedings by the European Commission has led to the suspension of proceedings in the MOX Plant Case itself pending the outcome of the ECJ proceedings.

**Background to the MOX Plant Case.**

The legal and regulatory process leading to the authorisation by the relevant United Kingdom Regulators of the MOX Plant was usefully summarised in a paper delivered to the 2003 Inter Jura.

In October 2001, in the light of the decision by the Secretaries of State that the practice of MOX manufacture in the United Kingdom was justified, the Irish Government requested the constitution of an arbitral tribunal under Annex VII of UNCLOS to determine its claim that the authorisation by the United Kingdom government of the MOX Plant was in breach of the United Kingdom's obligations under various of the Articles of UNCLOS.

Pending appointment of the Annex VII Tribunal, Ireland applied to the International Tribunal for the Law of the Sea in Hamburg (ITLOS) for Provisional Measures to suspend authorisation of the MOX Plant and to prevent shipments associated with the MOX Plant. Following a hearing in November 2001, ITLOS declined to order the Provisional Measures sought by Ireland and merely ordered Ireland and the United Kingdom to co-operate to mitigate the impact and extent of their dispute in more general terms.

**Relief sought by Ireland in the MOX Plant Case.**

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21 Case C459/03. The European Commission's case is that by instituting dispute settlement proceedings against the United Kingdom under the UN Convention for the Law of the Sea concerning the MOX Plant located at Sellafield, Ireland has failed to fulfil its obligations under Article 10 and 292 EC and Article 192 and 193 Euratom.

22 See Jonathan Isted, "Novel Developments in the Use of International Law to Oppose Nuclear Activities", a paper delivered to the INLA Inter Jura 2003, Cape Town, South Africa.

23 This was in fact the second international arbitration to be commenced by Ireland against the United Kingdom relating to the circumstances of the authorisation of the MOX Plant. The first was commenced in June 2001 under Article 32 of the Convention for the Protection of the Marine Environment of the North East Atlantic (the OSPAR Convention). For full details of the OSPAR Arbitration, see Nuclear Law Bulletin 72 (Volume 2003/2) pp. 41 - 47.

24 For further details on the ITLOS application, see Nuclear Law Bulletin 69 (Volume 2002/1) pp. 60 - 62.

25 Subsequent to the ITLOS hearing, the Annex VII Tribunal was constituted and the MOX Plant Case proceeded, ultimately to a hearing at the Peace Palace in the Hague in June 2003 at which proceedings were suspended pending the determination of the related proceedings brought by the European Commission against Ireland before the ECJ (Commission v Ireland, Case C459/03).

Ireland also applied to the Annex VII Tribunal, upon the suspension of the proceedings, for a detailed series of Provisional Measures restricting certain operations in respect of both the MOX Plant and the Thermal Oxide Reprocessing Plant (THORP) at Sellafield pending final determination of the proceedings before the Annex VII Tribunal. This request was declined by the Tribunal on the grounds, inter alia, that "[o]n the present state of the evidence, the Tribunal [did] not consider that Ireland [had] established that [sufficient] harm [would] be caused to the marine environment by virtue of the operation of the MOX plant, pending the determination of this case on the merits," to justify the granting of the Provisional Measures sought. See para. 55 of Order No. 3.
In the MOX Plant Case, Ireland is requesting the Tribunal to make a series of declarations to the effect that the United Kingdom has, in authorising the MOX Plant, breached various of its obligations under UNCLOS. The declarations sought are as follows, namely:

- That the United Kingdom has breached its obligations under Articles 192 and 193 and/or Article 194 and/or Article 207 and/or Articles 211 and 213 of UNCLOS in relation to the authorisation of the MOX Plant, including by failing to take the necessary measures to prevent, reduce and control pollution of the marine environment of the Irish Sea;\(^{26}\)

- That the United Kingdom has breached its obligations under Articles 192 and 193 and/or Article 194 and/or Article 207 and/or Articles 211 and 213 of UNCLOS in relation to the authorisation of the MOX Plant;\(^{27}\)

- That the United Kingdom has breached its obligations under Articles 123 and 197 of UNCLOS in relation to the authorisation of the MOX Plant and has failed to co-operate with Ireland in the protection of the marine environment of the Irish Sea inter alia by refusing to share information with Ireland and/or refusing to carry out a proper environmental assessment of the direct and indirect impacts on the marine environment of the MOX Plant and associated activities and/or proceeding to authorise the operation of the MOX Plant whilst proceedings relating to the settlement of a dispute on access to information were still pending;

- That the United Kingdom has breached its obligations under Article 206 of UNCLOS in relation to the authorisation of the MOX Plant.\(^{28}\)

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\(^{26}\) Ireland alleges that such pollution arises from:
- intended discharges of radioactive materials and or wastes from the MOX Plant and additional discharges from the THORP plant arising as a consequence of the operation of the MOX Plant; and/or
- accidental releases of radioactive materials and/or wastes from the MOX and THORP plants and/or international movements associated the MOX and THORP plants; and/or
- releases of radioactive materials and/or wastes from the MOX and THORP plants and/or international movements associated with the MOX and THORP Plants resulting from terrorist act.

\(^{27}\) Ireland alleges that the breaches in question arise from the failure of the United Kingdom:
- properly or at all to assess the risk of terrorist attack on the MOX Plant and associated facilities on the Sellafield site or on international movements of radioactive material associated directly or indirectly with the MOX Plant; and/or
- properly or at all to prepare a comprehensive response strategy or plan to prevent contain and respond to terrorist attack on the MOX Plant and associated facilities on the Sellafield site or on international movements of radioactive waste associated with the plant;

\(^{28}\) Ireland asserts that the United Kingdom has breached its Article 206 obligation in a number of ways, including by:
- failing by its 1993 Environmental Statement properly and fully to assess the direct and indirect potential effects of the operation of the MOX Plant and associated facilities on the marine environment of the Irish Sea; and/or
- failing since the publication of its 1993 Environmental Statement to assess the direct and indirect potential effects of the operation of the MOX Plant and associated facilities on the marine environment by reference to the factual and legal developments which have arisen since 1993 and in particular since 1998; and/or
- failing to assess the potential effects on the marine environment of the Irish Sea of international movements of radioactive materials to be transported to and from Sellafield and relating directly or indirectly to the operation of the MOX Plant; and/or
- failing to assess the risk of potential effects on the marine environment of the Irish Sea arising from terrorist act or acts on the MOX Plant and associated facilities or on international movements of radioactive material associated directly and indirectly with the operation of the MOX Plant.
Ireland is also requesting the Tribunal to order as follows, namely:

That the United Kingdom shall refrain from authorising or failing to prevent (a) the operation of the MOX Plant and/or (b) international movements of radioactive materials into and out of the United Kingdom related to the operation of the MOX Plant or any preparatory or other activities associated with the operation of the MOX Plant in particular the reprocessing of spent fuel at the THORP plant for the purposes of the operation of the MOX Plant until such time as:

(1) there has been carried out a proper assessment of the environmental consequences arising directly or indirectly from the operation of the MOX Plant and associated facilities as well as related international movements of radioactive materials; and
(2) it is demonstrated that the operation of the MOX Plant and associated facilities and related international movements of radioactive materials will result in the deliberate discharge of no radioactive materials including wastes directly or indirectly into the marine environment of the Irish Sea; and
(3) there has been agreed and adopted jointly with Ireland a comprehensive strategy or plan to prevent contain and respond to terrorist attack on the MOX Plant and associated facilities and international movements of radioactive waste associated with the plant.

The nature and scope of the claim in the MOX Plant Case.

Underpinning Ireland's case, as is clear from the relief which Ireland seeks, are allegations that, notwithstanding the fact that the authorisation of the MOX Plant has been found to be fully in accordance with UK domestic legal and regulatory requirements29, the United Kingdom has breached various of its obligations under UNCLOS, notably those relating to co-operation in the protection and preservation of the marine environment, environmental impact assessment and those relating to prevention, control and reduction of pollution from both land sources and vessels.

It is, therefore, Ireland's case that these obligations under UNCLOS constitute, in effect, a further layer of legal regulation to the activities of the relevant nuclear facilities, in addition to UK domestic and European legislation regulating discharges into the marine environment from a nuclear installation. Ireland asserts that, notwithstanding the operators', and the United Kingdom's, compliance with these UK domestic and European legal requirements (which have been formulated specifically to regulate the operation of nuclear installations), it is entitled to relief from an international legal tribunal to constrain operation of the plant by direct reference to the provisions of UNCLOS itself.

The claim made by Ireland before the UNCLOS Annex VII Tribunal raises a host of issues, the determination of which will be a matter of some considerable interest to lawyers, and international lawyers in particular. By way of illustration, the following are just three of the significant issues raised in the case:

29 As evidenced, for example, by the decision of the English Court of Appeal in its decision, in Regina (on the application of Friends of the Earth) v. Secretary of State for the Environment, Food and Rural Affairs [2002] Env LR 612, CA, on the issue of compliance with Euratom justification requirements.
the meaning of "pollution" in Article 1.1(4) UNCLOS and its implications for
marine discharges of radioactive substances;
the extent to which account must be taken, when assessing the impact of
radioactive discharges (and accordingly setting appropriate discharge authorisation
levels), of the impact of radiation upon non-human biota\(^\text{30}\) and the degree to which
this is currently adequately addressed by applicable European and international
standards\(^\text{31}\);
the role and requirements of the "precautionary principle" in this regard.

It is proposed to focus upon these three issues, and the treatment of each by the respective
parties in the MOX Plant Case.

**The meaning of "pollution" in UNCLOS.**

Many of the provisions of UNCLOS upon which Ireland relies in the MOX Plant Case\(^\text{32}\), and
upon which the majority of the specific declarations sought by Ireland in the Case are based,
relate to obligations under UNCLOS to prevent, reduce and control pollution. At the very
heart of Ireland's case in this regard is the allegation that "the radioactive substances which
will be discharged into the Irish Sea and into the atmosphere as a result of the authorisation of
the MOX plant … are pollution within the meaning of UNCLOS"\(^\text{33}\). Indeed, this is identified
by Ireland itself as one of the four "central issues" or "key questions" in the MOX Plant
Case\(^\text{34}\).

Ireland asserts that the levels of radioactive discharges which would be made from the MOX
Plant constitute pollution for the purposes of UNCLOS, notwithstanding that it is
acknowledged that they are well within internationally recognised limits for radioactive

\(^{30}\)ie. flora and fauna.
\(^{31}\)Notably, ICRP 60.
\(^{32}\)Namely Articles 192, 193,194, 207, 211, 212, 213, 217 and 222 UNCLOS - see Chapter 9 of Ireland's
Memorial dated 26 July 2002.
\(^{33}\)See para 9.59 of Ireland's Memorial.
\(^{34}\)"Pollution" is defined for the purposes of UNCLOS in Article 1.1(4), as follows:
"1. For the purposes of this Convention:
(4) "pollution of the marine environment" means the introduction by man, directly or indirectly, of substances or
energy into the marine environment, including estuaries, which results or is likely to result in such deleterious
effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities,
including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of
amenities;"

The other three being:
- whether the MOX Plant and the THORP Plant are linked so that the radioactive discharges from both
must be considered together;
- whether it is necessary for the Tribunal to decide scientific controversies in order to decide the MOX
Plant case; and
- whether, in considering what obligations attach to the discharges of radioactivity into the sea, it is
correct to have regard only to the question of the effects of the discharges on the resultant radiation dose
to susceptible groups.
See Ireland's Reply, dated 7 March 2003, paras 2.2-2.6.
discharges\textsuperscript{35}. Indeed, both in the Provisional Measures application before ITLOS and in its Memorial in the MOX Plant Case, Ireland goes so far as to assert that "the introduction of radioactive substances into the marine environment - even in the smallest quantities" is pollution, as it "has the potential to harm life and the environment and hinder marine activities, to impair the quality for use of sea water, and to reduce amenities"\textsuperscript{36}.

In effect, Ireland's argument\textsuperscript{37} is that radioactive substances are, by definition, pollutants for the purposes of UNCLOS and therefore the discharge of any level of such substances into the marine environment constitutes pollution in breach of relevant UNCLOS obligations.

For its part, the United Kingdom's view is that the requirement that the substances introduced into the marine environment be demonstrated to be harmful is central to the concept of pollution for the purposes of UNCLOS. Its view is usefully summarised at paragraph 8.17 of the United Kingdom's Rejoinder in the following terms:

"The point is simple. It is not the introduction of substances per se into the marine environment that amounts to pollution but the introduction of substances, any substances, into the marine environment in such quantities and/or circumstances as results or is likely to result in harm. The definition of 'pollution' in article 1.1(4) of UNCLOS - a definition drafted by the Group of Experts on Scientific Aspects of Marine Pollution - recognises this. For Ireland's allegations to have any foundation it must therefore show harm or the likelihood of harm. This it has not done, and cannot do. … Ireland has not challenged the United Kingdom's evidence of either the scale of the projected emissions or of their effect on the marine environment."

Were the Tribunal ultimately to determine in favour of Ireland's analysis of the relationship between the definition of "pollution" in UNCLOS (and accordingly the scope of relevant Treaty obligations) and the practice of marine discharge of radioactive substances, then this could have significant implications for the current basis for regulation of such discharges, with resultant adverse consequences for those operating nuclear facilities in UNCLOS Member States\textsuperscript{38}.

It would also raise a serious issue as to how such an absolutist approach to the discharge of radioactive substances into the marine environment under UNCLOS would fit with the

\textsuperscript{35} See para 8.12 of the United Kingdom's Rejoinder dated 24 April 2003: "The emissions in question are, in the words of the RPII [Radiological Protection Institute of Ireland] 'well within international standards' or, in the words of the European Commission's MARINA II study 'consistently and significantly below the ICRP and Euratom Basic Safety Standards limit of 1mSv per year to members of the general public'".

\textsuperscript{36} See para 9.67 of Ireland's Memorial. It is worth noting in this respect the finding of the majority of the Tribunal in the OSPAR Arbitration to the effect that Ireland had failed in that case, amongst other things, to establish that the commissioning and operation of the MOX Plant was likely adversely to affect the maritime area - a requirement of their claim in respect of Article 9(2) OSPAR. See para. 179 of the Final Award in the OSPAR Arbitration at: http://www.pea-pa.org/ENGLISH/RPC/#Ireland%20v.%20United%20Kingdom%20("OSPAR"%20Arbitration)

\textsuperscript{37} Repeated in oral submissions before the Tribunal in June 2002 - see. eg. the Opening Speech of the Attorney General of Ireland, Transcript Day 1, page 6.

\textsuperscript{38} These would include countries such as France, Germany, Japan, Hungary, the Czech Republic, the United Kingdom and Russia. Indeed, it should be further noted in this regard that the European Community is itself a signatory to UNCLOS, which, subject to the eventual judgment of the ECJ in Commission v Ireland (Case C459/03), may significantly extend the specific relevance of the MOX Plant Case to member states of the European Community who are not separately signatories to UNCLOS.
The ultimate determination of this issue will therefore be a matter of considerable significance in the context of radiation protection and its regulation.

The adequacy of currently applicable European and international standards for radiation protection in relation to non-human biota

Ireland argues that the requirement to assess the impact on non-human species, in addition to and separately from the impact on human health, is clear from the fact that UNCLOS Part XII is stated as having as its object "the protection and preservation of the marine environment", not merely "the protection and preservation of human health". Indeed, Ireland even goes so far as to suggest that such an assessment would need to be undertaken at the level of the individual organism, not merely at the level of species viability.

Ireland challenges the United Kingdom's assertion that the negligible levels of discharges from the MOX Plant, well within acceptable international standards, give rise to no demonstrable harm on the grounds that such an assessment by the United Kingdom is based upon concepts of dose levels calculated by reference to standards designed to safeguard human health only and is accordingly inadequate to satisfy the requirements to assess the impact on non-human species under UNCLOS.

For its part, the United Kingdom notes that, whilst the approach taken to the protection of non-human species in ICRP 60 is under review, this should not be taken as any acknowledgement that the current standards, based as they are upon the ICRP 60 approach, fail in any sense adequately to ensure the appropriate level of protection for non-human species.

Whatever the respective merits of these two opposing views, the determination of which must await a resumption of the proceedings before the Annex VII Tribunal in due course, the nature and content of the debate amply demonstrates the need for ICRP and others to continue to progress programmes aimed at demonstrating transparently the adequacy of measures

39 See Ireland's Reply para 2.76.
40 For example, Ireland argues that the European Commission's Opinion under Article 37 Euratom did not take into account broader environmental impacts - see eg. para 6.60 of Ireland's Reply. This is refuted by the United Kingdom with reference to various authorities, including Commission Recommendations 91/4 Euratom and 1999/829/Euratom, and the judgment of the ECJ in Saarland v Ministry for Industry [1988] ECR 5013 at 5040. See eg. United Kingdom Counter Memorial para 5.53.
41 See paragraph 16 of ICRP 60 (1990), which states: "The Commission believes that the standard of environmental control needed to protect man to the degree currently thought desirable will ensure that other species are not put at risk. Occasionally individual members of non-human species might be harmed, but not to the extent of endangering whole species or creating imbalances between species".
42 Indeed, the United Kingdom quotes the words of Professor Roger Clarke, the Chairman of the ICRP, in support of its assertion that the ICRP believes that its current standards provide adequate protection to the non-human environment, albeit recognising a need more fully to explain and demonstrate why this is the case. See the United Kingdom Rejoinder, para 8.27, quoting from "The evolution of the system of radiological protection: the justification for new ICRP recommendations", Journal of Radiological Protection, 23 (2003), p. 129.
taken, via recommendations, guidelines and regulations, to ensure the appropriate degree of radiological protection for non-human species as well as humankind.\(^\text{43}\)

**The precautionary principle.**

Ireland alleges that there is an absence of scientific certainty as to, and a lack of internationally agreed criteria and guidance concerning, the impact of environmental radiation on flora and fauna.

In such circumstances, Ireland argues that the precautionary principle demands "the greatest restraint" on the part of UNCLOS Member States when authorising radioactive discharges into the environment, and in particular the marine environment.

Ireland takes the view that the precautionary principle therefore operates in a number of distinct ways in the case at hand, from informing the approach to interpretation of terms of UNCLOS itself (eg. the definition of "pollution" - in effect making a presumption of harm in the case of radioactive discharges\(^\text{44}\)) to determining the nature and extent of obligations in respect of environmental impact assessment\(^\text{45}\).

For its part, the United Kingdom asserts that its practice in authorising the MOX Plant was entirely consistent with a precautionary approach, guided by the precautionary principle as elaborated in European Community law which requires that "use should be made of the precautionary principle where the possibility of harmful effects on health or the environment has been identified and preliminary scientific evaluation, based on available data, proves inconclusive for assessing the level of risk"\(^\text{46}\).

It is the United Kingdom's case that it undertook "a detailed process of review which involved an evaluation of risk and harm by reference to the available scientific evidence", which, contrary to Ireland's assertions, was "not in any way ambiguous" and which did not "point to any possibility of a risk of significant harm from the radioactive discharges now in contention", whether in terms of human health or in terms of the non-human environment\(^\text{47}\).

\(^\text{43}\) The programmes include "The Framework for Assessment of Environmental Impact" (FASSET) programme (see: [http://www.fasset.org](http://www.fasset.org)) and the "Environmental Risks from Ionising Contaminants: Assessment and management" (ERICA) programme.

\(^\text{44}\) Ireland further justifies this approach to the definition of "pollution" by operation of the precautionary principle by reference to the alleged uncertainty relating to the human health effects of low-dose radiation, involving issues such as the so-called bystander effect and genomic instability. See eg. para 2.81 and Appendices 16 and 18 of Ireland's Reply.

\(^\text{45}\) In other words, Ireland asserts that, in view of what it sees as the failure of the current internationally recognised standards for radiological protection demonstrably to ensure the protection of non-human species from the impact of radioactive discharges, reliance upon such standards to determine compliance with UNCLOS obligations is inadequate. Compliance with the Euratom Basic Safety Standards, ICRP Recommendations or the Article 37 Euratom procedures is, in Ireland's view, insufficient given the requirements of the precautionary principle.

In Ireland's view, these requirements are set out, as a rule of general international law, in Principle 15 of the Rio Declaration on Environment and Development (31 ILM 874 (1992)) and, as between the parties in this case at any rate, further described in Article 2(2)(a) of the 1992 OSPAR Convention and the European Community formulation of the Principle.


\(^\text{47}\) See the United Kingdom Rejoinder, para 8.34.
Whereas Ireland asserts that precaution is demanded by uncertainty, the United Kingdom asserts that the application of the precautionary principle is not engaged by mere uncertainty, but by the actual identification of the possibility of harmful effects and the inability to assess the level of risk. In the United Kingdom's view, there is no evidence of harm; furthermore, the risk of harm is capable of being, and has been, assessed on the basis of internationally accepted, conservative, guidelines for radiological protection.

Given these diverse views as to the legal status, requirements and implications of the so-called precautionary principle - both in respect of the specific circumstances of this case, and generally in the field of radiation and the environment - this is certainly another issue in respect of which the Tribunal's ultimate views will be awaited with interest.

For the moment, however, we must await, with interest, the outcome of Case C459/03 (Commission v Ireland), the written stage of the proceedings in which is currently in progress before the ECJ. Only then may we see a determination by the Tribunal in the MOX Plant Case itself on any of these important issues.

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2. Euratom competences in the field of nuclear safety

Civil nuclear activities are regulated in the European Union (EU) by the Euratom Treaty, signed in 1957. The main purpose of this Treaty was to create the conditions necessary for the development of a powerful nuclear industry, but also to establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied. A broad set of specific measures, distinct from those which had evolved under the auspices of the International Atomic Energy Agency, has been developed in the field of radiation protection. But the safety of nuclear installations has not developed in the same way, although it is supposed to provide concrete guarantees for protecting populations against ionizing radiation.

The inclusion of new Member States from Central and Eastern Europe is unprecedented in the history of the development of the European Union. The history of these countries during the twentieth century and the nature of their economic development has created a particular focus on a subject little touched upon in previous enlargements - that of the nuclear sector. A Community evaluation of the level of safety provided a European perspective on nuclear safety.

The Laeken European Council in December 2001 internalised this perspective by asking for reports on nuclear safety to be presented on a regular basis. Concrete actions have been undertaken by the Community in the field of nuclear safety, largely for the benefit of candidate countries. But paradoxically, domestic action remains limited.

At the end of April 2002 the EU Vice-President Loyola de Palacio announced in the European Parliament that the time had come for “common [nuclear] standards and control mechanisms which will guarantee the application of the same criteria and methods in the whole of enlarged Europe”. On 6th November the Commission's college finally discussed and adopted what became known as the “nuclear package” which encompassed legislation on safety standards, uranium imports and radioactive waste management strategies.

At the same time, the question of the Community competence in the field of nuclear safety was raised before the Court of Justice of the European Communities (CJEC), on the occasion of the accession of Euratom to the Convention on Nuclear Safety. In its ruling, the Court, considering that “it is not appropriate, in order to define the Community’s competence, to draw an artificial distinction between the protection of the health of the general public and the safety of sources of ionising radiation”, recognized to Euratom some competence in the field of nuclear safety.

Such an evolution occurred because of the activities at EU level, which have, for a number of years, developed undeniable technological expertise.

**Past and current activities within the European Union in the field of nuclear safety**

The Euratom Treaty contains provisions allowing the Community to regulate the use of nuclear energy by the Member States, in particular as regards nuclear safeguards and health protection. But the Treaty does not address the particular aspects of nuclear installation safety. As a result, regulatory activities in these areas have developed along national lines under the responsibility of national authorities.

Chapter 3 has been used in the main with regard to radiation protection. However, in the past, Community added value has been recognized in building common views on nuclear safety issues, and two Council resolutions have paved the way for co-operation between Member States and the Commission.

In its Resolution of 22 July 1975 the Council considered that the technological problems relating to nuclear safety, in view of their environmental and health implications, called for appropriate action at Community level which would take into account the prerogatives and responsibilities assumed by national authorities.

The Resolution of 18 June 1992 encouraged the continuation of the process of consultation and co-operation established by the resolution of 1975, and recommended its extension to third countries, notably to the Central and Eastern Europe Countries (CEEC) and the Newly Independent States (NIS).

These two Council resolutions give a framework and working methods for the progressive harmonization of safety requirements.

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49 Adopted in Vienna on 17 June 1994, under the auspices of the International Atomic Energy Agency (IAEA).
The European Commission has worked with the support of expert groups for 25 years on these guidelines and has launched many studies and initiatives\textsuperscript{52}. These groups have actively contributed to the development of a “non-binding EU acquis” through the publication of their studies, common positions and consensus documents. Their approach to “harmonization” consists of a comparison of national practices, identification of common features, and analysis of the safety relevance of differences.

On account of many other initiatives undertaken over time, activities undertaken at Community level have contributed substantially to the pursuing of a high level of nuclear safety in the Member States, and towards the improvement of nuclear safety in the CEEC and in the NIS. The fact that no EU legal acquis has been developed in the field of nuclear installation safety does not mean that national systems have nothing in common.

It is stressed again that in recognition of the importance of immediate and effective action, the Laeken European Council in December 2001 committed itself to maintaining a high level of nuclear safety in the Union and stressed the need to monitor the safety of nuclear installations in general. It called for regular reports from all Member States on nuclear safety.

However, as to the legal basis for community action in terms of binding instruments, a number of countries are of the view that the Euratom Treaty did not give the Community any competences in the area of nuclear safety. This issue came very much to the fore when the Commission proposed that the European Atomic Energy Community join the international Convention on Nuclear Safety, mentioned above. When the Member States agreed to this they followed the line that Euratom had no specific competences for nuclear safety and restricted the Community to only the radiation protection parts of the Convention.

The matter was presented to the European Court of Justice and, after long and extensive deliberations, the Court made a very important ruling on 10 December 2002\textsuperscript{53}.

**Identifying the Community competence: the Court ruling in case C-29/99**

The main aim of the Convention on nuclear safety is to achieve and maintain a high level of nuclear safety worldwide, by encouraging best practice in the safe design, construction, operation and regulation of civil nuclear power plants.

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\textsuperscript{52} The Nuclear Regulators’ Working Group (NRWG) includes representatives of nuclear regulatory authorities from EU Member States and Applicant States of Central and Eastern Europe. The Reactor Safety Working Group (RSWG), which included all the EU regulatory bodies and industry, was discontinued in 1998. The Working Group on Codes and Standards (WGCS) dealt with the integrity of safety related mechanical components of nuclear power plants. Its activities have been suspended since 1998. The NRWG put emphasis on licensing issues and harmonisation of safety requirements, while the RSWG focused more on harmonisation of methodologies and practices to comply with national requirements. Discussions on more policy-oriented issues of nuclear safety take place in other regulators’ fora, such as the IAEA Senior Regulators’ Group, the International Nuclear Regulators’ Association (INRA) and the Western European Nuclear Regulators’ Association (WENRA).

\textsuperscript{53} Judgement of the Court of Justice of the European Communities in Case C-29/99, 10 December 2002, Commission of the European Communities v. Council of the European Union.
There is a provision in Article 30 for the Convention to be “open for signature or accession by regional organisations of an integration or other nature” and a requirement for such an organisation, when becoming party to the Convention, to make a declaration about which Convention articles apply to it, and the extent of its competence in the field covered by those articles. Under the Euratom Treaty, the Council adopted in 1998 a decision approving accession to the Convention. That document included a declaration as mentioned above, whereby the Community declared, in particular, that the Community possesses competence in the fields covered by articles 15 and 16(2) of the Convention.

The Commission applied to the Court of Justice for annulment in part of that decision inasmuch as it does not refer to all the competences of Euratom in the fields covered by the Convention. According to the Commission, the Community’s competence extends to the fields covered by articles 1 to 5, 7, 14, 16(1) and (3) and 17 to 19 of the Convention.

Recognizing that the Euratom Treaty does not contain a title relating to installations for the production of nuclear energy, the CJEC considers that the outcome of the proceeding depends on the interpretation of the provisions in Title II, Chapter 3, of that Treaty.

According to the preamble to the Euratom Treaty, the Member States are on the one hand “resolved to create the conditions necessary for the development of a strong nuclear industry” and on the other hand “anxious to create conditions of safety necessary to eliminate hazards to the life and health of the public”. In addition, pursuant to Article 2(b), the Community has the task of establishing “uniform safety standards to protect the health of workers and the general public and ensure that they are applied”. In the light of these provisions, the Court considers that “it is apparent that such protection cannot be achieved without controlling the sources of harmful radiation”, but recalls that the Community competences must observe those of the Member States. Moreover, the Court recalls that, “in order to give practical effect to the provisions in Title II, Chapter 3”, the Court has interpreted them broadly on several occasions.

The Advocate General, in its Conclusions, asserts that:

a) “given current scientific knowledge, it is neither possible nor desirable to maintain artificial boundaries between radiation protection and nuclear safety”;

b) “clearly radiation protection and safety of sources are closely connected: on the one hand, if radiation protection is to have any practical impact, it must at least try to identify the source which produces the radiation at issue; on the other, safety arrangements concerning a given source must guarantee that in all operational states radiation doses are kept below prescribed limits and as low as reasonably achievable. There is moreover evidence that the borderlines between both disciplines are becoming more blurred”;

c) “from a legal perspective it is also evident that modern radiation protection systems such as the Basic Standards Directive are increasingly source-oriented and therefore necessarily also regulate aspects of the safety of installations. Conversely modern systems of safety legislation such as the Convention at issue follow an integrated approach and incorporate radiation protection aspects of safety”;

d) “the fact that Member States maintain exclusive competence with regard to the technological aspects of safety does not prevent the Community from adopting legislation laying down certain requirements with regard to safety, licensing, inspection, evaluation and application mechanisms”.

This analysis tends to confirm the close link which exists between these two concepts: radiation protection and nuclear safety.\textsuperscript{55}

It is worth pointing out that the Court doesn’t clearly adopt the distinction proposed by the Advocate General between the radiation protection aspects (Community competence shared with Member States) and the technical aspects (exclusive competence of Member states) of nuclear safety. In the light of that finding, the court has identified the fields covered by the Convention which are also the competence of Euratom. But a distinction is made between normative community competence and a competence of recommendation or opinion.

The Court has found:

- **Community normative competence** in the fields relating to:
  - the establishment of a legislative and regulatory framework to govern the safety of nuclear installations;
  - emergency preparedness.

- **Community competence of recommendation or opinion** in the fields relating to:
  - measures relating to the assessment and verification of safety;
  - the siting of a nuclear installation;
  - the design, construction and operation of nuclear installations.

In the light of all the foregoing considerations, the Court annulled the Council declaration in so far as articles 7, 14, 16(1) and (3) and 17 to 19 of the Convention, in respect of which Euratom has competence, are not mentioned in the declaration attached to the Council decision approving the EAEC’s accession to the Convention. Consequently, the deposited declaration was replaced by an amended declaration, by a Council Decision of 15 December 2003.\textsuperscript{56}

Without awaiting the decision of the Court of Justice, but on the grounds of the Advocate General conclusions, the Commission announced, in its communication on 6 November 2002, that it deemed necessary to consider nuclear safety in a Community perspective. The Commission's college finally discussed and adopted what became known as the “nuclear package” in order to pave the way for a Community approach to the safety of nuclear installations and the processing of radioactive waste.

\textsuperscript{55} “Radiation protection may be defined as all measures aimed at protecting human beings and the environment against ionising radiation. Safety, on the other hand, concerns measures aimed at establishing and maintaining, in nuclear installations, effective defences against potential radiological risks in order to protect individuals, society and the environment against the damaging effects of ionising radiation emitted by these installations”, Communication from the Commission to the Council and the European Parliament, 6 November 2002, COM(2002) 605 final.

Exercising the Community competence: the nuclear package

On 30 January 2003, the European Commission adopted the “nuclear package”, a set of legislative proposals that basically contained:

- a proposal for a Council Euratom Directive setting out the basic obligations and general principles for the safety of nuclear installations (the “Safety Directive”);

This initiative constitutes the first attempt to legislate at Community level in this field. The texts are highly inspired on the Convention on Nuclear Safety and in the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management – to which Euratom is a contracting party.

The Council of the European Union discussed the proposals between March 2003 and June 2004, where a certain number of Member States claimed for a non-binding instrument, instead of compulsory rules at European level.

Lack of consensus on the Proposal, the Council adopted on 28 June 2004 its “Conclusions on nuclear safety and on the safety of the management of spent nuclear fuel and radioactive waste”, inviting all parties to further reflection and consultation on this issue. The Conclusions stress the national responsibility for the safety of nuclear installations as a fundamental principle. They further reaffirm “the importance of adequate financial resources to support the safety of nuclear installations throughout their life and during their decommissioning”. The Conclusions go on to underline the important role of international conventions in the nuclear safety field and of organisations such as the IAEA, the NEA and WENRA.

In the meantime, the Commission presented in September 2004 a revised proposal for the two Directives, while the Council has launched a reflection exercise in order to decide on the right means for addressing nuclear safety at European level (“Council action plan”).

* * *

3. The liability of the head of the undertaking in respect of workers’ protection

This issue was in part addressed at the 2001 INLA Conference, but we believe it is worth dealing with it more thoroughly here, touching upon delegation of powers (para. B) and updating the Tricastin case (para. C).

The extent of liability

It is useful to recall that the basic standards on radiation protection of workers and the public were set out in the Euratom Directive 96/29 of 13 May 1996. Moreover, the Euratom
Directive 90/641 of 4 December 1990 stipulates that the operator of a controlled area (i.e. an area with a higher risk) where external workers intervene is responsible for the operational aspects of their radiological protection. This means that the operator must (a) check the worker’s suitability from a medical point of view, (b) make sure he/she has received basic training in radiation protection and (c) that he/she has the equipment necessary to ensure individual protection, (d) check, by means of dosimetric follow-up, that individual surveillance (especially medical) is ensured commensurate with the nature of the intervention, (e) impose compliance with general principles, dose limits and protected areas under the relevant legislation. In addition, the operator must adopt control, surveillance and training measures for any of his/her own employees who are likely to be exposed to ionising radiation on account of their tasks within the undertaking.

The above provisions have been implemented in the national legislation of the European Union countries. As to France, in accordance with the labour legislation (Code du Travail), the head of the undertaking is required to adopt the general administrative and technical measures in force, especially concerning working organisation and conditions, aimed at ensuring prevention of accidents and occupational diseases arising from exposure to ionizing radiation. Besides, he/she must ensure co-ordination between these measures and those taken by the head of the external undertaking, bearing in mind that each is responsible for the preventive measures to protect their own staff.

**Actual implementation of liability: role, conditions for and consequences of the delegation of powers**

Under the French labour legislation, the employer is responsible for the correct application of provisions governing hygiene and safety, which include radiation protection. However, the employer (or the person representing him/her) will be exempted from such responsibility if his/her powers have been delegated, a move that may be dictated by practical reasons, e.g. in the case of a large undertaking that is logistically scattered. This entails the need for more effective on-the-spot surveillance, which may involve laying out a prevention plan, conducting an analysis of the posts and related risks, etc. For the delegated person, this requires real and independent powers to organize the work, train the staff, provide materials and equipments, exert controls etc., which entail liability under criminal law, e.g. in the case of negligence, lack of caution, disregard of an obligation pertaining to safety or caution, and so on.

Nevertheless, it should be recalled that delegation of powers is a special legal tool subject to specific conditions under which the delegated person may validly exert his/her powers. First, powers/duties defined by law as exclusive to a given person cannot be delegated. Second, especially in the eyes of the criminal judge, a delegated person must have the authority (to impart orders, prescribe, check, etc.), the competence (in-depth knowledge of internal and external regulations, experience, training) and the means (human, material, technical, financial). This is particularly important since the delegated person will also chair the committee on hygiene and safety at work.

Should these conditions not be fulfilled and independently of how the delegation of powers might have been structured, the judge will identify the person liable as the person who has acted (by commission or omission) on the basis of the three criteria cited above.
In practice, it is recommended that powers be delegated to one highly specialized person (who will have an overall vision of the problems and of the measures required to solve them), not to several persons, even though they may occupy the same hierarchical position at the same site.

In French law, if one of the involved parties believes that a point of law has not been respected, it may seise the Court of Cassation (which does not rule on the merit of a case). This holds true, for example, if that party alleges that a provision of criminal procedure has not been correctly applied. In the matter of delegation of powers, the Court of Cassation has already ruled to the effect that “delegating the same task(s) to several persons will restrict their individual authority and create obstacles to their individual initiatives”. However, the delegated person may rely on consultancy within the undertaking for the purpose of validating prevention plans in connection with the delimitation of areas at risk, determining what staff is entitled to intervene on account of training, qualification and experience, etc. The delegation must in any case remain at a high hierarchical level in order to avoid any dispersion of liability (which the judge would not recognize anyway).

Illustration of liability: the Tricastin case

In 1999, two external workers were irradiated during a technical check at the French nuclear power station at Tricastin. Allegedly, the head of the undertaking had not taken all the measures required to prevent the incident. In particular, it was found that there was no radiation protection service, that the training of certain workers was inadequate, that there were faults in the methodological and statistical management of the access to irradiated areas as well as in the access authorization, including an adequate physical barrier to access where needed.

The head of the undertaking had delegated his powers in a manner that was, however, found unacceptable by the judge since it involved several persons even though the object of the delegation was the same and the various measures deriving therefrom were of an individual and limited nature. The general and permanent measures remained within the competence of the head of the undertaking, a circumstance which had formed the object of a technical note written and signed by the head of the undertaking.

The criminal court of first instance in Valence (26 June 2001) sentenced the head of the undertaking to one month prison (suspended) for infringing the labour legislation (in this case, radiation protection) in accordance with the decree of 28 April 1975, and ordered EDF (the national electricity board) to pay a fine of 76,000 euros for unintentional injuries under the Criminal Code. Both parties lodged an appeal on the grounds that powers had been delegated and that the legislation had been applied correctly.

The Court of Appeal’s ruling of 19 February 2003 was heavier for the head of the undertaking (one year in prison, suspended and 750 euros for unintentional injuries), the fine for EDF being amended to 1350 euros. However, the head of the undertaking argued that the prison sentence was not legally acceptable since it was associated with the notion of unintentional injuries resulting in the victim’s absence from work for a period of less than 3 months, a circumstance for which a prison sentence is not contemplated.

The Court of Cassation, called upon to rule on this point of law, on 17 February 2004 annulled the Court of Appeal’s ruling on the grounds that a prison sentence may only be
handed down in case of a second or further infringement of the labour legislation, not of the first such offence.

The Chambéry Court of Appeal, called upon to judge on the merit of the case, found (2 September 2004) that the head of the undertaking was not actually disputing the facts for which he was held liable. The fine imposed on the head of the undertaking was increased to 1500 euros, since the infringement fell exclusively within his own liability.
ANNEX 1 – PART 1

Radiation exposure from natural sources and the origin of NORM

The components of the exposures resulting from natural radiation sources are given in the table. The average effective dose to the Belgian population is 2.5 mSv/y [3], comparable to the worldwide average of 2.4 mSv/y [1]. More than half comes from radon exposure on the basis of an average radon concentration in Belgium indoors of 48 Bq/m³ and outdoors of 10 Bq/m³. Note that the UNSCEAR dose conversion factor for radon is 50% higher than the ICRP 65 [4] conversion convention that was adopted in the EU BSS directive [2] and implemented in Belgian legislation [5]. Even more significant than the average values is the wide range of individual values. UNSCEAR [1] estimates the typical range of radon exposures between 1 and 10 mSv/y depending on indoor accumulation of radon gas.

Average radiation dose from natural sources in Belgium and worldwide, calculated using the methodologies given in the UNSCEAR 2000 report [1,3].

<table>
<thead>
<tr>
<th>Source</th>
<th>Average annual effective dose (mSv/y)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Belgium</td>
</tr>
<tr>
<td>Cosmic radiation</td>
<td>0.35</td>
</tr>
<tr>
<td>External terrestrial radiation</td>
<td>0.4</td>
</tr>
<tr>
<td>Radon and thoron</td>
<td>1.45</td>
</tr>
<tr>
<td>Internal exposures other than radon</td>
<td>0.3</td>
</tr>
<tr>
<td>Total</td>
<td>2.5</td>
</tr>
</tbody>
</table>

NORM results from the decay of radio-nuclides with half-lives of more than 500 million years, the most important being uranium-238, thorium-232 and potassium-40. The first two radio-nuclides form the beginning of the natural uranium and thorium decay series. These are complex decay chains ending in a stable lead isotope. Most radio-nuclides of the natural decay chains have half-lives of less than a few months and these can be considered to be in secular equilibrium with their parent radionuclide. In this way the uranium series can be simplified into 6 chain segments, the most important being uranium-238, radium-226, lead-210 and polonium-210, and the thorium series into 3 segments: thorium-232, radium-228 and thorium-228. As the decay chains in most natural substances are in secular equilibrium, the uranium series is usually presented by uranium-238 or by radium-226 (which is easier to measure) and the thorium series by thorium-232. Only in case of a distinct disequilibrium, for example as a result of a heating process or chemical reactions, the specific activities of the relevant chain segments are given.
ANNEX 1 – PART 2

European exemption-clearance levels for NORM materials

The exemption-clearance levels recommended by the European Commission in Radiation Protection 122, part II [8] for the most relevant natural radio-nuclides are given in the table for all types of material. An additional column gives the considerably higher values only applicable for wet sludge from the oil and gas industry. The lack of consensus in the European Union is illustrated in the last column of the table by the Dutch exemption-clearance values [10]. The difference between the values in Radiation Protection 122, part II and the Dutch Decree for polonium-210 and lead-210 is a factor of 20, as the exposure scenarios in the Netherlands are mainly related to exposure to moderate amounts of sludge and scales of the oil and gas production industry [11].

Exemption-clearance levels for NORM materials in Radiation Protection 122, part II and in the Dutch Radiation Protection Decree.

<table>
<thead>
<tr>
<th>Most relevant natural radionuclides</th>
<th>Radiation Protection 122, part II</th>
<th>Dutch Decree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All types of material (Bq/g)</td>
<td>Wet sludge from oil and gas industry (Bq/g)</td>
</tr>
<tr>
<td>U-238sec (*)</td>
<td>0.5</td>
<td>5</td>
</tr>
<tr>
<td>U-238nat (**)</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Ra-226+ (with short-lived progeny)</td>
<td>0.5</td>
<td>5</td>
</tr>
<tr>
<td>Pb-210+ (with Bi-210)</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Po-210</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Th-232sec (***</td>
<td>0.5</td>
<td>5</td>
</tr>
<tr>
<td>Th-232</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Ra-228+ (with Ac-228)</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Th-228+ (with short-lived progeny)</td>
<td>0.5</td>
<td>5</td>
</tr>
<tr>
<td>K-40</td>
<td>5</td>
<td>100</td>
</tr>
</tbody>
</table>

(*) U-238sec: the U-238 and U-235 decay series in secular equilibrium and at a ratio similar to that found in materials of natural origin (0.72 % by mass)

(**) U-238nat: U-238 and U-235 in secular equilibrium only with their short-lived progeny and at a ratio similar to that found in materials of natural origin

(***) Th-232sec: the thorium decay series in secular equilibrium
ANNEX 1 – PART 3

References to the paragraphs dealing with the "NORM" issue

ANNEX 2

About the Comprehensive Test Ban Treaty (CTBT) and its verification regime.

The major undertaking by States Parties to the CTBT is “not to carry out any nuclear weapon test explosion or any other explosion, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control” (Article 1).

The Treaty provides for a verification regime consisting of the following four elements:

- Creation of a permanent International Monitoring System (IMS);
- Consultation and clarification procedures to be followed by states in the event of a suspicious occurrence;
- On-site inspections (OSI), carried out at the request of a state party;
- Confidence-building measures.

The Treaty has been opened for signature on September 1996. As of 30 September 2004, 173 out of the 194 members of the United Nations have signed it, and 119 have ratified it, thus indicating its universal appeal.

The Treaty will enter into force when 44 states listed in Annex 2 have signed and ratified it. Again as of 30 September 2004, only 33 states on this list had done so. Amongst the 11 absenteees are:

- Three non-signatory states: India, North Korea and Pakistan;
- Eight states which have signed the Treaty but not yet ratified it: China, Colombia, Egypt, Indonesia, Iran, Israel, United States and Vietnam.

By a Resolution, dated 19 November 1996, the States Parties also set up a Preparatory Commission, the main task of which is to prepare and validate the necessary means of implementing the verification procedure after the entry into force of the Treaty. This Preparatory Commission is made up of representatives from all the signatories states. It has three subsidiary bodies which draft, in close collaboration with the Provisional Technical Secretariat, each in its domain, the recommendations which are communicated to the Preparatory Commission:

- Working group A, dealing with financial and staff matters;
- Working group B, dealing with technical issues;
- Advisory group, contributing financial expertise.

The Preparatory Commission and its subsidiary bodies are called the Policy Making Organs of the CTBT Organisation and sit regularly in Vienna.

The Preparatory Commission is also, and above all, helped by a permanent organisation, the Provisional Technical Secretariat (PTS), which had its headquarters in Vienna and holds the status of an international organisation. The PTS implements on an everyday basis the
decisions of the Preparatory Commission and reports to it its activities. It is staffed with around 275 persons and its budget for 2004 was some 95 US dollars.

Two main components of the verification regime require funding: the International Monitoring System (IMS) and the On-Site Inspection (OSI).

The IMS is divided into three parts:

- A worldwide network of facilities on the territory of 89 states, comprising 50 primary seismological stations, 120 auxiliary seismological stations, 11 hydro-acoustic stations, 60 infrasound stations, 80 radio-nuclides stations, 40 so-called “rare gas” stations and 16 radionuclide laboratories.
- The Global Communications Infrastructure (GCI).
- The International Data Centre (IDC) located in Vienna.

The main task of the IMS is to collect, transmit to Vienna and process the data in order to detect, characterise and localise any “suspicious occurrence” and to send to all signatory states through their National Data Centre the collected data and products.
ABSTRACT - The main challenges for the international nuclear law.


Ludo Veuchelen
Commentator

1. A personal statement
Nuclear lawyers tend to believe in Don Quichote when they try to bring together economical, ethical, environmental and legal values in one regulation. In the fast changing world of high technology and high risk (high-magnitude but low-probability risk) the rulemaking process is both too slow and too hierarchical and conflicts with technocratic and soft-law alternatives.

To illustrate this point I want to comment on the Report of WG 4:

a. In the report of WG 4 is repeated that the ICRP recommendations only provide GUIDING PRINCIPLES and it takes sometimes 10-20 years before the final legal text is implemented.

b. The need for “stable and consistent” rules announced in the Report takes place along the announcement of the new ideas of ICRP, which are now open for discussion. This is a clear example of how Soft Law develops into Hard Law, as presented by Katia Boustany in former INLA congresses, and now by my colleague Chloé Degros. The OECD/NEA has an expert group following this discussion (see Roger Clarke, Chairman of ICRP: “Towards a new system of protection of man and the environment”).

2. How does Nuclear Law cope with the paradox mentioned in my statement?
It has to be said that two important cases in the recent time were positive for the nuclear sector:

a. The Administrative High Court in London confirmed the exploitation license of BNFL for MOX production (and confirmed in Appeal), as being “justified” under nuclear law (and this was repeated in Appeal);

b. The Environmental Impact Assessment for building a new nuclear reactor in Finland turned out in a positive vote of the Parliament.

3. Main lessons from the recent successful applicants in the nuclear field
a. Justification: this is the first Basic Safety Standard in nuclear law, at least in the European Union. In the MOX-case in the UK, it was clear that this basic rule is more than a cost-benefit analysis.
Although many problems remain for its practical application (e.g. at what moment in the decision process), it can be seen as a principle which gives TRANSPARENCY to the citizens, as for the EIA.

b. Combining “horizontal” regulation with “vertical” regulation, in particular environmental law with nuclear law.
Although many critiques on nuclear law can be rejected because it has a complete set of hard and soft law (IAEA, OECD/NEA, ICRP, …) which covers the main issues of environmental law, it shouldn’t be so that some doubts remain, and surely not contradictions, as is the case with the EU Draft Directive on Environmental liability.

In my opinion a defensive position has not much sense. In the report of the WG 4 (p. 10) the ruling of the Court of Justice of the EC of September 22, 1988, was cited but in the meantime there was the Decision of the same Court on December 10, 2002, which confirmed the extended competences of the EC Commission, be it on nuclear safety. The clear statement in the judgement against “compartementation” of nuclear law leaves little doubt.

c. On the third party liability, nuclear law has an international track-record. Once also the Paris and the Brussels Conventions will be revised, these international legal tools outweigh firmly other industrial sectors. There might still be a great gap between theory and practice, in particular on behalf of accident management and financial means to cover preventive measures. Nuclear insurance for the increased amounts, and in particular the terrorism risk, remains a crucial issue. Also the problem of gradual pollution seems unsolved. In the environmental law the anthropocentric position has been long surpassed, not so in the nuclear law. Monika Hinteregger will treat this topic later during the congress.

4. As a conclusion can be said that the KEY-WORDS for further success of international nuclear law are:
• Transparency;
• Participation;
• Environmental concern and Liability.

The PARADOX mentioned in my personal statement can to my mind only be resolved through “reflexive regulation” and “procedural justice”.

A consensus regulation “à la Belge” is only acceptable when the choice of priorities is clearly opened and discussed in the “Theatre of Debat” (Dworkin).

Procedural justice\textsuperscript{57} refers to some social science research that shows that people are not influenced by the results of the legal process as much as they are influenced by their opinion of whether the system was fairly administered, their participation in the process, and the dignity and trust of the system. It is comparable to the “informed consent”\textsuperscript{58}.

\textsuperscript{57} Tom Tyler’s research studies, Wexler and Winick’s 1996, Law in a Therapeutic Key by Carolina Academic Press
\textsuperscript{58} Procedural Justice and Radiation Protection, Kristin Shrader-Frechette, Ethical Issues in Radiation Protection, an International Workshop, SSI Rapport, 2000:08. Lars Persson (Ed.)
To come back to the Report of WG 4, the issues I didn’t find were:

1) the new concept of Controllable Dose and the discussion on Effective Dose, the indicator used to predict the risk of cancer caused by radiation. This point is strongly linked to the studies on the effects of low doses at the cell structure and the linear no-threshold hypothesis, which comes under scrutiny.

2) there is a consensus that regulators need “numbers” as benchmarks for regulation. These can be limits, action levels or reference levels. The new idea is to retain only action levels.

3) given the difference in social acceptance, the release of radioactive materials should be more subject to an authorisation optimisation process than a pre-defined triviality level below which no further actions are necessary.

4) and last but not least: the boundary between unacceptable and tolerable is not a scientific question! Those that are worried should be involved in the decision-making process.

And so we come back to the need for REFLEXIVE REGULATION and to the participation of stakeholders. In fact, no reference is made in the Report of Roger Clarke, Chairman of the ICRP, promoting the new policy under the title: “Towards a new system of protection of man and the environment”.

I also would like to raise some new points of reflexion to Working Group Nº 4:

1. the EU Commission has decided (in 2001) to take France to the European Court of Justice for “failing to respect the Euratom Directive on Informing the Public in the event of Radiological Emergencies”. The Commission also found that French legislation did not fully translate the requirements of the Directive for rescue workers. Also French procedures for communicating prior information to the population would not be in accordance with the requirements of the Directive. Although France might have settled these issues, an international comparison on the correct implementation of this Directive seems very useful.

2. Why are the NORM industries not examined by WG 4 (as is radon)?

3. A new analysis on exemption and clearing levels for nuclear waste might be advised to WG 4, now that decommissioning has taken such importance.

4. The position and responsibility/liabilities of the Qualified Expert needs a thorough investigation because in many cases also the position of Prevention and Safety Manager is combined in one and only person. Besides Radiation Protection Law, also administrative law, civil liability and criminal liability law have to be envisaged.

Ludo Veuchelen, Legal Officer SCK•CEN
March 31, 2003

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59 This paper only represents the author’s personal opinion.
Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
I don’t follow a lot of what he is saying but I do disagree with what I can understand.

I know that the ICRP has moved to concepts like optimization that are inherently vague, judgmental and subjective. Whatever risk from low-level radiation is assumed by a certain group will drastically affect their optimization analysis. Only if the risk assumption use by each person is the same will the optimization judgment by each person be similar. When different risk assumptions are made by groups of people, those groups can never agree on optimization. Concepts like optimization do not make good legal standards and do not make good regulatory standards because different interested parties will strike different balances due to their different underlying values and assumptions. The only time it can work is if a regulatory agency, using the same risk assumptions, makes the optimization judgment. In the United States the NRC and the EPA often disagree on radiological regulatory levels because they are using slightly different risk assumptions. As long as the item being regulated does not overlap the jurisdiction of both agencies, there is no serious problem. But when both agencies claim regulatory authority over the same item, conflicts occur.

Many years ago I spend time with Dr. Lauriston Taylor, one of the founders of the ICRP. He convinced me that a good standard should be both simple and numerical. Unfortunately, the ICRP has moved away from that principle and adopted vague concepts such as optimization. Consider a speed limit. What if the speed limit was not a number but rather was a phrase like ALARA or Optimization or Justification? How would you know what speed you can drive without violating the law? The police would ticket inconsistently based upon each officer’s personal views at the time. Courts would have to litigate each traffic ticket to determine what was ALARA or Optimization or Justification at the time. This would necessarily involve witnesses who present opinion testimony. In contrast, a simple numerical number speed limit can be scientifically measured by a radar device and the issue of whether or not a person should pay a fine for driving too fast becomes a matter of factual, not opinion or judgmental, evidence.

When the courts become involved in lawsuits alleging liability for damage due to radiation, a simple numerical legal standard will work best. If the issue is one for regulatory resolution alone, vague concepts such as optimization can be applied and will work best if there is an underlying agreement on radiation risk by the different regulatory agencies involved. Allowing judges and juries to apply their own judgment of optimization or justification will only lead to conflicting judgments in each case depending upon the values of the judge or jury, the expert witnesses who happen to testify, etc. Putting concepts like optimization or justification into the legal system is a very bad idea. It would cause as much trouble as if the numerical speed limit signs were all changed to the phrase “Optimize your Speed” or the phrase “Justify your speed.” Each speeding case would become a matter of great debate among people having different points of view as to what speed was justified under the conditions. It is only asking for trouble and creating an unworkable legal system.

When Mr. Veuchelen encourages law to use ‘justification” because it gives “transparency” to the citizens, his suggestion is unwise. Legal rules as to the amount of
radiation exposure allowed to workers, members of the general public, plant emissions, contamination levels, etc. should all be simple numerical levels. Judges and juries can find the facts and apply the numerical standards to those facts. They cannot perform “justification” and “optimization” judgments. Such “transparency” and “citizen participation” will lead to confusion, conflicting legal judgments, and impossible burdens placed upon the nuclear industry.

The place for “transparency” and “citizen participation” is not in the courts (other than a finding of the true facts of a case) but rather at the regulatory level when the numerical legal standards are being developed. The agency can propose a numerical standard, such as the level of allowable yearly releases from a nuclear power plant, and the citizens can participate in the debate before a certain level is established by the regulatory agency. But that standard should be established as a numerical standard and the courts should then apply the simple numerical standard without any additional attempt to “justify” or “optimize” allowable radiation levels by the judge or jury.
CONTENTS

CHAPTER ONE
1. Natural radioactivity and European regulation of norm industries 4
2. The development of a radiation protection doctrine for CTBT inspectors 9

CHAPTER TWO
HARD LAW VS. SOFT LAW: IS THERE A THIRD WAY? 14

CHAPTER THREE
RECENT CASE LAW: PROTECTION OF THE MARINE ENVIRONMENT, EU COMPETENCES IN NUCLEAR SAFETY, LIABILITY OF THE EMPLOYER 19
1. Discussion of issues raised by the Sellafield MOX Plant case 19
2. Euratom competences in the field of nuclear safety 29
3. The liability of the head of the undertaking in respect of workers’ protection 35

ANNEX 1
Part 1 - Radiation exposure from natural sources and the origin of NORM 39
Part 2 - European exemption-clearance levels for NORM materials 40
Part 3 - References to the paragraphs dealing with the "NORM" issue 41

ANNEX 2
About the Comprehensive Test Ban Treaty (CTBT) and its verification regime 42

ANNEX 3
Part 2 - Comments on Veuchelen Paper by Don Jose 48
EUROPEAN NUCLEAR SAFETY REGIME – AN ABORTIVE ATTEMPT

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ABSTRACT

In November 2002 the European Commission proposed to the Council of the European Union the so-called Nuclear Package. This package included i.a. two directive proposals, one for a directive on the safety of nuclear installations and another on the management of spent nuclear fuel and radioactive waste. Within the Council, however, a number of Member States were strongly opposing this initiative and consequently the proposals have not been adopted. This article explains, from a point of view of such an opposing Member State, how the directive proposals were seen to introduce a regulatory system differing from the internationally adopted approach to nuclear safety and what kind of problems were seen in advancing the nuclear waste management in the way proposed by the Commission. The article also discusses the arguments used in attempts to show the directive proposals to be in violation of the Euratom Treaty. A critical analysis of the judgment of the European Court of Justice that changed the prevailing understanding of the competence of the Euratom in the nuclear field is also included.

1 INTRODUCTION

In November 2002 the European Commission, the executive organ of the European Atomic Energy Community (Euratom) and at the same time the executive organ of the European Community and the European Union made publicly known the so-called nuclear package. This package included i.a. two drafts of directive proposals that were due to form the basis for expanding the Euratom legislation to an entirely new area, nuclear safety and nuclear waste management. The first one of these directives (“installations safety directive”) was to regulate the safety of nuclear installations as well as the collection and use of funds for nuclear waste management. The other one (“waste directive”) was to cover principles and timetable for nuclear and other radioactive waste management. The wordings used in the articles of both proposals were strongly influenced by two conventions concluded in the 1990’s under the auspices of the International Atomic Energy Agency (IAEA): Convention on Nuclear Safety (CNS) and Joint Convention on the Safety of Spent Fuel Management and on

1 Even if this contribution is partly based on the views of the Government of Finland, reproduced in publicly available documents, facts given as well as interpretations and opinions expressed are the responsibility of the author alone.
2 Within the legislative system of the European Union, these directives would have been binding, as to the result to be achieved, upon each Member State, but would have, at least in principle, left to the national authorities the choice of form and methods.
the Safety of Radioactive Waste Management. The package also contained a Communication explaining the thinking behind these proposals [1].

Even if the Commissioner responsible for energy matters within the Commission had already a half a year earlier announced the Commission’s intentions vis-a-vis nuclear safety, the nuclear package, all the same, caused astonishment in the quarters responsible for nuclear safety in the Member States of the European Union. There had, of course, been plenty of cooperation in the field of nuclear safety and nuclear waste management within the Union, especially aiming at raising the level of nuclear safety in the countries neighbouring the Union, but no such common legislation that would directly relate to the substance of nuclear safety or nuclear waste management. On the other hand, radiation protection has, from the founding of the Euratom, been one of those areas that belong to the Community competence. But traditionally one was used to think that nuclear safety and nuclear waste management are subject matters that belong exclusively to the Member States, and the Commission has repeated the same message in the course of years⁴. Thus the Commission’s proposals represented an entirely new interpretation of the division of competences between the Union and its Member States.

Consequently, it is no wonder that even if the final proposals [3] were officially submitted to the Council only in the following April, a lively debate on their need, their content and their legality started immediately in November between the Member States and the Commission. The question of the legal basis aside, the substance of these two proposals turned out to be very controversial. The proposals were strongly criticized while the object of the sharpest critique varied from one Member State to another and between the both proposals. After the official discussion started within the legislative body of the Euratom Community, the Council of the European Union, the Commission indicated its readiness to modify the proposals in several ways and eventually got the majority of the Member States to accept the idea of adopting the two directives. This majority was, however, less than the qualified majority required by the Euratom Treaty.

In what follows, the justifications, presented by the Commission, for the two directive proposals will be first briefly analysed. Then the reasons that led one of the opposing Member States (Finland) to reject the original proposals will be described.

The question, whether or not the Euratom Treaty gives powers to legislate on nuclear safety and nuclear waste management, was pushed to the background in the Council deliberations after the Court of the European Communities (ECJ), the authoritative interpreter of the Union’s founding Treaties, had given, in a related case [4], its judgment defining to what extent the Euratom competence and the duties of a Contracting Party to the CNS overlap. Since the Commission often cited this judgment during the deliberations, also some aspects of this judgment will be examined below.

Both directive proposals as well as the judgment have already been amply discussed by several authors [5-9], but almost without exception, from the point of view of the Community legislation. The articles are mostly repeating the Commission’s argumentation and trying to draw guidance from the judgment for understanding the evolution of the jurisprudence of the Community and leaving aside the proper implementation of the CNS and the Joint Convention. In what follows, the discussion will be more critical and the point of view somewhat more of that of the Parties to these Conventions.

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³ Within the EU, binding legislation like directives can be issued only on subject areas that are, in the founding treaties, i.e. EU Treaty, EC Treaty or Euratom Treaty, identified to be within the competence of the Union.

⁴ See e.g. [2]
2 JUSTIFICATIONS PRESENTED BY THE COMMISSION

Also within the EU, the need for any new piece of legislation has to be appropriately justified. The justifications should, among others, show that the so-called subsidiarity principle is respected, i.e. that the Community shall take action “only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale or effects of the proposed action, be better achieved by the Community”.

The Commission duly presented a number of different arguments in favour of the two directives. A closer analysis, however, revealed that many of the Commission’s arguments only described the activities the EU had had in the nuclear field, not the need for new legislation. Another group of arguments was simply describing the Commission’s view why there existed a proper legal basis for the directives. The subsidiarity angle was not touched at all.

The Communication explaining the thinking behind the nuclear package, but not the directive proposals themselves, put in evidence one driving force behind the proposals: the wish to keep the so-called nuclear option open. After having two years earlier examined means to secure sufficient energy supply for the following decades in the Union in circumstances where the efforts to slow the climate change lead to ever stricter limitations to the use of fossil fuels, the Commission had concluded that this would hardly be possible without keeping also nuclear energy among the acceptable choices. A necessary condition for keeping the nuclear option open is, according to the Commission, restoration of the public trust in the safety of nuclear power. Likewise, the Commission saw as a necessary condition for the public trust the working out of concrete programmes for final disposal of nuclear waste. Perhaps the Commission also presumed that the EU would be perceived as the guarantor of nuclear safety more easily than the authorities in the Member States.

As far as safety of nuclear installations was concerned, the Commission was not arguing that the level was low within the Union. It only concentrated on the fact that “the nuclear safety measures vary widely from one Member State to another” (preamble, paragraph (8)). According to the Commission, “only a common approach can guarantee the maintenance of a high level of safety in nuclear installations, from conception to decommissioning, in an enlarged EU”[3]. The Commission did not hide the fact that its actual target was the level of nuclear safety in the twelve European States that were, at that time, negotiating with the “old Member States” about the accession to the Union. Since most of the nuclear power plants in these countries were of Russian origin, there was, as a legacy of the Chernobyl accident, a strong conviction, shared also by the Commission, that the level of nuclear safety in these States, across the board, was lower than in the old Member States.

However, as part of the accession negotiations the Council had already, in 2001-2002 reviewed the status of nuclear safety in these candidate States. This review was not based on any existing Euratom legislation, but was carried out to monitor the fulfilment of a political condition for the accession. The Council found that generally speaking the level was not lower than in the old Member States. The Council noted that in some cases certain corrective measures were needed and assigned to the Commission the task to monitor the developments in these cases. In addition, the Council noted that there was already an agreement with three candidate States to close down eight nuclear power plant units altogether since, by the definition adopted by the G-7 at the beginning of the 1990’s, these plants cannot be upgraded to internationally accepted levels of safety at a reasonable cost.

The Commission argued that it would be unfair to monitor the safety only in the new Member States, since the EU could be accused of discriminative treatment between the new

5 This has been noted also by Trüe [5]
and old Member States [1]. However, actually at the time of the publication of the Communication relating to the directive proposals, the monitoring requirement did cover in the ten new Member States, due to accede to the Union in May 2004, only the units to be closed down and as such in a category totally different from the other nuclear power plants within the enlarged Union.

In its Communication, the Commission stressed the need to collect the funds required for the decommissioning and dismantling of a nuclear installation as well as for nuclear waste management related to the dismantling already during the operation of the installation. Similarly the Communication highlighted the need to guarantee with adequate arrangements that these funds are available for the purpose for which they were collected. The Commission did not, however, claim that the arrangements in the old Member States were not adequate, but simply stressed that the arrangements presently vary from one Member State to another. The need to have unified arrangements was not justified in any way. As to the prospective new Member States, the Commission was mostly complaining that they had started the collection of funds rather late and that therefore the amounts of money collected were not adequate [1].

As a matter in fact, the driving force behind the provisions concerning the financial resources for decommissioning can be found outside of the sphere of nuclear safety. The possibilities to use the collected funds without any interest or with an interest much less than the market rate vary between the Member States and this can, if one so wishes, be interpreted as a distortion of the market situation between electricity companies on the opening European electricity market. The European Parliament had interpreted the situation in this way and the Commissioner in charge of energy had promised to rectify the situation by proposing relevant new Euratom legislation.

It is easy to agree with the Commission’s view that it is time to pass on from words to concrete actions in nuclear waste management. One of the central elements of the waste directive proposal was to require that, before given dates, final disposal sites that satisfy the safety requirements will be identified in each Member State for both low- and medium-level radioactive waste and for high-level waste, spent fuel included. But neither in its Communication nor in the directive proposal did the Commission in any way try to justify how the timetable established at the Community level could, in the real world, help to find an acceptable disposal site. In certain areas of economic activity one can no doubt push through even difficult reforms with the help of community legislation, but to gain nation-wide public acceptance for a final disposal site hardly belongs to these areas.

3 WHAT WAS WRONG WITH THE PROPOSALS?

The umbrella organisation for international nuclear safety work has already for a long time been the IAEA. All the Member States of the European Union are members of the IAEA. The basic obligations and general principles, developed within the IAEA for nuclear safety have been written down in the CNS, to which all EU Member States using nuclear power are Contracting Parties. Respectively the same States are also Parties to the Joint Convention, which deals with the safety of the management of spent nuclear fuel and other radioactive wastes.

One of the points of departure of the CNS (Article 9 and pp (iii)) is that even if the prime responsibility for the safety of a nuclear power plant rests with the holder of the relevant licence, the responsibility for nuclear safety rests with the State having jurisdiction over that plant. The Joint Convention, respectively, stresses that (pp (vi)) “the ultimate responsibility for ensuring the safety of spent fuel and radioactive waste management rests with the State”.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
Both Conventions contain an article (Article 30 and Article 39, respectively) that in principle makes it possible that, instead of the Member States of the EU, the responsible for the implementation is the Euratom Community. The preconditions for this are that the Euratom becomes a Party to the Convention (as it now is) and has given (as it has done) a declaration indicating “which articles of the Convention apply to it and the extent of its competence in the field covered by those articles”. According to the same article, in matters within its competence, the Euratom Community shall, on its own behalf, “exercise the rights and fulfil the responsibilities which this Convention attributes to States Parties”. In other words the Euratom comes *in lieu* of its Member State *vis-a-vis* other Contracting Parties as far as those obligations are concerned that belong to its competence. Or using the words of the ECJ, the Convention seeks to ensure that the Euratom communicates to the other parties to the Convention “both the fields covered by the Convention in which it has competence to fulfil the obligations and exercise the rights which flow from it and the extent of that competence”[4, paragraph 49]. The spirit of both those articles seems specifically to be that the responsibility for fulfilling the obligations of the Convention can be divided horizontally between the Euratom and its Member States. Either the Community or a Member State is responsible for certain matters, but not both simultaneously.

On the other hand, one of the starting points in the directive proposals was that the Member States would still in practice have the responsibility for the safety of nuclear installations and spent fuel and radioactive waste management even when the Euratom would produce legislation covering those matters and which matters then formally would belong to the Community competence. The Commission evidently considered that the division of responsibilities remains unchanged.

In Finland, the directive proposals were seen to vertically divide the responsibility. This approach was found very problematic since it was considered to be against the general principles of nuclear safety where it is of particular importance to have responsibilities unequivocally defined. One can also ask whether this kind of vertical division of responsibilities is in line with the two Conventions.

It was also seen in Finland that, with its existing staff, the Commission had no chances to bear the responsibility for the safety of the nuclear power plants and other nuclear installations in the Member States.6 And even with huge resource increases the centralisation of control in Brussels would not bring any rationalization gains, since there is a great variety of different constructions among the more than 150 nuclear power plants operating within the EU, and everyone of the other nuclear installations is unique.

A number of articles in both proposals repeated almost *verbatim* the content of corresponding articles in the CNS and Joint Convention. On the surface, this seems quite an acceptable approach, but actually there is a great difference between a convention and a directive. A legally binding directive should have much more precise wordings than an incentive-type convention like the two IAEA conventions. Thus one of the worries in Finland was, how the proposed directives would be interpreted in practice, especially by the Commission and by the ECJ.

The implementation of the CNS and the Joint Convention is examined through a peer review process carried out at regular review meetings. One of the services provided by the IAEA has, for a long time, been sending, on request, review teams to evaluate the operation of the national regulatory authority and/or a single nuclear installation. In both cases critique is presented, if warranted, and recommendations are given. It is up to the Government in question to decide whether and how the recommendations should be implemented. Also the installations safety directive proposal contained an article introducing some kind of a peer

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6 The Commission’s proposals anticipated that only less than five additional man-years were needed to manage the systems to be set up.
review mechanism. A group of experts\textsuperscript{7}, to be selected among those made available by the Member States, would evaluate the work of the national regulatory authority in each of the Member States in turn and present recommendations for improvements. But the need to really implement these recommendations would have been decided by the Commission, not the Member State itself. Thus it would not have been a question of a genuine peer review, but of a regulatory measure that is based on the impression conveyed, during a few days, to a few outside experts and with which the responsibility for nuclear safety is actually transferred to the Commission.

Originally one of the prominent features of the installations safety directive proposal was the idea of developing own nuclear safety standards for Euratom. Even if the Commission assured that the intention was to utilize the existing international standards, the idea was almost unanimously opposed by the experts in all Member States. It was not seen rational to create a competing system to the already existing system of the IAEA to develop standards. The Commission also anticipated standards for such nuclear installations for which no IAEA standards existed, yet. Actually, there is a fundamental difference between the IAEA standards and the standards envisaged by the Commission. While the IAEA standards describe the goals that should be strived at, the Commission standards would have been binding on the Member States. It was felt by the experts that the Commission greatly underestimated the time and effort needed to develop new types of standards, even if existing standards could be used as a basis. In the final version of April 2003 the idea of common standards had been left out, but the explanatory notes seem to imply that the Commission had not totally abandoned the idea.

In the same way as in the case of the installations safety directive proposal, one had also included in the waste directive proposal certain, even if a smaller number of, provisions dealing with the principles of securing safety. Their origin was clearly in the Joint Convention. These provisions can be criticized on the same grounds as those of the installations safety directive proposal. An additional point of criticism was that as the installations safety directive, unlike the CNS, would have covered also other nuclear installations than nuclear power plants, and consequently also installations for waste management, the result was that the requirements in the two proposals were partly overlapping.

The waste directive proposal did not include a peer review mechanism of its own, but instead provisions for another, strongly opposed mechanism. The central element of this mechanism was the idea, in itself acceptable, that each Member State should establish a clearly defined programme for radioactive waste management. The proposal did not, however, stop here, but it gave also time limits, i.e. definitive years, by when each Member State should give authorisations for operation of final disposal facilities for high-level and long-lived radioactive waste on the one hand, and for short-lived low and intermediate-level radioactive waste on the other hand.

Especially the time limit for high-level waste, the year 2018, was regarded as impossible. It does not seem to take at all into consideration the problems inevitably connected with the finding of a final disposal site. So far in only one Member State of the EU, i.e. in Finland, there is a kind of a largely accepted decision on where high-level nuclear waste, in this case spent nuclear fuel, can be buried. This decision was preceded by a decades long dialogue for finding a suitable and acceptable disposal site. The decision has been formally made only in principle and no construction licence has been issued for the disposal facility, since only underground geological studies will finally show the suitability of the site. According to the present plans, the operation licence will be issued around 2020. But if the

\textsuperscript{7} Two experts, according to the Commission’s proposal!

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
site turns out to be unsuitable, the whole process for finding another site will start almost from scratch all over again.

The time limits in the directive would have been binding and a Member State could not have disregarded them without a positive decision of both the Commission and the Council. In other words, the national competence in this highly sensitive area would have been transferred to the Community organs. But the idea of fixed time limits imposed from the outside also include, in principle, a great problem. This approach gives the compliance with time limits priority over nuclear safety, while the installations safety directive proposal explicitly required that “in the course of all practices directly related to nuclear installations due priority is given to nuclear safety”. One can hardly argue that the radioactive wastes in the present circumstances cause such a danger that it would justify final disposal without giving due priority to nuclear safety. At least in Finland, it was seen that a time-limit imposed by an supranational body would easily destroy the trust in securing the safety of final disposal that the Government, the regulatory authority and the nuclear power companies had, with difficulty, been able to build up.

The waste directive proposal made the Government in Finland nervous also because it explicitly draw attention to the possibility for a Member State to be exempted from the obligation to find a final disposal site for radioactive wastes by sending them to another Member State or outside of the Union. The proposal naturally set very strict conditions for these transfers, but the problem was elsewhere. The Communication mentions the possibility of a regional disposal site and the explanatory notes to the proposal clarify that the proposal seeks to encourage the sharing of facilities and services wherever possible. Even if the proposal itself did not include any provision that would have obligated a Member State to co-operate in this respect with other Member States, the directive was seen to give more impetus to the concept of regional disposal sites. As in Finland one of the unconditional points of departure of the disposal project has been that the site to be selected will be used only for spent fuel produced at the Finnish power plants, it was natural that, also from this angle, the proposed directive was seen as a threat to the consensus that had formed the basis for the project.

The Commission’s directive proposals were based on the assumption that the articles in the Euratom Treaty concerning the radiation protection norms give also powers to have Euratom legislation on nuclear safety. This assumption was initially contested by many of the Member States. After all, it was a complete departure from the interpretation that was customarily thought to be the correct one. A month after the publication of the first directive versions the Commission’s view got support from the ECJ. The Member States did not want to question the ECJ’s interpretation and, after this, the discussion on the proposals was concentrating in their content. Those provisions in the installations safety directive that related to the funds for decommissioning and nuclear waste management were, however, clearly outside of the domain of the Court’s decision. During the discussion, a consensus emerged that the articles in question do not give powers to regulate the collection and safe-keeping of those funds except on a very general level.

4    CASE C-29/99

The ECJ gave on 10 December 2002 its judgment in Case C-29/99, Commission vs Council. This judgment clearly influenced the discussion within the Council on the nuclear package, while people tended to give for the judgment a wider application than its wording actually warrants. This may be partly due to the fact that the reasoning behind the judgment is not entirely clear nor is it entirely convincing.
The case was about which articles of the CNS should be listed in the declaration that the Euratom was going to communicate to the depository. The Council, which decides on the content of such a declaration, included in the list of articles regarding to which the Euratom had competence only two articles (Article 15, Radiation Protection, and Article 16(2), Emergency Preparedness). The Commission, which had proposed more than ten other articles to be included, did not content itself with the Council’s decision, but asked the ECJ to study the question. It is worth noting that both sides were of the opinion that some, but not all of the articles should be listed and that neither side claimed that the Euratom competence covered any of the disputed articles in its entirety. The difference of view concentrated in the extent to which the Euratom competence overlapped with the competence necessary for implementing different articles of the CNS.

The Court arrived at the conclusion that the Euratom Community had competence over more articles than those two the Council had listed. The judgment seems to be grounded on especially two aspects: (a) inappropriateness, “in order to define the Community's competences, to draw an artificial distinction between the protection of the health of the general public and the safety of sources of ionising radiation” (paragraph 82); and (b) a broad interpretation of Article 4 of the CNS.

The Court’s conclusion that it is not appropriate to draw a distinction between radiation protection and the source of radiation, in other words between radiation protection and nuclear safety, is mainly based on a teleological interpretation of the relevant provisions of the Euratom Treaty. According to Article 2(b) of this Treaty, the Euratom shall, in order to perform the task given to it, “establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied”. Detailed provisions on how this is done are found in Chapter 3 of Title II, entitled 'Provisions for the encouragement of progress in the field of nuclear energy'. The first article of this chapter, Article 30, is worded as follows:

“Basic standards shall be laid down within the Community for the protection of the health of workers and the general public against the dangers arising from ionising radiations. The expression ‘basic standards’ means:

(a) maximum permissible doses compatible with adequate safety;
(b) maximum permissible levels of exposure and contamination;
(c) the fundamental principles governing the health surveillance of workers.”

As can be seen, this article refers only to some basic concepts of radiation protection: "doses", "levels of exposure", and "health surveillance". Nothing is said about the sources of radiation or about nuclear safety. Only recently there have been arguments in favour of an interpretation that this article should be understood to cover also nuclear safety.

Different explanations have been offered for the “omission” of a direct reference to nuclear safety in the Euratom Treaty. The Commission has explained the lack of references to aspects such as operational safety of nuclear power plants and radioactive waste storage or disposal facilities (i.e. criteria or norms to be respected, during either design or operation of these facilities) “is probably because at the time the Treaty was drawn up, these were not major concerns”. [10]

But also an entirely different explanation has been presented. The “omission” would have been quite intentional since details of the construction and operation of nuclear installations were, at that time, seen too sensitive from the non-proliferation point of view to be described publicly through safety norms.8

8 This explanation has been presented, in an oral communication, by Professor Vuorinen, former Director General of the Finnish nuclear regulatory authority, who was already active in the nuclear field at the end of the
The Court supported the first interpretation by simply stating, without any actual justifications, that the protection of the health of workers and of the general public cannot be achieved without controlling the sources of harmful radiation (paragraph 71). The ECJ also considered, referring to its earlier jurisprudence, that Article 30 must be given a broad interpretation, though in reality the examples cited by the Court seem to broaden the interpretation in directions that are not relevant for the case in hand.

However, the Court did not give an opinion on the competence of the Community in the field of nuclear safety in general. Basically, it only noted that the concept “nuclear safety” also contains elements that can as well be considered elements of radiation protection and that these belong to the competence of the Community. In other words, using the metaphor presented by Trüe: "[T]he ocean of the Member States competence for the area of nuclear safety includes, as its part, islands of radiation protection. These islands can be subject Euratom legislation.” [5].

Based on this interpretation, the ECJ then assessed whether any of the disputed articles of the CNS contains also such overlapping elements and whether these elements were also within the Euratom competence. The Court’s view was that even a smallest islet was enough to warrant the inclusion in the list of the declaration.

The Court found several such elements in different articles of Chapter 3 of Title II, but at the same time noted that it was mainly a question of giving opinions or recommendations. At the same time, the Court rested its argumentation on the wording of Article 4 (“Implementing measures”) of the CNS:

“Each Contracting Party shall take, within the framework of its national law, the legislative, regulatory and administrative measures and other steps necessary for implementing its obligations under this Convention.”

According to the ECJ, the term “other steps” in Article 4 of the CNS covers these opinions and recommendations. On the basis of this, the Court then concluded that a total of seven articles in the CNS should have been listed.

In its judgment, the ECJ seems to have been concentrating in the different powers of and responsibilities for the Commission to act under the Euratom Treaty. The words “necessary for implementing its obligations under this Convention” seem to have got less attention. With respect to most of the overlap between the articles of the Euratom Treaty and the CNS that the Court identified, one can ask whether the Community acts identified by the Court are necessary, even partly, for the implementation of the Convention. Article 161 of the Euratom Treaty specifically stipulates: “Recommendations and opinions shall have no binding force”. They are binding neither on the Member States nor on nuclear operators. Thus the Commission is not able to force any State or actor through these recommendations and opinions to fulfill the requirements of the CNS. It can only try, for its part, to influence the content of the implementation decisions.

However, it was hardly the purpose of the drafters of Article 30 of the CNS to make the other Contracting Parties to the Convention aware of those instances that have the right, by expressing opinions or making recommendations, to try to influence decisions on the implementation of the Convention. After all, no such declaration is required from other Contracting Parties. Evidently, the purpose was to make other Contracting Parties aware of when the responsible for the implementation is Euratom, when each of the Member States.

1950’s. The limitations to the applicability of the Euratom Treaty due to military considerations have been a constant source of active debate.

9 This lack of justifications was also noted by Koutrakos [7].

10 The declaration was modified accordingly by the Council.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
5 CONCLUSIONS

The attempt to broaden the Euratom competence to nuclear safety and nuclear waste management questions caused wilderment among the nuclear regulators community throughout the European Union. The attempt was opposed with legal and substantive arguments. After the judgment by the ECJ in case C-29/99, the question of the proper legal base was pushed to the background. However, as it turned out that the proposals would not have gained the necessary majority within the Council and as even those Member States accepting the idea of new directives wanted to have profound amendments to them, the Council postponed the discussion on the proposals. Instead, the Council decided to concentrate in widening and deepening the co-operation between Member States and in this way to work towards harmonizing the nuclear safety practices in the Union. The question of binding norms would be revisited later. At that time, it might be justified to study again also the question of legal basis and the limitations introduced by the CNS and the Joint Convention.

After the Council shelved the Commission’s first proposals, the Commission has published new proposals that replace the earlier ones [11]. Many of the pitfalls of the first attempt have been remedied in these new proposals, but the basic difficulty remains: the vertical division of responsibilities. And one can see already now that the worst of the scenarios outlined by Pinel in Nuclear Inter Jura ‘95 [12] is coming true.

REFERENCES


JUSTIFICATION OF THE CONTINUED DEVELOPMENT OF THE PEACEFUL USE OF NUCLEAR ENERGY

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ABSTRACT

The argument for justification of nuclear electric power development is examined: practicability, economic and new build; effects on health; safety; security; the environment; issues and opportunities to overcome barriers to its development are identified. Uncertainties are identified in the areas of health and security that must be acknowledged and tackled from an international base. The practicalities of deployment of nuclear energy to offset world poverty are discussed; principle objectives identified and legal measures to overcome barriers to the continuing development of nuclear energy are suggested.

1 INTRODUCTION

The principle of justification, according to the ICRP, is that no practice involving exposures to radiation should be adopted unless it produces sufficient benefit to the exposed individual or to society to offset the radiation detriment it causes. European Directives require that activities involving exposure to ionising radiation be justified in advance by the advantages they produce. The Basic Safety Standards Directive clearly requires a generic, rather than a site-specific assessment of the justification of the practice. While it has been successfully argued in the UK Courts that the justification requirements including public consultation on reprocessing of nuclear fuel in the THORP plant had been satisfied it would be prudent to assume that a new style of reactor would be seen as a new class of practice and subject to determination by the Secretary of State only after public consultation. Such consultation would open the practice to the wider question of sustainability.

The IAEA view is that the essence of the Bruntland Report’s definition of sustainable development is the importance of expanding possibilities and keeping options open, not foreclosing them for future generations. In the United Kingdom a new generation of nuclear reactors would be considered under The Justification of Practices Regulations that requires the Justifying Authority to determine that the practice is justified and requires that a number of government objectives be satisfied, namely to:

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1 The IEA estimates 1.6 billion people lack access to electricity; Universal electrification will require bringing electricity to 1000 million new people a year for the next 50 years. (Double today’s rate). IEE Power Engineer, February/March 2005, Institution of Electrical Engineers, London.

2 EC Directive 80/836/ EURATOM Article 6 amended by Directive 84/467/ EURATOM.

3 EC Directive 96/29/EURATOM, Articles 6(1) and (2).

4 R v Inspectorate of Pollution, ex p. Greenpeace Ltd (No.2) [1994] 4 All E.R. 329

5 The Justification of Practices Involving Ionising Radiation Regulations 2004 (SI 2004/1769)

6 ibid Regulation 6

7 These points are taken from ‘A Better Quality of Life’ CM 4345, DETR 1999.
Satisfy the requirement of ‘practicability’ in that it prudently uses natural resources and maintains high and stable economic growth and employment;

Promote social progress that recognises the needs of everyone in that it is not ‘harmful to health’, is ‘safe and secure’; and

Afford effective protection of the environment.

Notwithstanding the UK government position concerns about nuclear weapons, terrorism, persistent low-level radiation and the disposal of radioactive waste must also be adequately satisfied.

2 THE PRACTICABILITY OF NUCLEAR ELECTRIC POWER

That nuclear electric power is practicable has been established beyond doubt by the fact that a significant proportion of electricity in major areas of the world is generated from nuclear energy. However, practicability also implies that nuclear power can be produced economically; that improvements can be made to minimise waste and decommissioning clean-ups; and that it can be adapted for practicable use in locations that need power and clean water but have technology, infrastructure, political and geographic challenges.

2.1 Economics

Many of the arguments about the cost of nuclear electricity focus on the historic costs of clean up, decommissioning and disposal of waste. It is clear that such historical costs associated with the development of nuclear energy, the research facilities, pilot plants, waste storage, fuel reprocessing and decommissioning are not included in the price that is paid for electricity. In the UK the government has taken the initiative to absorb those costs within its own responsibility through the Nuclear Decommissioning Authority (NDA). The cost of insuring against the liabilities associated with a nuclear accident up to £500 million per plant is included in the price of electricity. Historic costs of nuclear energy may be compared with the probably unidentifiable, costs of clean up of other industries such as the coal industry, railways and power plants associated with coal-fired electricity generation and the as yet to be identified cost of wind generation. It is reasonable in responding to challenges to the cost of nuclear electricity to do so in the light of future costs of other sources of energy using a similar platform including external costs. Based on this ‘level playing field’ approach applied to all other sources of energy an analysis by the Royal Academy of Engineering reveals that the current cost of nuclear electricity, taking into account an allowance for decommissioning, is comparable with wind, coal and oil sourced electrical generation. Together with the possible efficiency improvements in future nuclear fuel cycle and electricity production, the plentiful supply of uranium for which there is only a military alternative use, the efficient use of land and minimal fuel transport cost, it would be imprudent to discount nuclear electricity on economic grounds; however risk takers have yet to be convinced.

2.2 New Nuclear Build

The price of nuclear electricity is directly affected by high capital depreciation caused by the costs of construction, influenced by the discount rate. To counter this, future reactor systems must reduce capital costs and construction programme times by increasing factory

\[8 \text{ Costs of Generating Electricity, March 2004, A commentary on a study carried out by PB Power for the Royal Academy of Engineering. Page 3 Fig 2. [www.raeng.org.uk]}

assembly, modular construction,\textsuperscript{10} longer operating lives up to 60 years and smaller units. Two stages of development, third and fourth generation, are envisaged: third generation being improvements of the current water-cooled reactor systems and fourth generation being the extension to a commercial stage of high temperature research reactors. Examples of the third generation are the European Pressurised Water Reactor (EPR) \textsuperscript{[2]} and the Advanced Pressurised Water Reactor (APR) \textsuperscript{[3]} both of which use proven technology building on over 30 years of operating PWR experience. Generation four include high temperature reactors \textsuperscript{[4]} being developed in the US and South Africa. Further research into fourth generation reactors aims at developing new concepts that would reduce waste, extend fuel life and lower production costs. At higher operating temperatures power plants can become a source of heat for co-generation in industrial applications. Coastal power plants could be used for large-scale seawater desalination. With temperatures above 900 degrees centigrade the recovered heat would allow the production of hydrogen. In the much longer term thermonuclear fusion would remove doubts about energy supplies. The development of small floating nuclear stations\textsuperscript{11} and the use of reverse osmosis for desalination gives the possibility of taking power and clean water to coastal States and areas accessible by large rivers. The use of waste heat from used fuel storage facilities and from classified high-level waste, given acceptance of low-level radiation exposure, would offer sustainable domestic heating. Clearly these latter concepts would require radical changes to the ownership of plants and of necessity require international control. The idea of providing a service as opposed to supplying a plant, i.e. guaranteed electricity and water, could be a solution. Two interesting projects are at the early stages of development.\textsuperscript{12} A Small, Sealed, Transportable, Autonomous Reactor (SSTAR) that could be deployed anywhere in the world is in the pre-conceptual stage of design at the Lawrence Livermore Nuclear Laboratories in California. A feature of the SSTAR would be its long core life that should not need to be replaced for 30 years. A second project supported by the Japanese Central Research Institute of Electrical Power Industry (CRIEPI) and Toshiba is the Super Safety, Small and Simple Reactor (4S). Preliminary conceptual designs have been completed at 10MW and 50MW power levels. A possible practical application for a 10MW 4S Reactor would be the city of Galena in Alaska.\textsuperscript{13} Nuclear electric power is practicable, economic and offers future improvements, prudently uses natural resources and offers to maintain high and stable economic growth and employment.

3 HEALTH EFFECTS OF NUCLEAR ENERGY

Even though radiation is easily identified, pollution from radioactive materials is feared and held as a reason for curtailing or even ceasing the use of nuclear energy. This view is in spite of the fact that much is known about the medical and environmental effects of radiation and that radioactive materials are better regulated than any other pollutant. Less is known about the medical effects of over 30,000 chemicals that are used in sufficiently high volume (one tonne or more per year) to require registration. Radiation from radioactive substances has been regulated on the recommendations of the International Commission on Radiation Protection (ICRP). The main objective of the ICRP recommendations is a Utilitarian balance to provide an appropriate standard of protection for man without unduly limiting the beneficial practices giving rise to radiation exposure. The membership of the ICRP comprises

\textsuperscript{10} Modular construction allows a multiunit power station made up from standard modules, each capable of independent operation and so allowing a small unit size, say 150 MWe to be used in areas with less energy density and for a staged build of larger stations where there is greater demand.

\textsuperscript{11} Russian News and Information Agency, ‘From nuclear icebreakers to floating nuclear power plants’, 12 October 2004.


\textsuperscript{13} Small Alaska Village Eyeing Nuclear Power, Reuters, February 04, 2005.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
a majority of scientists and consequently has been criticised as being biased in favour of the use of radioactive processes and has also been criticised for underestimating the dangers of low-level radiation. This view is understandable but one must also ask why scientists, since they work with radiation, should risk their own health. The members of the ICRP are independent and have no commercial interest in the application of radiation practices. Nevertheless the ICRP in reviewing and updating its recommendations now adopts a consultation process giving the opportunity to the wider public to influence their recommendations. The draft ICRP 2005 Recommendations under public consultation amends the limits for certain radionuclides. Future releases of radioactive materials to the North Atlantic are being reduced to near zero by 2020 by agreement with the signatories of the OSPAR Convention, however the term ‘near zero’ has yet to be tested.

The design and operation of nuclear power stations is based on radiation releases from normal operation and design basis accidents that give a radiation dose to the public at the site boundary of no greater than 1 mSv, 1000 times lower than the radiation level known to cause harm, giving a risk of death of 1 in 200,000\(^{14}\) per year. Regulations also require that releases be reduced to as low a level as is reasonably practicable. The risk of death due to radiation from a nuclear plant is therefore less than the risk of an accident in the home, on the roads and at work. Releases from accidents and historical discharges of radioactive waste may present risks over and above those of normal operations and for inhaled or ingested particles should be treated with precaution, however, on balance the harm caused by radiation from nuclear electric power is low compared with everyday risks.

4 SAFETY AND SECURITY

The meaning of the terms safety and security have a common base and so there is a risk of confusion in their use. For the purpose of this paper four aspects are discussed: safety of the nuclear process in the sense that the process is operationally safe and will not cause harm or damage; that the nuclear process is safe from external harm; safety of nuclear materials such that they are not used to cause harm; and security of the output such that energy supplies are not interrupted or lost to the consumer. Taking these aspects in turn.

4.1 Operationally safe

Worker exposure to radiation in the UK is regulated under the Ionising Radiations Regulations 1999 that reflect the Euratom Basic Safety Standards Directive. These regulations enforce working practices and exposure constraints and limits based on ICRP Recommendations. The worker exposure limit is 20 mSv per year where the exposure known to cause harm is in the region of more than 50 times that value.

Exposure of the public to radiation from a nuclear process, excepting medical procedures, is limited to 1 mSv per year under all circumstances including design basis accidents. In the UK releases to the environment that may come into contact with the public are regulated, so as not to cause harm, by the Radioactive Substances Act 1993, that requires authorisation for the storage or release to the environment of radioactive materials. Any such release may be approved with conditions one of which is that it is justified and is as low as is reasonably practicable using best available techniques.

The design of nuclear reactors in the UK is such that the PWR as built at Sizewell has four barriers to the escape of radioactive materials: the fuel cladding; the reactor pressure vessel; the concrete and steel containment; and the steel outer containment. A similar system, without the outer containment, was sufficient to contain the results of the reactor meltdown at

\(^{14}\) At 5% per Sievert using the linear non-threshold dose response relationship.
the Three Mile Island Power Plant in the USA preventing the release of radiation to a level less than the regulatory limit. Generation three reactors would prevent such a meltdown even with the complete loss of power supplies. Experience around the world has demonstrated that practically, the release to the environment of radioactive materials in excess of regulatory limits from operation of the PWR is rare. Other than the TMI and Chernobyl accidents no other disastrous accident has occurred in 441 commercial power reactors worldwide with an operating experience of 11,000 reactor years. Harm to the public from the TMI accident was caused by fear of harm, rather than harm from radiation, caused by misinformation and lack of emergency planning. While the Chernobyl type reactor (RBMK-1000) will not be built in the future the accident has led to significant delays in nuclear power development since 1986. Unlike TMI, Chernobyl had no containment and so radiation was widely dispersed. It is instructive to note that although the accident is a living monument to poorly regulated engineering it has not been the cause of the tens of thousands of deaths predicted by the media at the time.

4.2 Protection of the power station from external harm

The design of the structure of a nuclear reactor containment is such that as well as preventing the escape of radioactive materials it must withstand the effects of climate, credible earthquake and external forces such as the impact of military and civilian aircraft. The effect of fire will affect administrative and services buildings but the nature of the containment and safety systems will ensure that the reactor will be undamaged and will shutdown safely. Concern has been expressed about the safety of irradiated fuel storage and transport. While in early reactors on-site storage of used fuel was potentially vulnerable, future designs offer a similar level of protection for used fuel as for the reactor systems. It has been shown that transport flasks for used fuel can withstand the collision with a full speed fully loaded express train.

4.3 Safety of nuclear materials

There is undeniable risk of radiation release from the illicit use by terrorists in a Radioactive Dispersal Device (RDD) or ‘dirty bomb’; however, the use of new or used fuel from a nuclear power reactor would require extreme action. Greenpeace activists in the UK gained access to the nuclear power station at Sizewell to demonstrate lax security, however, to obtain radioactive materials and take them away from the station would require special skills and equipment that is only available to reactor operators and is closely regulated under IAEA safeguards. The use of radioactive materials from medical, industrial or academic sources would be more likely the target of terrorist action. Such possibilities should not affect the future of nuclear power but do serve as further incentives to ensure safe containment.

4.4 Energy Security

Even for short periods, the loss of electrical supplies would cause harm in particular to the elderly and infirm and it would not be unrealistic to say that the loss of power for one day during a severe cold spell could result in the loss of life of a significant number of people. To prevent such interruption to the power supply it is necessary to have reliable back up to vulnerable sources of supply such as wind and in the future imported gas. Nuclear energy has

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proved its value in this area when it contributed to avoiding loss of electrical supplies in the UK during the industrial unrest in the coal industry.

Although early nuclear power stations had poor availability, nuclear power reactors now have a good record in the high 90% region. A nuclear reactor operates on the basis of refuelling on a 1 – 2 year cycle, which means that no offsite supplies of fuel are necessary during that period and in some cases even longer periods where advanced stocks are held. Some generation four reactors will have the facility to store a lifetime of fuel and used fuel on site although the balance between security and economics will be the deciding factor in the case of new fuel. The availability of electricity and waste heat could be guaranteed for long periods without interruption from the disruption of transport. The wide geological availability of uranium, its low cost of resource replenishment, and low cost to the customer as a component of final generation costs make it a significant future source of energy. [6]

5 EFFECTIVE PROTECTION OF THE ENVIRONMENT

The use of nuclear energy has many positive effects on the environment. Direct effects are the availability of energy and clean water to alleviate poverty in undeveloped areas of the world and as a consequence the possibility of removing a cause of terrorism and modern day ‘Robin Hoods’; a cleaner atmosphere; a reduction in carbon dioxide, sulphur dioxide and nitrogen oxides in the atmosphere; the contribution to medical, agricultural and industrial activities; the extraction of hydrogen to contribute to cleaner transport; and indirectly by slowing the depletion of gas, oil, coal and wood resources.

The question that is of concern to many is the effect on future generations in the context of release of radiation from stored or disposed radioactive waste. In the UK such concerns are being identified in the studies being carried out by the Committee on Radioactive Waste Management (CoRWM) to decide the optimum solution to the long-term storage and disposal of solid radioactive waste. The currently stored radioactive waste, used fuel and radioactive materials do not present a hazard to the public; the annual radiation exposures due to discharges from the UK sites are well within regulatory limit of 1 mSv. The highest exposure is at Sellafield 0.21 mSv and Whitehaven 0.41 mSv; the latter being due to historical releases of Technologically enhanced Naturally Occurring Radioactive Materials (TNORM) from the former phosphate works. Nevertheless changes to domestic legislation may be necessary to deal with long-term nuclear waste management.

6 PROLIFERATION OF NUCLEAR WEAPONS AND MATERIALS

The fear is expressed that having new nuclear power stations will lead to more nuclear weapons. This is a false fear as weapons grade materials can be produced without the need for power reactors. The greatest risk of nuclear weapon proliferation is that countries will follow similar development of weapons, as did the USA, Russia, UK, France, China, India, Pakistan and Israel without access to external help. The Non-Proliferation Treaty offers peaceful nuclear technology and the advantages of nuclear electricity, medical, industrial and agricultural applications to States that need them on condition that they do not develop nuclear weapons. This has clearly worked in the majority of States that have taken advantage of the arrangements. There are examples of failure such as North Korea and we are currently witnessing the process in action in the case of Iran, nevertheless the system is viable and with improvement will continue to be effective. Possible improvements include the prohibition of enrichment and reprocessing nuclear fuel in non-nuclear weapons States and the concentration of those processes and possibly the storage and disposal of used fuel and radioactive waste in a limited number of locations in the world; A Multinational Nuclear Approach (MNA).
Apart from world trade considerations, the remaining obstacle to the worldwide application of nuclear energy is the risk of nuclear materials being used in weapons. Two significant studies carried out prior to the 2005 NPT Review focus on solutions to this problem. An IAEA expert group considered and reported in February 2005 on international approaches to the nuclear fuel cycle [7] and the Carnegie Endowment for International Peace reported in March 2005 a strategy for nuclear security. [8]

The IAEA Expert Group reported five approaches to strengthen controls over nuclear materials: Reinforcing existing commercial market mechanisms; Developing and implementing international supply guarantees with IAEA participation; Promoting voluntary conversion of existing facilities to multinational nuclear approaches (MNAs); Creating, through voluntary agreements and contracts, multinational, and in particular, regional, MNAs for new facilities based on joint ownership; disposal and storage of spent fuel (and combinations thereof). Integrated nuclear power parks would also serve this objective. The proposals take account of the history of past abortive attempts to internationalise the fuel cycle and outline the technological and IT advances that make surveillance more efficient. However, in reviewing options and obstacles to regional/international provision of services the bolder step of providing the end product (electricity, water and heat) was not considered. The question of bomb-owning non-NPT States (the 3-State problem) was not directly addressed, however, to be realistic their recognition and involvement, and that of potential weapon States, must be included in any proposed solution to proliferation.

Complimentary to multilateral approaches identified in the IAEA Report the Carnegie Endowment noted that perhaps the most ambitious attempt ever made to extend the civilising reach of the rule of law has been the international effort to contain the acquisition and use of nuclear weapons, however, it goes on to say that non-proliferation is a set of bargains whose fairness must be self-evident if the majority of countries is to support their enforcement and identifies six objectives; Make non-proliferation irreversible; Devalue the political and military currency of nuclear weapons; Secure all nuclear materials; Stop illegal transfers; Commit to conflict resolution; and solve the 3-State problem.

In order to succeed in this endeavour it will be necessary to strengthen international law including voluntary codes of conduct and related measures with investment, banking and manufacturing firms to discourage and prevent nuclear trafficking. Also, if the creation of MNAs is to move forward States enjoying the benefits of nuclear energy must also share the risks. The 1997 Joint Convention and the 1994 Convention on Nuclear Safety go some way towards standardising the management of such facilities but international nuclear liability law has deficiencies that include, inter alia, exclusive liability of the operator and time limits which compel a specific agreement relating to the responsibility of the States involved. [9] Regrettably the NPT Review held in New York in May 2005 failed to agree on any new measures that might have stirred such movement.

7 ISSUES, OPPORTUNITIES AND CHALLENGES

The three pillars of sustainable development, economic, social and environment have been addressed and it is clear that nuclear electric power can meet the tests to satisfy the justification of new nuclear build. The decision to recommence the development of nuclear electrical power rests with Governments; however, public opinion and international politics affect that decision.

With the subject of waste management well on its way to resolution [10] the issues relating to new nuclear development are reduced to two major subjects: the consequences of

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the remote but possible accident that would release cancer causing particles over a wide area; and the risk of the use of nuclear technology to produce weapons. On the other hand the opportunities to be grasped are: the availability of relatively low polluting energy that is free of greenhouse gas emissions and polluting carbon particles; the possibility of deployment of small, long lived, low maintenance power sources that can be deployed in developing countries; and security of energy supplies in the environment of scarce alternatives.

The challenges to be overcome focus on the resolution of these two major issues. Accidents and the consequences of accidents can be avoided by the practice of sound engineering, vigilant management and on the public acceptance of the relative risk of low level radiation in the face of the hazards of alternative sources of energy, future security of supplies and everyday risks. The second issue, that of proliferation of nuclear weapons, must be solved through international law and political means. It involves recognising all nations with a nuclear capacity as parties to the solution; the strengthening of the United Nations or creation of a separate international body to suitably modify and police the Non-Proliferation Treaty (NPT); ratification of the Comprehensive Test Ban Treaty (CTBT); and to accelerate the ‘Megatons to Megawatts’ programme. The question of centralising or regionalising the manufacture and reprocessing of nuclear fuel, storage and disposal of spent fuel and unwanted nuclear materials would require further international instruments coupled to the NPT and CTBT and would set the scene for a ‘brave new world’.

The application of this gift of nuclear energy in developing States requires the resolution of a further problem; many States that would benefit from this source of electricity, clean water and heat do not have control of their resources and lack the infrastructures to sustain such systems. [11] The current model of supplying a power plant is not feasible in the circumstances of most developing States and would not be seen as an acceptable solution by the public in the developed world. The principle of supplying the product, electricity, water and heat as a service, similar to the supply of gas and oil, could provide a solution with the use of secure generation four systems being retained by a consortium of financial institutions, commercial organisations, manufacturing firms and utilities with full responsibility for all aspects of operation of the system up to the interface with the user. Such an arrangement could interlock with the provision of fuel cycle services and safeguards as described in the IAEA Report.

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NUCLEAR INSTALLATION LICENSING AND DEMOCRATIC DECISION MAKING IN FINLAND – A CASE STUDY REGARDING THE OLKILUOTO 3 NUCLEAR POWER PLANT UNIT AND THE FINAL DISPOSAL REPOSITORY FOR SPENT NUCLEAR FUEL

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ABSTRACT

The Olkiluoto 3 project – the project regarding the construction of the fifth nuclear power plant unit in Finland – is in progress. The new nuclear power plant unit has been ordered by Teollisuuden Voima Oy (TVO) and will be supplied by a French – German consortium. The new nuclear power plant unit is to be in operation in 2009.

While TVO is having the new nuclear power plant unit built in Finland, Posiva Oy – a subsidiary of TVO and the company in charge of the practical implementation of the final disposal of spent nuclear fuel in Finland – is constructing an underground characterisation facility relating to the future final disposal repository for spent nuclear fuel. The underground characterization facility, ONKALO, is being excavated in the same area where the two existing TVO operated nuclear power plant units are located and where the Olkiluoto 3 power plant unit is constructed, too.

The construction and operation of nuclear installations in Finland are subject to a specific licensing procedure defined in the Finnish Nuclear Energy Act and Nuclear Energy Decree that entered into force in 1988. Olkiluoto 3 is the first nuclear power plant unit that is constructed after the current Nuclear Energy Act and Decree were enacted. The same applies, of course, to the final disposal repository for spent nuclear fuel, as no such facility exists in Finland so far.

The fact that the democratic decision making in a European country can today result in showing green light to additional nuclear energy has attracted quite some attention internationally, as new nuclear power plant units have not been built in the Western Europe recently and political decisions to shut down existing units within a certain period of time have been made in some countries.

The main purpose of this presentation is to shortly describe the Finnish nuclear installation licensing process, provide a general picture of the various steps in the political decision making that have lead to the current situation, where the construction work of the new nuclear power plant unit can commence, and point out some of the reasons that can be assumed to have influenced in favour of the construction of additional nuclear energy.
1 INTRODUCTION

TVO is a private limited company currently operating two nuclear power plant units in Olkiluoto. TVO provides electricity only to its owners and the generated electricity is provided to them at cost.

Posiva Oy (Posiva) is a company established by the two Finnish nuclear operator companies, TVO and Fortum Power and Heat Oy, in 1995 and is jointly owned by them. The main field of operation of Posiva is to be in charge of the measures for the management of spent nuclear fuel of its owners' nuclear power plant units after interim storage at the power plant unit sites.

The use of nuclear energy in Finland, including the nuclear installation licensing process, is governed by the Nuclear Energy Act and Nuclear Energy Decree that became effective in 1988. The same licensing process applies both to nuclear power plant units and other nuclear installations such as the final disposal repository for spent nuclear fuel. In addition to the licenses and permits granted in accordance with the Nuclear Energy Act and Decree other licenses and permits that are not nuclear installation specific are needed, but they are excluded from the scope of this paper.

Several factors arising i.a. from economic requirements and environmental commitments have encouraged Finland to take decisions that allow the construction of additional nuclear capacity. It should be emphasized that the Olkiluoto 3 project has been commenced on the initiative and due to the needs of the Finnish industry. The state has not been a promoter of the project. Nor is the project in any way financed by the state.

As to the final disposal repository for spent nuclear fuel the excavation works of an underground characterization facility, ONKALO, are in progress. The purpose of the underground characterization facility is to further confirm that the final disposal repository for spent nuclear fuel can be built in the Olkiluoto bedrock as planned. Eventually, ONKALO is intended to be a part of the final disposal repository.

2 THE NUCLEAR INSTALLATION LICENSING PROCESS

According to the Nuclear Energy Act and Decree the use of nuclear energy is subject to several different authoritative decisions; the decision in principle and licenses for the construction and operation. The basic requirement for the use of nuclear energy is laid down in the Nuclear Energy Act according to which the use of nuclear energy, taking into account its various effects, shall be in line with the overall good of the society. Prior to the decision in principle the environmental impact assessment process must have been concluded. The several different phases of the licensing procedure applied to nuclear installations take a number of years to conclude.

Before the company planning to construct a nuclear installation is allowed to make any binding financial commitments regarding the nuclear installation a decision in principle is needed from the Council of State. The decision in principle is a political decision to show green light to a single project. Thus, it is not a permission to construct a nuclear installation. On the other hand the decision in principle does not obligate the applicant to carry through the project.

The process relating to the decision in principle involves extensive consultation of both the specialized authorities and the civil society before any decision is taken. In fact, the consultation phase commences already in connection with the environmental impact assessment process, when both authorities and non-governmental organizations considered
relevant are asked to present their views to the responsible ministry. In addition everybody else is free to express his or her opinion. The presented views are public.

According to the Nuclear Energy Act the Ministry of Trade and Industry (MTI) shall acquire statements regarding the application for the decision in principle from the Ministry of Environment, the Municipality Council of the municipality, where the nuclear installation is planned to be built, and from the neighboring municipalities. Further, the MTI shall acquire a preliminary safety assessment from the Radiation and Nuclear Safety Authority of Finland (STUK). The company applying for the decision in principle shall make public a description of the project. Before the decision in principle is taken, the MTI shall provide the population and municipalities in the vicinity of the planned site of the nuclear installation the opportunity to express their opinions of the application in writing. Finally, the MTI shall organize a public hearing in the municipality of the planned site of the nuclear installation, where everyone is entitled to express their opinions about the project orally or in writing. The opinions shall be provided to the Council of State.

The Council of State can take the decision in principle regarding a nuclear installation only, if the municipality, where the planned site of the nuclear installation is located, has supported the application for the decision in principle, and no issues indicating that the planned nuclear installation cannot be built safe have arisen and the construction of the nuclear installation is in line with the overall good of the society. Thus, the acceptance of the project by the local population and the local municipal authorities as well as the statement of STUK regarding the safety of the nuclear installation, are crucial for the project. A negative statement from the municipality would stop the process in respect of the planned site and a statement from STUK that the nuclear installation cannot be built safe would end the whole project.

In connection with the application for the decision in principle the applicant shall define the general characteristics of the project such as the purpose of the nuclear installation, general operational principles and approximate size of the installation. Additionally, the planned site or alternative sites shall be defined.

In order to become valid the decision in principle taken by the Council of State must be endorsed by the Parliament. The Parliament can either endorse the decision or reject it, but it cannot change the contents of the decision in any way.

The commencement of the construction of a nuclear installation is subject to a separate construction license granted by the Council of State. Further, before the nuclear installation may be taken into use, an operation license is needed from the Council of State. Unlike the decision in principle, the construction license and the operation license are not subject to the approval of the Parliament.

The construction license can be granted only, if a valid decision in principle exists and the requirements set in the Nuclear Energy Act for the safety of the nuclear installation and its operation, the appropriateness of its planned site, environmental protection, arrangements for nuclear fuel supplies and handling of nuclear waste, and the human and financial resources of the applicant are fulfilled. Again, the statement of STUK regarding to the safety of the nuclear installation is crucial. At this stage the applicant shall provide a detailed technical description of the nuclear installation to STUK. The MTI carries out extensive consultation with various ministries, expert authorities and relevant non-governmental organizations also in regard to the construction license application. Further, everybody else is allowed to express views regarding the application.

The operation license may be granted if a construction license exists and if a number of requirements defined in the Nuclear Energy Act e.g. concerning the safe operation of the nuclear installation as well as expertise and financial status of the applicant are fulfilled. If the Council of State rejects the operation license, the applicant is entitled to get a reasonable
compensation from the state for the direct costs of constructing the nuclear installation, provided that the rejection is not due to the nuclear installation and its operation not fulfilling the safety related principles stipulated in the Nuclear Energy Act or the applicant not being considered to fulfill the qualifications necessary to operate the nuclear installation in a safe manner and in accordance with the obligations undertaken by the state under international treaties.

In addition to the public hearings and possibility to express views and opinions in connection with the nuclear installation licensing process, the applicant and anyone, whose right or obligation an individual decision directly concerns, have the right to appeal to the relevant court in order to have the decision lifted. Appeals can be made only on the grounds that the decision is illegal. Appeals based on the expediency of the decision will not succeed. The right of appeal does not apply to the decision in principle. As to the decisions taken in the municipality level, each and every resident of the municipality has the right of appeal.

2.1 Decision in principle for the fifth nuclear power plant unit in Finland

The preparations for the licensing process for the fifth nuclear power plant unit in Finland commenced in 1998, when TVO started the environmental impact assessment procedure. The environmental impact assessment process was completed in 2000, when the relevant ministry issued its statement according to which TVO's environmental impact assessment report fulfilled the requirements set out in the corresponding legislation.

TVO submitted the application for a decision in principle to the Council of State in November 2000. Two alternative sites for the new nuclear power plant unit were specified in the application. One alternative was Olkiluoto in the municipality of Eurajoki in the southwestern part of Finland and the other Hästholmen located in the town of Loviisa in southern Finland. The Council of State adopted the decision in principle in January 2002 and the Parliament endorsed it in May 2002.

The MTI made TVO's application for the decision in principle widely public and copies thereof were freely available from TVO. Further, TVO distributed a description of the project to every household in Eurajoki and Loviisa, as required by the Nuclear Energy Act. Additionally, the MTI organized a public hearing about the application. In the public hearing everyone was allowed to present his or her view on the project orally or in writing. The MTI also asked and made known its readiness to receive views on the application. Particularly, the opinions of other ministries, neighboring municipalities and expert organizations were sought, but also the general public was provided with the opportunity to give their opinions about the application within three months either in writing or by phone. The application and the environmental impact assessment report and the statements relating thereto as well as the opinions and comments presented to the ministry were accessible through the internet site of the MTI.

The statements given by various ministries about the application for the decision in principle were mostly positive or neutral. Only the Ministry of Environment gave a negative statement. Also the neighboring municipalities were rather critical. The majority of the spontaneously given opinions were against the project.

STUK's statement regarding the feasibility to build the nuclear installation safe and the decisions of the municipalities in question to support or oppose TVO's application were crucial. STUK stated that no such factor had arisen that would have resulted in a conclusion that the plant cannot be built safe. Further, the Municipality Councils of both Eurajoki and Loviisa supported TVO's application for the decision in principle.

The Council of State that took the decision in principle was formed by five different political parties having widely differing views on energy policy. Already when the Council of
State was formed it had been decided that in case the matter of additional nuclear energy was put on vote, each minister could follow his or her conscience in the voting. The Council of State adopted the decision in principle with ten votes against six. The decision included a statement containing a political commitment by the Council of State to promote the use of renewable energy sources and energy efficiency.

The debate during the four-month-period between the decision of the Council of State and the plenary session of the Parliament, where the Parliament endorsed the decision of the Council of State, was extraordinary wide. The issue was debated in eight different permanent Parliamentary Committees and extensive hearings of experts and pressure groups were carried out. The economy and forestry committees were in favor of the decision in principle and the environmental committee was against. The rest of the committees did not take stand.

Although, the Parliament endorsed the decision in principle with 107 votes against 92, the outcome of the parliamentary handling was uncertain until the last moments. The concept of overall good of the society probably caused the debate in the plenary session to cover issues, many of which were not directly connected to the project in question. Among others, the existing Finnish climate strategy, employment effect of the new nuclear power plant unit, welfare of the forest industry and security of energy supply were discussed. Those opposing the decision in principle endeavored especially to question the economic expediency of the project. Contrary to what might have been expected, nuclear safety and nuclear waste were not discussed to a particularly large extent.

2.2 Construction license for Olkiluoto 3

The contract for the supply of the new nuclear power plant unit was signed in December 2003 and TVO submitted its application for the construction license to the Council of State in January 2004. The construction license for Olkiluoto 3 was granted to TVO in February 2005.

In accordance with the Nuclear Energy Act the MTI requested statements of the application for the construction license from various ministries and authorities, including STUK, as well as from the municipality of Eurajoki, which TVO had chosen to be the location of the site of the new unit. Further, the MTI provided the application to various organizations for statements. Announcements informing the public about the pending application and about the possibility to present views on the application were published in a number of newspapers. Additionally, the application was on view on the notice boards of Eurajoki and its neighboring municipalities.

In connection with the handling of the construction license application the MTI received some 40 opinions from the public and various organizations concerning e.g. the safety of the planned nuclear installation and acceptability of nuclear energy in general. TVO used the possibility to provide its replying statements concerning the presented opinions.

At this phase the focus in the licensing process shifted from the political acceptability of the project more to the technical features and safety of the planned nuclear installation. STUK's statement regarding the safety of the planned nuclear installation was again crucial. In connection with the construction license process TVO was obliged to provide STUK with detailed technical information about the planned nuclear installation to enable STUK to assess the safety of the nuclear installation and determine whether or not the planned nuclear installation can be built safe.

Prior to taking the decision regarding the construction license the MTI had to make sure that the European Commission had given its statement in respect of the investment and that TVO had complied with the stipulations of the Chapter IV of the Euratom Treaty as well as stipulations given in accordance therewith. Additionally, the MTI notified the Swedish authorities about the construction license application in accordance with the agreement signed
2.3 Decision in principle concerning the final disposal repository for spent nuclear fuel

The preparations for final disposal of spent nuclear fuel in Finland started already in the late 1970's and the beginning of 1980's, when the four existing nuclear power plant units in Finland were completed for operation. In 1983 the Council of State made a decision on the long-term strategy for nuclear waste management including the schedule for final disposal of spent fuel. Pursuant to the decision the site for final disposal of spent nuclear fuel was to be selected by the end of the year 2000. According to the subsequently slightly revised schedule Posiva should have the readiness to submit its application for the construction license to the Council of State in 2012. The operation of the facility should start in 2020. The field work in order to select the site for the final disposal started in 1987. In the 1990s the investigations were focused on the current nuclear power plant unit sites in Loviisa and Eurajoki as well as two other candidate sites with no nuclear activities. In 1994 the Nuclear Energy Act was modified to prohibit import and export of nuclear waste to and from Finland. By this change the Parliament opted for final disposal of nuclear waste in Finland.

The environmental impact assessment process for the final disposal facility started in 1997. Posiva finalized its environmental impact assessment report in spring 1999 and the process ended in November 1999, when the relevant ministry issued its statement according to which the report fulfilled the applicable regulatory requirements.

Posiva submitted its application for the decision in principle to the Council of State in May 1999. The Council of State took the decision in principle in December 2000 and the Parliament endorsed it in May 2001 by 159 votes against 3. The decision in principle does not entitle Posiva to build the final disposal repository, but an underground characterization facility, the purpose of which is to ensure that the planned site is suitable for a final disposal repository. The construction of the actual final disposal facility is subject to a separate construction license from the Council of State. Respectively, the operation of the final disposal repository is subject to a separate operation license.

The application of Posiva for the decision in principle concerned the spent nuclear fuel generated in the four current nuclear power plant units in Finland. In accordance with Posiva's request the Council of State postponed the handling of the application regarding the spent nuclear fuel generated in the future fifth nuclear power plant unit so that it was handled together with TVO's application for the decision in principle concerning the fifth nuclear power plant unit.

As to the statements, hearings, views and opinions regarding the project, the process was in practice similar to the one described above in connection with the Olkiluoto 3 project. A description of the project was distributed to each household in Eurajoki and its neighboring municipalities. A description of the project was available in places notified by the MTI. Notice of the pending project was given on notice boards of Eurajoki and its neighboring municipalities and in a number of newspapers. A public hearing was organized in the municipality of Eurajoki in November 1999. Statements were requested from various ministries, authorities and other organizations. Additionally, the Swedish authorities were notified about the project. STUK issued a preliminary safety assessment report, and Posiva submitted its replies to the remarks included therein.

The Municipality Council of Eurajoki supported the project by 20 votes against 7. Had the Municipality Council objected the project the process would have stopped as far as the
site was concerned. According to STUK's preliminary safety assessment report no such factors emerged that would have indicated that the final disposal repository could not be built safe.

A few residents of the municipality of Eurajoki appealed to the relevant Administrative Court and further to the Supreme Administrative Court from the decision of the Municipality Council of Eurajoki. The appeals were, however, rejected.

3 FACTORS AFFECTING THE DECISIONS

Several factors affect in favor of the construction of additional nuclear energy in Finland, all of which existed already when the application for the decision in principle was submitted and none of which have weakened after the decision in principle was taken.

The electricity consumption in Finland is estimated to increase approximately with 25% within the next fifteen years from 85 TWh to over 106 TWh by 2020. The annual increase in the electricity consumption is still 1-2%. In order to ensure sound economic growth and investment opportunities for the industry, Finland will need more than 3000 MW of new generation capacity by 2015, as the Finnish economies is very much based on energy intensive industry such as pulp and paper industry as well as metal and chemical industries. The Finnish industry uses roughly half of the energy consumed in Finland.

According to the burden sharing of the European Union the target for Finland is to stabilize its greenhouse gas emissions to the level of the reference year 1990 by 2008 – 2012. This target is extremely demanding. It seems that the carbon dioxide emissions by the Finnish electricity generation will, in fact, grow in a significant manner in the beginning of the first commitment period before the new nuclear power plant unit is in operation. The scale of such growth will greatly depend on how the required additional electricity is generated.

Finland is very dependent on the import of energy. There are no oil, natural gas or coal resources in Finland. The rather considerable water resources in Finland are suitable for the generation of hydropower only to a limited extent and in practice all the hydropower available in Finland has already been taken into use with the exception of some protected rivers. The peat resources are relatively large, but there is a trend to limit the use of peat as fuel to its current level. The use of wood as fuel is limited by the need thereof in the sawmills and paper and pulp industry.

The public opinion about nuclear energy has become more positive during the last years. While during the past couple of decades the local population has been strongly opposing additional nuclear energy, by 2003 two municipalities were actually competing over the fifth nuclear power plant unit. This is, no doubt, greatly due to the excellent operational record of the four existing Finnish nuclear power plant units. Together with the progress achieved in the final disposal project this can also be anticipated to have influenced in favor of keeping nuclear energy as one of the alternatives to satisfy the increasing need for electricity in Finland.

The decision that the construction of a final disposal repository for spent nuclear fuel is considered to be in line with the overall good of the society is supported by a number of factors. The nuclear waste generated by the use of nuclear energy of the current generations must not impose burdens for future generations. According to the Nuclear Energy Act the nuclear waste generated in connection with or as a result of the use of nuclear energy in Finland, must be handled, stored and disposed of in Finland in a way intended to be permanent. No such technologies for the handling of nuclear waste are foreseeable that would eliminate the need for final disposal. Even if reprocessing of spent nuclear fuel was taken into use in Finland, final disposal of the highly radioactive nuclear waste remaining from the process would be necessary.
The uninterrupted continuation of the final disposal process is also vital in order to maintain the expertise regarding the final disposal. STUK's preliminary safety assessment report or other statements do not indicate that the ongoing project could not be completed safe. The authorities' statements have been in favor of the project or neutral. According to the current knowledge the best way to dispose of the spent nuclear fuel from the safety point of view is the final disposal in the bedrock. The planned site is suitable for the final disposal repository e.g. in terms of safety. The municipality of Eurajoki has supported the project. The final disposal is intended to be permanent, but new decisions are possible, if necessary. The retrieval of the spent nuclear fuel from the final disposal repository is feasible in all phases of final disposal, also after the final disposal repository has been closed. On the other hand, the retrieval is relatively difficult, which is good i.a. from the nuclear material safeguards point of view. The economics of the project are ensured, as the nuclear power companies must continuously have such an amount of funds reserved in the state's nuclear waste fund that equals to the future costs of nuclear waste handling. The public opinion regarding the final disposal has become more positive since the 1990s especially in the municipalities, where the existing nuclear power plant units are located. The change in the Nuclear Energy Act in 1994 has, no doubt, affected to this direction. The development is presumably also due to a comprehensive distribution of information that is required in the Nuclear Energy Act, too. By distributing accurate and adequate information about the project it has been possible to ease the concerns of the public. Further, the public has been able to express their opinions and concerns e.g. in connection with the public hearings. On the other hand, it must be said that the final disposal project has not become that well known on a national level as perhaps expected and desired.

4 FINAL NOTES

The construction work of Olkiluoto 3 has commenced and the excavation of the underground characterization facility, ONKALO, for the final disposal repository for spent nuclear fuel is also in progress. The nuclear licensing process is yet to be continued in regard to both Olkiluoto 3 and the final disposal repository before either of them will be in operation. Both of the projects mentioned herein have been truly long-term projects. A decision in principle for the fifth nuclear power plant unit was sought from the Council of State already in the mid 1980s and again in the early 1990s. In the mid 1980s the plans did not materialize due to the Chernobyl accident. In the early 1990s the decision in principle taken by the Council of State was rejected by the Parliament. It is worth noting that the current Prime Minister of Finland was one of the main opponents in the latter case. Further, the current Minister of Trade and Industry opposed additional nuclear energy. Less than ten years later the time was mature for the Council of State to take and the Parliament to endorse the decision in principle signaling that the construction of additional nuclear energy is in line with the overall good of the society. A variety of different opinions both in favor of and against nuclear energy still of course exist also in Finland. However, the recent developments evidence that the democratic decision making involving a wide debate both on a political level as well as among the public can result in decisions supporting the construction and use of nuclear energy also in today's Europe.
THE EURATOM COMMUNITY TREATY’S PROSPECTS AT THE START OF THE NEW MILLENNIUM

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ABSTRACT

This paper will assess the present state of the Euratom Treaty, considering which aspects of it might require reform in order to establish EU rules for the nuclear sector which answer the challenges of the new Millennium. Points of criticism against the Euratom Treaty are, in particular, the aim of unconditional promotion of the establishment and growth of nuclear industries and Euratom’s democratic deficit. Equally, the scope of Euratom’s competences, in particular with regard to radiation protection, nuclear safety and waste management, should be clarified. In addition, otherwise well-established elements of EU law are not part of Euratom law, or even lack consistency with it: privileges ostensibly granted by the Euratom Treaty appear incompatible with a liberalised internal electricity market, and environmental protection requirements are not integrated into Euratom’s activities. It will be argued that the persistent lack of systematic reform threatens the present and future unity of EU law in the nuclear sector. It will be shown that the amendment proposals for the Euratom Treaty attached to the ‘Constitution for Europe’ would have left it further behind in the development of EU law in general anyway. The failure of the ‘Constitution for Europe’ may thus open up another chance for an adequate updating of the Euratom Treaty’s provisions with the next Treaty amendments. Clear legal drafting appears desirable, not only from an academic perspective, but also in the interest of transparency and public support for the EU, even though in practice the EU institutions and other practitioners may have made the Euratom Treaty work quite well so far, e.g. providing effective radiation protection, however, often by a very broad interpretation of its provisions.

In conclusion, a call is made for the integration of the Euratom Treaty into a comprehensive EU Treaty encompassing all EU activities (be it called a Constitution or not), including the option of pursuing the promotion of nuclear technology as a matter of enhanced cooperation, while, at the same time, preserving uniform radiation protection and safeguards standards. Furthermore, provisions or legal bases regarding nuclear safety and waste management standards should be added. Both enhanced cooperation and uniform standards should be guided by uniform constitutional principles. This solution would, on the one hand, preserve as much unity of European Union and Euratom law as possible. On the other hand, it would allow Member States which have opted for the use of nuclear technology to pursue this within the common EU framework, and the others to terminate their involvement in the promotion of nuclear technology.
1 INTRODUCTION

The Euratom Treaty has largely remained in its original 1957 state until today, whilst the EC Treaty and the EU Treaty have been amended several times, and with many substantive changes and additions. Given that the situation of the nuclear industry has developed since 1957, and that circumstances have changed considerably since then, quite a few of the Euratom provisions are regarded as outdated, inadequate or obsolete, whilst other provisions are not included although there is strong support, at least in some Member States or from some groups that they should be. Nonetheless, despite being intended to mark a new era of European integration in the new Millennium, the proposed ‘Treaty establishing a Constitution for Europe’ did not address any of these concerns. It excluded the Euratom Treaty from the process, leaving it on the sidelines, to be merely annexed to the ‘Constitution for Europe’ by the very last protocol, which was to make a few amendments to it. Since the future of the Constitution appears rather uncertain at present, we will not concern ourselves with it in too much detail any more. With regard to the Euratom Treaty it did not change nor improve much. Amendments to the Constitution would have been necessary anyway, due to its many deficiencies, and thus also to cater for the specific problems of the nuclear sector appropriately. In what follows I shall concentrate on the most important substantive issues for reform of the Euratom.

2 THE EURATOM TREATY – A FOSSIL?

Given its age and its largely unamended state the Euratom Treaty has often been called a fossil, particularly by those who wish to phase out nuclear technology for energy generation altogether. Others warn that its radiation protection and safeguards standards are as valuable as ever and must not be abolished, but, if anything, updated or extended. There are also some features that are open to more general criticisms, and where reform seems desirable, regardless of the position one takes towards nuclear technology. These include provisions which do not appear to meet today’s requirements, such as

- the Treaty objective of promoting the ‘speedy establishment and growth of nuclear industries’,
- the existence of provisions which have never been applied as intended by the authors of the Treaty,
- Euratom’s democratic deficit and ensuing lack of legitimacy,

and other provisions whose legal drafting is unclear or inconsistent with other EU law, resulting in

- uncertainty with regard to the scope of Euratom competences, their delimitation from the EC’s competences on the one hand and from the Member States’ competences on the other, including the lack of provisions or clear competences with regard to nuclear safety, i.e. the safety of installations, decommissioning and waste management,
- the inconsistency of the Euratom Treaty with EU Treaty and EC Treaty provisions and principles, in particular, the incompatibility with the establishment of a free energy market and the relevant provisions on state aids and subsidies,
- the lack of integration of environmental protection requirements, and
- the opaque architecture of the EU and the Communities.

I will not be able to address all these issues in equal depth in this short paper, but will have to focus on a few points from this list.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
2.1 The Treaty Objective of Promoting Nuclear Industries: a Legitimacy Problem

Whatever the attitude towards the use of nuclear technology for the generation of energy, the Treaty objective of promoting nuclear industries would not be included in the same way in a Euratom Treaty drafted today, and by today’s Member States. In the 1950s, nuclear industries in the (then) Member States, as elsewhere, were still in their infancy. This is not the case any more. The nuclear option may not, or not fully, have fulfilled its prospect of contributing to the raising of the standard of living in the Member States, but nuclear industries have been established in those Member States which decided in favour of this option. At the same time, a common nuclear industry of the Community never materialised: industries remained national. Indeed, a common nuclear industry seems now an even remoter possibility after the accession of several non-nuclear Member States, and the decision to phase out nuclear energy generation in a number of others, including Germany. Given the opposition to such industries from many European citizens it cannot be justified any more to make the aim of promoting nuclear industries, and the privileges attached to it, such as the provision of funding and a far-reaching exemption from market liberalisation, a binding matter for all Member States. After all, only three of the ‘old’ 15 member states have not taken a negative decision on the use of nuclear technology for energy generation; developments in the five new Member States who have nuclear power plants on their territories and appear to welcome them for the sake of energy supply relatively independent from foreign, particularly Russian, sources, remain to be seen. The legitimacy of spending considerable amounts of taxpayers’ money on an industry many European citizens do not wish to support is questionable. The other treaty privileging a certain source of energy, the Coal and Steel Treaty, expired in 2002, and, from the point of view of democratic legitimacy, at least the privileges for nuclear industries should follow.

However, it also remains to be seen whether the opposition to nuclear technology will remain as strong as it is at present, given that nuclear technology may actually contribute to mitigate climate change: nuclear power plants, once built, do not emit carbon dioxide. The Commission claims that a possible reduction of 7% in emissions by 2010 is achievable by the use of nuclear energy generation, and suggests that tackling climate change will become even more difficult without the nuclear option. In addition to problems of climate change, technological progress may further improve nuclear safety, thus lessening public resistance against nuclear technology.

2.2 Euratom’s Democratic Deficit

The question of the continuing legitimacy of the aims of the Euratom Treaty takes me to the first major point of criticism, its democratic deficit. The Euratom Treaty has hardly been amended with regard to the position of the citizens’ representative, the European Parliament, at least not with regard to the legislative process. The EP still only enjoys at best a right to be consulted on a proposed piece of secondary legislation; sometimes there is no obligatory participation of the EP at all. For example, with regard to external relations, the EP only has a say if the Commission voluntarily seeks its opinion. Consequently, legitimacy of secondary Euratom legislation is provided indirectly via the Council, i.e. the Member State governments, which, in turn, are controlled by the relevant Member State’s parliament, with all the deficiencies attached to this process with regard to lack of information, majority voting, secrecy of Council proceedings and the need for compromise. The consultation of the EP may have an additional, but merely supplementary function in providing legitimacy.
With regard to secondary legislation, legislating without EP participation or after its mere consultation has been considered more and more unacceptable for the EC, considering the depth of regulation and its impact on the individual citizen.\textsuperscript{15} The same would appear to apply to the Euratom, although there is one crucial difference: the Euratom Treaty deals with a very specific and technical area, far beyond the understanding of the ordinary citizen. As opposed to this, the EC Treaty is a framework treaty. As a rule, such a framework treaty cannot include provisions which would all be specific enough to make its secondary legislation sufficiently predictable in order to extend the legitimization stemming from ratification to each and every legislative act made under it. Thus democratic legitimacy provided initially by ratification would be even weaker for the EC Treaty than for other, more specific international agreements such as the Euratom Treaty. However, this is not to say that democratic legitimacy with regard to the latter is satisfactory.

It is thus regrettable that the Euratom legislative procedure was omitted from the democratisation of the legislative process by the proposed EU Constitution: only with regard to the EC area the Constitution would have improved the situation by making the co-decision procedure the regular legislative procedure for ‘proper’ legislative acts (and even here this was subject to numerous exceptions\textsuperscript{16}). In the Euratom Treaty the legislative procedures prescribed by the individual legal bases were to remain the same (consultation or no participation of the EP). Thus the co-decision procedure would not have been extended to the Euratom area, although, nominally, the Constitution provisions on the legislative procedure were to apply to it as well (Article 3 Euratom Protocol). Accordingly, the Constitution would not have improved the democratic legitimacy of secondary legislation based upon the Euratom Treaty.

An additional problem with regard to democratic legitimacy arises from the process of ratification of the Treaty by Member State parliaments prior to its entering into force in 1958, and of the ratification of any accession and amendment treaties. Democratic legitimacy of the Euratom itself and its secondary legislation relies on this ratification, in particular due to the deficiencies of indirect legitimization via the Council. However, such ratification will often have been achieved by way of a package deal, as a price to be paid for EU membership or for progress in European integration in other areas, not due to the will to actively promote nuclear industries; this applies in particular to new non-nuclear Member States such as Austria.

Here the failed Constitution would in fact have provided an instrument to ensure legitimacy of Euratom membership: it would have become possible to become or remain a Member State of the EU without being a Member State of the Euratom (Art. I-58 – I-60 Constitution/Art. 3 Euratom Protocol); those Member States that would choose to remain a Euratom Member would do so covered by the legitimization of their domestic parliaments. This remedy to the problem of legitimacy will be taken up later again when considering enhanced co-operation as a solution.

Another legitimacy problem arises from the lack of transparency of Euratom law due to gaps, provisions deviating from practice or secondary law etc., some of which will be explained in the following. The common problem of such lacks in transparency is that the citizens and their representatives in parliament can only legitimate what they can come to at least some basic understanding of\textsuperscript{17}, and, as will be shown, this is not always certain with regard to Euratom law.

2.3 Competences: Unclear Delimitations, Gaps and Overlaps

The legislative competences of the Euratom are not always clearly delimited from those of the Member States; in addition, there are gaps and overlaps with EC legal bases: such problems arise whenever several legal regimes apply simultaneously in the same area.\textsuperscript{18}
Accordingly, Euratom competences have repeatedly given rise to litigation before the European Court of Justice (ECJ). One set of cases concerned post-Chernobyl-legislation on contaminated food, regarding which there is an overlap of EC legislative competences for common commercial policy and the internal market on the one hand and the Euratom competence for radiation protection on the other: there the ECJ decided as to the ‘correct’ legal basis to be used on the basis of the ‘centre of gravity’ of the individual acts. In doing so it accepted that, generally, EC legal bases could apply in the area of Euratom law as long as the relevant Euratom provisions were not conclusive. What is striking about these cases is that the substance of the legislative acts concerned was nearly the same, but the result found as to the correct legal basis, mainly grounded on the objectives of the acts, varied. Thus there is not much legal certainty as to which of several relevant legal bases to apply at present. The post-Chernobyl-case between the EP and the Council also illustrated the democratic deficit of the Euratom discussed previously, as the relevant difference between the legal bases was the amount of influence accorded to the European Parliament and each Member State in the legislative procedure.

Secondly, with regard to the delimitation of Euratom and Member State competences it must be noted that the regulatory competences of the Euratom are restricted in scope, i.e. largely to radiation protection and safeguards. Thus the Euratom competences have often been construed broadly in order to avoid gaps in the competences system, however, not all Member States always immediately accepted this. The ECJ first had to decide how far Euratom competences were affected by the 1979 IAEA Convention on the Physical Protection of Nuclear Material, Facilities and Transports. The ECJ held that, under the Euratom Treaty, the Member States could only participate in the Convention subject to the condition that the Euratom was a party to the latter on the same lines as the Member States in so far as its own powers and jurisdiction are concerned; the powers concerned were ‘no fewer than four individual chapters of the treaty’, namely the chapters relating to supplies, the nuclear common market, safeguards and property ownership. Similarly, in a more recent case the ECJ was called upon to decide to what extent the Euratom should be a party to the IAEA’s Nuclear Safety Convention, in particular, whether the Euratom’s legislative competence for radiation protection extended into the area of nuclear safety of installations, which is otherwise left to the Member States. The ECJ held that Euratom’s radiation protection competence does extend into the area of nuclear safety, as effective radiation protection required addressing the possible sources of radiation, however, the exact extension of the radiation protection legal basis into the area of nuclear safety remained open.

The underlying problem is that, as the Euratom Treaty does not include any explicit legal basis with regard to nuclear safety, secondary legislation in this area can only be made as an adjunct to activities in related areas, in particular, radiation protection, research and investment. Accordingly, the Euratom research programmes have included safety issues from the beginning, and the Euratom engaged in considerable activities in order to improve the safety of nuclear installations in the Middle and Eastern European and CIS states, in particular, by providing financial support for the upgrading of safety of nuclear power stations. However, the attempts by the Commission to implement the Nuclear Safety Convention by introducing a Directive on nuclear safety as part of its ‘Nuclear Package’ have so far failed. This raises particular problems with regard to international agreements, which, like the IAEA Conventions mentioned above, must be concluded as ‘mixed agreements’, with the Euratom and its Member States being parties to the agreement at the same time. In particular, this may result in an inability to use the advantages EU law has over public international law with regard to its binding force and mechanisms of enforcement.

Given the importance of nuclear safety of installations (and equally: waste management, decommissioning and transport) for public health, both in nuclear and in non-nuclear states,
clarification of responsibilities would be highly desirable in order to ensure effective protection. However, the Constitution would not have done much to improve the system of competences within the EU. The Euratom legal bases were left out altogether; the Constitution did not clarify their scope, nor did it close any of the gaps identified above. Instead, in its Article III-256 the Constitution provided for the introduction of yet another legal basis, a specific one for the energy sector. The latter, however, did not do much more than authorise the previous application of other, more general legal bases (such as Article 95, the legal basis for internal market legislation) to the energy sector, and would have created even more overlaps between legal bases in the energy sector.\(^30\)

2.4 Inconsistencies with Principles of EU and EC Law: Internal Market, State Aids, Competition Rules

The Euratom Treaty does not include any provisions on competition or subsidies which would correspond to Articles 81/82 and 86 et seq. EC, and it is contested whether such rules have been omitted on purpose, thus excluding any application of the said EC rules\(^31\), or whether there is scope for their application.\(^32\) If not, the privileges granted to the nuclear industries under the Euratom Treaty appear incompatible with one of the EC principal objectives, the internal market, and in particular with a liberalised EU electricity market. Production costs of nuclear energy may presently be lowered by loans, subsidies and by exemptions from the competition rules which other electricity producers have to comply with. This may lead to distortions of competition in the internal electricity market.\(^33\) Unlimited subsidies grant nuclear technology an unfair advantage over other, non-subsidised sources, or may lead to the introduction of further subsidies or other privileges for other technologies which may be justified, e.g., by environmental protection concerns (renewables)\(^34\). The electricity market would thus not be regulated by market mechanisms, but by privileges at the taxpayers’ or the consumers’ expense.

The position as regards EC subsidies law will be considered first: Article 87 (1) EC prohibits subsidies as a matter of principle, although it provides for various exceptions, subject to Commission scrutiny. An argument against the application of EC subsidies law to the nuclear sector can be made on the basis of the historic aims of the Euratom Treaty and its specific provisions on investment in nuclear technology (Articles 2 lit. c, 40 et seq., 173 et seq.). Indeed, in the past the ‘speedy establishment and growth of nuclear industries’ was furthered by considerable subsidies, both by the Euratom and by the Member States.\(^35\) On the other hand, the historic aims of the Treaties are not usually considered in their interpretation. Moreover, even if one wanted to rely on the historic aims, with regard to the subsidies rules the latter do not provide an entirely clear result: the Member States, as opposed to the Euratom, are not under any obligation to provide subsidies\(^36\), and the specific Euratom Treaty provisions were understood as only contemplating funding of research and investments in the initial period, but not thereafter.\(^37\) In any case, the specific Euratom provisions do not extend to a general privilege of nuclear industries over other forms of energy. In addition, the Euratom Treaty is not as such ‘dirigiste’\(^38\), but also relies on market mechanisms, e.g. with regard to the determination of prices (as a result of supply against demand, Article 67).\(^39\) Thus, apart from the specifically regulated areas of Euratom research and investment funding, the application of the EC subsidies provisions is not excluded by specific provisions of the Euratom Treaty.\(^40\) There are further arguments in favour of applying EC subsidies law to nuclear industries, which must be omitted here for lack of space.

Overall, given the political background, and the general principles of EC law which should be of general application, the legal situation on subsidies should be clarified *de lege ferenda* in a future consolidated EU Treaty or Constitution incorporating the Euratom Treaty.
Consistency in free market principles should apply, and the nuclear industries should be strong enough by now to survive under market conditions, or perish just like other competitors in the energy market whose performance cannot survive under market conditions.

Turning to EC competition rules, the position here is somewhat different. As far as chapter VI Euratom Treaty on supply of ores, source materials and special fissile materials makes specific provisions, these take precedence over EC competition law. Apart from this core area with regard only to certain listed materials, the Euratom Treaty leaves space for the application of EC competition rules. Nevertheless, the Supply Agency (Article 53) in its format and with its privileges provided for by the Treaty is sometimes regarded as a superfluous restraint of competition. The Supply Agency was granted a monopoly under Commission surveillance in order to balance supply and demand and to make sure that scarce material was distributed without discrimination. However, the Supply Agency never had to resort to its specific powers, and instead a simplified procedure was introduced. Thus the law as it appears to the citizen is not what applies in practice, making this area untransparent, with the ensuing legitimacy problems explained earlier.

At the same time, though, the Euratom Treaty appears to include provisions which amount to even more stringent internal market rules than those of the EC Treaty, allowing for only few specific exceptions from the non-discrimination rule. Thus Article 93 provides for the abolition of customs duties and quantitative restrictions in respect of specialised materials and equipment (listed in Annex IV) required by the nuclear industries; the separate internal market rules for the listed nuclear sector goods was justified by the Treaty aim to advance more quickly than with the EC common market. Still, with regard to materials not listed in Annex IV Article 28/30 EC would apply.

However, a separate regime of free movement of goods specific to the nuclear sector does not appear necessary any more, and should be done away with de lege ferenda. Practice does not appear fully consistent with the ostensibly strictly separate regime of the nuclear common market anyway: Art. 28/30 EC and the legal bases for the establishment of the internal market and for common commercial policy were applied to materials for the nuclear industries, whether listed or not. For example, the dual use regulations include such goods although they are based only on the EC Treaty. Similarly, even the ECJ included nuclear sector goods into the general EC common commercial policy regime in its WTO opinion, where it held that the Euratom Treaty did not contain any provisions relating to external trade and that there was nothing to prevent agreements concluded pursuant to Article 113 (now 133) of the EC Treaty from extending to international trade in Euratom products. Moreover, the lack of clarity as to whether specific rules of the Euratom Treaty apply (only to be established after consultation of the annexes), and the fact that EC rules apply to all non-listed goods relevant to the nuclear sector anyway calls for a consolidated regime for all goods. This could be supplemented with the radiation protection and safeguards rules catering for the specific dangers of the nuclear industries, thus permitting additional exceptions (e.g. with regard to waste to be deposited within the Member State of its origin in order to avoid additional risks of long-distance transports etc.). This applies equally to free movement of workers and capital as well as the free provision of services, which are guaranteed specifically for the nuclear sector. Apart from the aim of speeding up the implementation of these freedoms for the sake of a speedy establishment of nuclear industries the provisions of the EC Treaty just appear to have been duplicated, and secondary legislation often applies to persons in the nuclear sector, too.
2.5 Principles of EU and EC Law: Protection of the Environment

Neither the (then) EEC Treaty nor the Euratom Treaty included any provision on the protection of the environment at the time of their enactment (1958). However, whilst such a provision was incorporated into the EC Treaty in the mid-1980s with the Single European Act, the Euratom Treaty still only aims for the protection of the health of workers and the general public against the dangers of ionising radiation. Art. 6 EC is not applicable to the Euratom. Whilst one might argue that, in the densely populated areas of Western Europe, this does not make much of a difference as the protection of the population and of the environment are inseparable (cf. Article 35 et seq. in the radiation protection chapter, which provide for continuous monitoring of the level of radioactivity in the air, water and soil⁴⁹), this must be read in conjunction with the aims of the Euratom and thus marks a different, purely anthropocentric approach.⁵⁰ Here Article 184 on the separate legal personality of the Euratom, together with the explicit wording of Article 6 EC and the principle of attributed competences, prohibits the otherwise very sensible extension of Euratom legal bases to environmental protection: They cannot not be extended beyond their scope for the pursuit of an aim which is not one of the Euratom Treaty.⁵¹

The lack of such a legal basis does not appear politically acceptable any more, nor does it mirror today’s approach to environmental protection, as was illustrated by the Commission’s ‘Nuclear Package’ recently, in the reasoning of which the Commission often referred to the aim of environmental protection although it was acting solely on the basis of the Euratom Treaty and would thus not have the competence to consider the environment as such.⁵² The Constitution, or the 36th Protocol to it, would not have changed this situation.

3 A POSSIBLE SOLUTION: ENHANCED CO-OPERATION IN THE PROMOTION OF NUCLEAR TECHNOLOGY AND UNIFORM STANDARDS

Given the legitimacy problems of the Euratom Treaty mentioned earlier it is suggested that it might be preferable to move the part of the Euratom Treaty relating to the promotion of nuclear technology into a new form of enhanced cooperation.⁵³ Under the current Treaties, enhanced (or: closer) cooperation means that Member States who are willing to proceed faster that the others with EU integration establish a co-operation between themselves within the framework of the Treaty (Article 43 EU and Article 11 EC). They can work together within the areas of the EC Treaty which are not subject to an exclusive EC competence, using the institutions, procedures and mechanisms of the EU, subject to all the relevant provisions of the EC and EU Treaties. Currently, the main fields of enhanced co-operation (though regulated specifically in the Treaty itself) are the monetary union with the Euro and the Area of Freedom, Security and Justice, where exceptions were granted to Denmark and the UK (Protocol on the Schengen acquis); the Euratom Treaty does not provide for enhanced co-operation at all so far. The most important limit to enhanced co-operation is currently that it may only be used for furthering the objectives of the EU, and that the acquis communautaire must be respected. Consequently, under the present Treaties enhanced co-operation cannot be established in order to allow Member States to step back from integration in an area they wish to reclaim for the ambit of their national competences. However, given that the increasing number of Member States requires some additional flexibility in order to keep all Member States committed to the core of European integration, such an option should be included in an amended EU Treaty or Constitution. The Euratom Treaty would be a particularly suitable case for this.

If such an opening was achieved, enhanced co-operation could offer a solution to some of the problems, in particular, the transparency and legitimacy problems mentioned above. This would open the option of pursuing the promotion of nuclear technology as a matter of
enhanced cooperation within the common EU framework, but limited to those Member States which are still in favour of this option, and can thus legitimate expenditure and activities in pursuit of this objective. For these pro-nuclear states, enhanced co-operation would allow them to bring the Euratom Treaty provisions up to the new Millennium’s requirements; Member States which oppose the nuclear option would not block this any more. These other Member States would be given the chance to terminate their involvement in the promotion of nuclear technology, in line with the will of the majority of their people.

Nevertheless, the promotion of common safety and radiation protection standards remains an overriding priority to all EU Member States, as these are in the common interest of all. Consequently, all Member States should have a say in the decision on these standards. Radiation protection and safeguards standards should thus form part of the provisions of a consolidated EU Treaty or Constitution which are uniformly binding on all Member States.

In addition, both radiation protection and safeguards standards and any activities for the promotion of nuclear industries – pursued in enhanced co-operation – should be guided by uniform constitutional principles, such as legislative procedures in their most democratic form, internal market rules on competition and subsidies and environmental protection commitments. Exceptions to this rule should require justification and be explicitly provided for in the Treaty for the sake of clarity.

CONCLUSIONS: GUIDELINES FOR A CONSOLIDATED TREATY OR CONSTITUTION

It will have become apparent from the above how far activities under the Euratom Treaty are interwoven with those under the EC Treaty, and that the EU Treaty amalgamates the existing treaties, as well as the secondary legislation made under them, to a considerable extent already. The EU and the Communities share the same institutions, and the EU Treaty calls for consistency of all activities. Many principles are, or should be, common to all three Treaties. The Euratom Treaty should thus be integrated into a consolidated Treaty or Constitution for Europe, with the option of pursuing the promotion of nuclear technology as a matter of enhanced cooperation, while, at the same time, preserving uniform radiation protection and safeguards standards. Both promotion and standards should be guided by uniform constitutional principles (democracy, internal market rules, environmental protection). In a uniform document it should also be easier to avoid or iron out the inconsistencies between the Treaties outlined above.

In addition, the quality of legal drafting should be improved: the legal bases of competence should be clarified with regard to their scope, and, where necessary, be extended. Other provisions obscuring what actually applies in practice should be updated. Provisions which have been duplicated before should be consolidated so as to apply to all relevant areas, thus enhancing transparency. All these provisions should be encompassed in a consistent energy chapter of a consolidated new Treaty or Constitution. Where necessary, this chapter should also cater for any specific regulatory needs of each form of energy.54
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1 With a list of the most important amendments Grunwald, Jürgen, Neuere Entwicklungen des Euratom-Rechts, 1 Zeitschrift für Europarechtliche Studien (1998) 275 at 277 note 6.


7 The term ‘safeguards’ means the set of measures performed to verify that nuclear material and equipment are not diverted from their declared usage, Article 77 Euratom, cf. Hancher, 53 MLR (1990) 669 at 573.

8 Trüe, 28 ELR (2003) 664 at 685; Scott, 5 RECIEL (1996) 225 at 229; Moulin, Andreas, Possibilities to Phase Out or Reform Euratom, in: Clegg/Moreira da Silva/Turmes/Rothe (MEPs) (note 6) p. 51 et seq.


13 However, the EP has been granted the right to institute a committee of inquiry in order to investigate alleged contraventions or maladministration in the implementation of Union law, cf. Article 107 b Euratom; still on the previous situation Hancher, 53 MLR (1990) 669.

14 Cf. the German Federal Constitutional Court in its Maastricht decision, Collection of Cases vol. 89, p. 155.


18 In detail on the different positions with regard to the relationship between the Treaties and the availability of EC legal bases in the Euratom sector Trüe, 28 ELR (2003) 664 at 665/669 et seq.; Pechstein, Matthias, Elektrizitätsbinnenmarkt und Beihilfenkontrolle im Anwendungsbereich des Euratom-Vertrags, 12


20 Which was co-operation of the Council with the EP at the time under Article 100 a (now 95) EEC Treaty and consultation under Article 130 s (now 175) EEC Treaty, now upgraded to co-decision, as opposed to no participation under Article 113 (now 133) EEC Treaty. In addition, Article 130 s EEC Treaty required unanimity in the Council at the time and the other legal bases only a qualified majority.


26 Germany offers a good example for the promotion of renewable energy sources.

27 For details see Grunwald, Energierichter der Europäischen Gemeinschaften, 229 et seq., 234 et seq.; Cusack, 40 CMLR (2003) 117 at 118/130 et seq.


29 For details see Hancher, 53 MLR (1990) 669 at 572.

30 However, in this vein Cusack, 40 CMLR (2003) 117 at 125.


32 Differenziert even further between research (permitted) and investment subsidies (subject to Art. 86 et seq. EC) Pechstein, 12 Europäische Zeitschrift für Wirtschaftsrecht (2001) 307 at 310-11; Fouquet, Dörte/von Uexküll, Ole, Der Beihilfecharakter der steuerlichen Freistellung von Rückstellungen der deutschen Atomindustrie, 7 Zeitschrift für Neues Energierichter (2003) 301; Hermes, Georg, Rückstellungen für die


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46 Cf. on this issue Grunwald, Energierecht der Europäischen Gemeinschaften, 272.


50 Also Scott, 5 RECIEL (1996) 225.


L’INVENTION D’UN SYSTÈME JURIDIQUE

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Il peut paraître ambitieux, voire téméraire de vouloir traiter de l’invention d’un système juridique, le juriste devant aborder le nucléaire avec modestie pour trois raisons au moins :

- Tout d’abord parce qu’il s’agit d’un thème qui dépasse largement les frontières du droit, voire, pendant un certain temps lui était étranger. Le nucléaire a été successivement le domaine des savants (l’enthousiasme), celui des militaires et des industriels (la puissance), celui des philosophes (l’angoisse). Au fond le juriste se limite à mettre en forme ces approches contradictoires : à l’apport du nucléaire au développement (AIEA), à la prolifération des armes et à la multiplication des centrales succède la crainte dont témoigne un vocabulaire spécifique : sûreté (fiabilité des I.N.B), sécurité (protection contre les radiations), comptabilité (non prolifération), protection physique (terrorisme nucléaire).

- Ensuite parce qu’il pénètre dans le champ des appréciations contradictoires, des manipulations. Par exemple, en ce qui concerne l’évaluation du coût du cycle du combustible, Damian (Les Temps Nucléaires) estime que les pères de l’économie industrielle ont été « sollicités » par le gouvernement américain pour justifier le caractère concurrentiel de l’électro-nucléaire, ou encore Belboech (La Gazette Nucléaire Décembre 1983) affirme que « la participation d’experts salariés de l’industrie nucléaire et du lobby médical, utilisateurs et producteurs de rayonnements est largement assurée au sein du C.P.R.I)

- Enfin la technicité de la matière. Rendant compte du procès en diffamation (Pellerin-Rivasi) le journaliste du monde (5 Novembre 1999) écrit : « Pour tenter de comprendre les données du problème, le tribunal s’offre une plongée dans le monde opaque du nucléaire…. Les témoins experts qui viennent à la barre ont parfois du mal à transmettre un message accessible au néophyte. On discute de la durée de vie de l’iode ou du césium 137, on parle de becquerels, de millisiverts, de pico curies, de rems ».

Il existe des réglementations nucléaires, le foisonnement des textes le démontre. Il y a bien un monument composite à la croisée des chemins du droit international et du droit étaque, du droit public et du droit privé. Mais peut on parler d’un droit nucléaire au sens d’un système juridique ? Si l’on retient une définition très simple de la notion de système, considéré comme une combinaison d’éléments réunis de façon à former un ensemble, le « cycle du combustible » (de l’exploitation de la mine d’uranium jusqu’à la production électro-nucléaire par la centrale) comme le « commerce nucléaire » sont autant d’éléments constitutifs d’un ensemble régi par le droit. En ce sens, le droit nucléaire existe comme le droit pharmaceutique et le droit médical.

Toutefois, la notion de système juridique suppose la présence d’un élément supplémentaire essentiel : l’ensemble des règles doit présenter des caractéristiques, des traits particuliers qui permettent d’y voir un corps de droit spécifique. La question de la spécificité a souvent été abordée par les plus éminents juristes (P. Weil. Aspect du droit international économique) qui ont recherché les éléments de « ressemblance/différence » pour conclure que « tout dépend du niveau de comparaison auquel on se place ». Il est vrai que le critère de « similarité » n’est pas glorieux (M.Waline). Mais on peut considérer qu’un droit est spécifique lorsqu’il comporte des sources particulières, lorsqu’il offre des solutions jurisprudentielles originales, lorsqu’il fait appel à des concepts nouveaux, lorsque la doctrine s’est emparée de la matière, lorsqu’il « est novateur dans son système »(Puget). Au début le droit apparaît comme le greffier des connaissances scientifiques, de leurs applications militaires et industrielles. Il est un droit d’imitation, un droit à procédures empruntées aux régimes existants, un instrument au service de finalités multiples (développement, domination, non prolifération, coopération). Mais très rapidement, la « révolution nucléaire » entraîne une révolution juridique. Le caractère excessif du nucléaire donne naissance à un droit original. Un droit sans frontière atteignant l’horizon de l’universalisme, un droit de la catastrophe, un droit de l’extrême, offrant l’aspect d’un monument achevé, qui par son originalité et sa créativité va à son tour influencer les autres droits. Ainsi le juriste assiste, dans une période relativement brève à l’invention d’un système juridique, phénomène qu’il n’a pratiquement jamais rencontré jusqu’alors, sauf peut-être dans le domaine de l’espace extra-atmosphérique (I ère partie).

Les éléments du système ne s’enchaînent pas de manière linéaire pour constituer un monument définitif mais de façon cyclique selon le principe de récurrence des choses humaines. Le droit nucléaire est vivant, édifice en évolution permanente comme la matière qui le constitue. Le droit nucléaire est vivant, édifice en évolution permanente comme la matière qui le constitue. Il est contesté remis en cause, à parfaire. Pour qu’un système soit vivant il faut qu’il recherche un langage nouveau. Le modèle se transforme. (II eme partie).

1 LA CONSTRUCTION DU MODELE

Dès l’origine, les caractéristiques du droit nucléaire apparaissent et vont s’amplifier. Ainsi sa dimension internationale : un rassemblement de savants conduit à la création d’une organisation internationale non gouvernementale, le CIPR qui, dès 1934, élabore les premières normes de radio protection. Ainsi sa fonction de protection et de réparation : l’OIT inclut les lésions provoquées par les substances radio actives parmi les maladies professionnelles.
Très rapidement tout bascule. A la morale du scientifique se substitue celle des Etats du « Gangster ou du vieux vicomte vicieux » (J. Huxley). Le nucléaire est progressivement dominé par la rationalité militaire. Lorsqu’il se « civilise » il reste marqué par ses caractères guerriers. Le modèle initial se caractérise par ses contradictions.

1.1 Les contradictions du modèle initial.

Le nucléaire est un moyen de développement exceptionnel mais il constitue également un instrument de lutte économique et militaire. Dans un état de droit il doit faire l’objet d’une stricte réglementation mais celle-ci a plus pour but de rassurer que de contraindre.

1.1.1 Volonté de développement et volonté de puissance

Le point de départ se situe dans le discours « Atoms for peace » (1953) dans lequel le Président Eisenhower déclare qu’il est possible et nécessaire de mettre l’énergie nucléaire au service de l’humanité (Le Monde du 9 Août 1945 écrivait que le flot des électrons qui jaillira des centrales électriques et nucléaires constituera le système sanguin des peuples insuffisamment développés). Derrière le discours incantatoire Sterling Cole et Knorr réalisent que : « l’atome est à la fois un élément de sécurité nationale, un symbole du réarmement moral du pays, un moyen de puissance, un enjeu de la guerre froide et surtout un instrument de promotion de l’industrie américaine ». A cette date en effet le nucléaire est, par le capital investi, l’activité la plus importante des Etats Unis (Westinghouse-General Electric-Union Carbide ont participé au projet Manhattan)

En 1954, la loi MacMahon (loi du secret et du monopole nucléaire) est révisée pour ouvrir l’atome au capital privé. La politique nationale (investissement public pour le développement des réacteurs, formation de techniciens étrangers, sous estimation du coût des centrales, prix dumping pour l’uranium enrichi, crédit de l’import export bank) s’appuie sur le développement du droit international qui remplit une double fonction (que certains jugent contradictoire) de promotion et de sécurité.

- Le 4 Décembre 1954 l’Assemblée Générale de l’ONU adopte la résolution 810 véritable acte de foi sur l’aspect bénéfique de l’atome et dans le prolongement sont mises en place trois organisations internationales : l’AIEA a pour objectif de promouvoir l’accès de tous les pays au nucléaire, Euratom d’œuvrer au développement d’une puissante industrie nucléaire européenne, l’AEN institution charnière étant chargée d’apporter à l’AIEA la contribution des pays les plus avancés et d’offrir à la Communauté Européenne une forme élargie de coopération (Reyners). Le vocabulaire est de nature économique : recherche, licences, approvisionnements, programmes d’investissements, entreprises communes…. Et les sociétés américaines exportent 53 réacteurs de recherche et placent 10 centrales dont 7 en Europe. Ces organisations ont également pour objectif de maintenir le monopole existant et de limiter les risques.
Dès l’origine sont apparues les contradictions. Lors de l’élaboration du statut de l’AIEA, les pays sous développés avaient déjà le sentiment de se livrer à la discrétion des puissances technologiquement avancées. L’AIEA est présentée comme un directoire de possédants (Conseil des Gouverneurs) elle n’a pas préparé la voie à la science et à la technologie nucléaire des moins avancée. Quant au T.N.P le chef de la délégation indienne comparait les pays dotés d’armes nucléaire à cet Empereur mongol, qui ivrogne lui-même, interdisait à ses sujets de boire à travers son Empire.

Les contradictions s’expriment au sein même des pays avancés. On s’interroge sur la survie d’Euratom on constate la capitis diminutio de l’AEN. Plus grave encore il semble qu’il y ait incompatibilité entre la règle de droit et le nucléaire.

1.1.2 Etat de droit et droit lacunaire

Selon la logique de formation des systèmes juridiques le droit nucléaire manque d’originalité et s’inspire des régimes de droit existants. Lorsqu’il affronte des situations spécifiques il s’efforce de les banaliser.

- Il est fait dans un premier temps largement appel à la réglementation de droit commun, les normes empruntant au droit général. Le droit nucléaire s’inspire du droit des contrats internationaux (production d’uranium - conditionnement d’uranium - vente de centrales nucléaires) et du régime administratif (l’Etat aide, autorise, contrôle, inspecte, sanctionne). La centrale s’intègre dans une opération à procédures dans un but traditionnel de police : la sûreté repose sur le principe d’isolation et sur la mise en place de barrières. L’accomplissement des procédures (autorisation - mise en service - rejet d’effluents) conditionne le fonctionnement auquel s’applique le principe de surveillance. Peut être s’agit-il de rassurer en refusant de faire du nucléaire un domaine particulier, d’intégrer le risque nucléaire dans le risque énergétique général.

En effet ce que le droit nucléaire dit de plus important n’est souvent que chuchoté. Le droit banalise le nucléaire. Trois exemples sont particulièrement significatifs :

- Pour le transport des matières nucléaires les spécialistes estiment qu’il ne pose pas de problème plus délicat que celui d’essaim d’abeilles.
- Pour lutter contre le terrorisme nucléaire, la volonté d’occulte les problèmes atteint des proportions ubuesques parce qu’il fallait selon le milieu éviter d’utiliser les vocables de terrorisme ou de nucléaire. Ainsi en droit français, si le législateur utilise le terme de terrorisme il n’est jamais associé à celui de nucléaire (loi du 9 Octobre 1986). Quant à la convention de 1980, elle n’utilise pas le terme de terrorisme mis celui de protection physique (articles 14 alinéa 2 et 3 a ruiné l’édifice laborieusement construit).
- Le caractère lacunaire est accru par la concentration du pouvoir qui nuit à une sécurité objective et fait du droit nucléaire un droit non crédible, d’autant que le juge n’offre pas l’exemple du contre pouvoir qu’il a su constituer dans d’autres domaines.

Le nucléaire sans les français (J.P. Colson) a secété un mode d’organisation en vase clos…les nucléocrates…une petite communauté d’élites scientifiques, politiques et économiques (Comité PEON) qui n’a pas connu de Mai 68 nucléaire.
Le Ministre de la Santé a sous ses ordres le SCPRI, le Ministre de l’Intérieur la DSIN… Le CEA est sous la tutelle du Ministre de l’Industrie et l’IPSN sous celle du CEA.

Le Ministre de l’Industrie est juge et partie : il arbitre entre des motifs de santé et de développement économique et se prononce généralement en faveur de ces derniers. (La même concentration se retrouve dans l’industrie nucléaire). Le schéma français est constitué en nihilo par l’Etat qui met en place un oligopole corporatif en construisant un noyau technico-industriel. L’intégration totale du cycle est assurée par la Cogema et Framatom (Comurhex – Fragem).

Le pouvoir législatif est laissé à l’écart. La création de l’office parlementaire des choix scientifiques et technologiques (8.7.1983) marque un progrès mais le gouvernement s’est s’opposer à un amendement qui proposait que l’office dispose d’un rapporteur permanent pour informé le Parlement sur le fonctionnement des installations nucléaires civiles et qu’il soit lui-même informer de tout accident ou incident.

Le défaut d’information est le corollaire de la concentration du secret partagé.

L’office déclare lui-même « qu’il n’a pas trouvé un seul savant français suffisamment indépendant du pouvoir atomique. » L’information est verrouillée selon l’expression de la mission parlementaire sur l’étude des répercussions sur les êtres humains et l’écosystème des essais nucléaires à Mururoa. L’information est publicitaire, sécuritaire (brochure EDF – Cogema) et patriotique. Il faut attendre la loi du 22.7.1987 pour que soit proclamé le principe d’un droit à l’information sur les risques technologiques sans que le nucléaire soit expressément cité. Pour rallier les citoyens et les élus locaux à la cause atomique, la venue d’une I.N.B (cf. les documents Andra sur Soulaines) doit être perçue comme une aubaine à ne pas laisser échapper (taxe foncière, taxe professionnelle, sous-traitance…, prix de l’électricité à un prix inférieur à la moyenne nationale pour les personnes ayant leur domicile près d’une centrale). La proximité de L’I.N.B comporterait-elle des risques compensés par des avantages ?

Le juge administratif ouvre largement son prétoire à la contestation du nucléaire mais l’autorisation de création relevant d’une appréciation de haute technicité, il n’exerce qu’un contrôle de l’erreur manifeste. Quant à la déclaration d’utilité publique et au bilan coût-avantage, l’utilité du nucléaire l’emporte toujours sur les inconvénients « le déséquilibre entre les besoins en énergie et les ressources disponibles sur le territoire national rend nécessaire le développement de la production d’énergie électrique ». La théorie de la voie de fait aurait permis au juge judiciaire de pénétrer sur ces terres interdites mais il fait preuve d’une plus grande timidité encore que le juge administratif, lequel affirme quelques jours avant T.M.I (à propos de l’application de l’article 34 d’Euratom) qu’« il ressortait clairement » que le fonctionnement d’un réacteur nucléaire ne pouvait être assimilé à une expérience dangereuse. Les faits allaient se charger de donner tort au juge. Au rythme des accidents nucléaires le droit élaborait un modèle.

1.2 Un droit modèle

Les américains ont considéré que rarement dans l’histoire des Etats-Unis l’on a connu événement aussi dramatique qu’avec le nucléaire. Alors que la suprématie technologique américaine est incontestable, l’administration Carter privilégie le charbon et les énergies renouvelables, répondant à l’extrême sensibilisation de l’opinion exacerbée par l’accident de TMI. La Cour Suprême avalise le jugement de la Cour d’Appel de Californie selon lequel l’interdiction de construction de centrales est légale aussi longtemps que la question des déchets radioactifs ne sera pas résolue.

Avec Tchernobyl la menace nucléaire atteint un degré jamais imaginé par les autres dégradations. Les scientifiques et les industriels sont suspects et accusés d’avoir voulu cacher le génie maléfique. L’événement va donner lieu à une mobilisation de la société internationale et à une créativité juridique sans précédent.

1.2.1 Un modèle de mobilisation de la société internationale

Il aura fallu attendre 1986 et le nuage radioactif pour admettre l’absence de frontière à la pollution nucléaire. L’accident nucléaire et l’état inquiétant des centrales des pays de l’Est ont conduit à un développement du droit international que l’on ne rencontre pratiquement dans aucun autre domaine.

- L’AEN organise un système de notification des incidents (IRIS) fondé sur la réciprocité des échanges et la confidentialité.

L’AIEA multiplie les directives relatives à l’assistance mutuelle d’urgence en cas d’accident nucléaire ou de situation d’urgence radiologique, aux échanges de renseignements en cas de rejets transfrontaliers de matières radioactives. Euratom complète le modèle. Les accords bilatéraux foisonnent (accords franco-allemand- convention avec la Belgique-Le grand duché de Luxembourg).

- Avec Tchernobyl on assiste à un véritable emballage du droit.

Convention du 26 Septembre 1986 sur la notification rapide en cas d’accident à laquelle est assujetti tout Etat sur lequel se produirait un accident dès lors qu’il pourrait entraîner comme conséquence un rejet frontalier international susceptible d’avoir de l’importance du point de vue de la sûreté radiologique pour un autre Etat. Convention du même jour sur l’assistance en cas d’accident nucléaire ou de situation d’urgence radiologique.

Convention de 1994 sur la sûreté nucléaire comportant une codification des obligations fondamentales (institution d’un organisme de réglementation indépendant, établissement de plans d’urgence) et obligeant les parties contractantes à soumettre leur politique nationale et les moyens utilisés au jugement de leurs pairs (rapport et réunion d’examen).


- La mobilisation des acteurs du nucléaire s’exprime également dans les programmes Phare et Tacis. À la suite du diagnostic de sûreté des installations nucléaires des pays de l’est, les initiatives d’assistance et de coopération émanent de toute la société internationale (World Association of Nuclear Operators Etats Unis Japon Communautés Européenne France Suède Finlande etc.). Les structures se mettent en place pour réaliser un programme de « housekeeping », de remise en ordre dans la maison nucléaire. Le droit est désormais sous influence nucléaire. En droit interne, des transversales fulgurantes vont permettre de construire un modèle du droit des risques majeurs.
1.2.2 Un modèle du droit des risques majeurs

Le droit nucléaire est un droit exploratoire et exemplaire. L’industrie nucléaire constitue un domaine privilégié, une sorte de laboratoire juridique pour l’étude des risques environnementaux et professionnels annonçant un droit des risques majeurs.

- Le nucléaire a joué un rôle initiateur en matière d’environnement. L’intensification de la contestation idéologique correspond au développement des centrales nucléaires. Tous les auteurs ont souligné le rôle de l’opinion publique dans la création du droit de l’environnement qui montre une curieuse similitude avec le droit social (J.Hebert).


2 LA TRANSFORMATION DU MODELE

Sous l’influence nucléaire, la règle de droit perd son caractère de certitude pour devenir plus floue. On passe d’une quasi certitude scientifique objective à une probabilité scientifique subjective. Le droit s’inspire de nouveaux principes et les exigences morales introduisent une éthique nucléaire.

2.1 Nouveaux principes et système nucléaire

Dans la nouvelle conception du droit celui-ci produit désormais des normes issues de l’incertitude. Une forte vraisemblance suffit pour établir un lien de causalité. « Une situation de risque, une hypothèse non infirmée devrait être tenue provisoirement pour valide même si elle ne l’est pas formellement » (H. Legal)

Prévention, précaution, générations futures, cette terminologie ne s’applique pas exclusivement au nucléaire mais elle a donné naissance à trois nouveaux principes, réversibilité, risque radiologique, transparence…qui ne sont pas dénués d’ambiguïté.

- De la réversibilité.

« La gestion des déchets à vie longue doit respecter la nature, l’environnement, la santé et prendre en considération les droits des générations futures (Loi 30.12 1991)

Selon Prieur, c’est la proclamation officielle que nos actions doivent être conduites de façon telle qu’elles ne portent pas préjudice à nos descendants. D’où le principe du refus du stockage souterrain irréversible, la réversibilité correspondant à la fois à une volonté de responsabilité et à un acte de foi dans le progrès. L’article 3 précise que le stockage en France des déchets radioactifs étrangers est interdit et l’article 4 lance un programme de recherche (transmutation et recyclage ou stockage sous terrains) qui doit faire l’objet de rapports transmis à l’office parlementaire et rendus publics. A l’issue d’une période 15 ans le choix final s’imposera.

Texte rempli de bonnes intentions que les spécialistes ont pourtant qualifié de loi de circonstances rapidement improvisée. Trois raisons de douter :

1. Les incidents de Gorlenden et la Place des Verts dans le gouvernement Allemand posent le problème de l’applicabilité de l’article 3 ;
2. Pour certains les choix seraient déjà effectués ; les deux principaux responsables, l’ANDRA et le CEA auraient opté pour l’enfouissement définitif. Théoriquement
aucun déchet ne peut être stocké dans les laboratoires, mais il suffira de baptiser le déchet source radioactive destinée à la recherche. La procédure de création est calquée sur celle des I.N.B et l’importance des investissements est considérable ;


- De la gestion des risques radiologiques


Après étude des populations exposées on s’est rendu compte qu’il n’était pas possible de démontrer de façon irréfutable l’existence d’effets stochastiques ou aléatoires (cancers radio réduits) pour les expositions à faible dose.

Le C.I.P.R a proposé de considérer que la relation devait être tenue provisoirement pour valide même si elle n’est pas formellement démontrée. L’incertitude doit conduire à une attitude de précaution. (Principe A.L.A.R.A, aussi bas que raisonnablement possible compte tenue des facteurs économiques et sociaux).

« Bien que les valeurs proposées pour les expositions maximales admissibles soient telles qu’elles impliquent un risque faible comparé aux autres risques liés à la vie courante...au vu de la nature insatisfaisante de la plupart des éléments sur lesquels sont fondés ces jugements associés à la connaissance du fait que certains effets sont irréversibles et cumulatifs; il est fortement recommandé que tous les efforts soient faits pour réduire les expositions à tous les types de rayonnements ionisants au niveau le plus bas possible »

Il doit y avoir :
- Justification de l’exposition
- Réduction de l’exposition
- Inacceptabilité du dépassement des doses individuelles

Le principe A.L.A.R.A est associé au principe d’optimisation : Le choix nucléaire ne fait pas de la précaution le principe substitutif de toute autre considération mais seulement une circonstance additionnelle d’admissibilité du risque.

D’où une série de questions et quelques remarques :
- s’agit-il d’un principe politique à la marge du droit ou d’un standard juridique ?
- comporte-t-il des obligations de comportement et de moyen plutôt que de résultat ?
- le principe a-t-il valeur universelle ou est-il lié à l’état de développement des sociétés ?

On se limitera à quelques remarques :

1. Etonnement : chacun était légitimement persuadé que la communauté scientifique et le monde politique avaient une seule idée en tête lors du lancement du nucléaire : la prudence. Ce n’était pas le cas puisqu’il a fallu un principe nouveau.

- La jurisprudence se réfère de façon croissante à ce principe pour les POS, les périmètres de protection rapprochés mais ne trouvera-t-on pas les mêmes solutions que
pour le principe coût-avantage : les grandes opérations ont été rarement censurées par le juge.

- Le principe pourrait favoriser un nouveau système de responsabilité (on l’a vu pour les dirigeants de l’usine de la Hague), la responsabilité pénale pour mise en danger d’autrui et manque de précaution. La transformation se limiterait-elle au passage de l’État de vengeance, à la chasse aux responsables ?

2. La doctrine est réticente : ce principe, écrivait le commentateur de la jurisprudence américaine relative à TMI, n’est pas et n’a jamais été conçu pour être une règle de diligence au sens de la responsabilité délictuelle. Quant au commissaire du gouvernement Stahl (affaire du maïs génétiquement modifié). « Le contenu politique et juridique du principe de précaution nous paraît davantage inciter l’Administration à privilégier une approche dynamique et évolutive, corrigeant les lacunes de son information et complétant son expertise au fur et à mesure qu’apparaissent les questions débattues ». Le Conseil d’État en a fait un principe de procédure, un simple élément du processus décisionnel permettant grâce à la transparence d’établir une démocratie sanitaire.

- De la transparence. Elle se retrouve dans tous les systèmes juridiques et comporte :
  - l’accès aux documents
  - la motivation des décisions
  - le droit d’être informé
  - le droit de participer aux procédures
  - la mise en place d’autorités administratives indépendantes

Elle est la condition d’une démocratie effective : en Norvège la loi de transparence s’intitule : « Loi du petit citoyen ».

La transparence est liée au nucléaire. Trois raisons en effet expliquent « le droit de savoir » :

- L’insuffisance de la médiation politique et parlementaire. La société veut agir directement : il s’agit moins de déclencher un contrôle que d’établir une sanction populaire immédiate.
- Enfin, le but final de la contestation est moins de corriger une illégalité en cours que de faire prévaloir un principe supérieur tiré d’un droit imaginaire et rêvé, d’un droit du futur ayant pour destinataires les générations à venir.

Rêve ou mode ? Transparence, je n’aime pas les mots flous ; il y a la malfaçon, opacité de la transparence (Rivero).

La transparence vise à faire accepter le schéma de référence choisi par les pouvoirs publics. L’administration s’ouvre au public mais elle n’entend pas partager le pouvoir.

Les théoriciens du choix public ont analysé le rôle du bureaucrate maximisateur. La transparence permet de placer l’élu sous influence. Par une information dirigée, elle impose aux citoyens une offre exagérée de services.

La formation permet alors de neutraliser le contrôle social. La transparence peut être une stratégie de persuasion : elle est communication publicitaire (AREVA). Lorsque la Cogema rompt avec la culture du secret et joue la transparence, elle se situe sur l’arête incertaine de l’ouverture et de la propagande.

Les progrès sont évidents. Le droit nucléaire n’en reste pas moins un arbitrage entre l’impératif social et l’impulsion techno-industrielle (Boustany). Les nouveaux principes s’inscrivent dans un arbitrage classique qui ne peut être dépassé que par l’appel à l’éthique.
2.2 Droit nucléaire et éthique

Si la science nucléaire a d’abord été un objet d’émmerveillement (les centrales nucléaires cathédrales de notre fin de siècle) elle est ensuite devenue l’une des fêlures de notre société (Glucksman). Elle a nourri deux courants technophobes. L’un mystique qui voit dans le nucléaire la marque de la barbarie : le monde gagné par le nucléaire est perdu pour la liberté, un monde qui va mourir dans le froid de l’hiver nucléaire (Michel Henry). L’autre courant philosophique refusant de distinguer la science nucléaire de ses applications s’insurge contre la neutralité de la science et estime que la finalité de domination lui est consubstantielle (Marcus - Habermas).

- La prise de conscience que l’apocalypse, attribut de dieu, est devenue humaine explique la prolifération des comités d’éthique et l’importance qu’ils occupent en matière nucléaire. Ils expriment l’inquiétude de l’inconscient collectif devant un continent voilé et obscur.

L’éthique fixe des limites mais ne peut limiter le travail d’investigation du réel, le désir de comprendre. La question essentielle est alors de fixer le dessein de l’éthique, de savoir si elle a la capacité d’infléchir le développement de l’humanité et le sort des générations futures. La notion de risque acceptable est-elle acceptable sur le plan éthique ?

Pour atteindre son objectif l’éthique récuse la mise en cause radicale de la science. Elle restitue le savoir à sa fonction initiale, le développement de l’homme. Elle montre du doigt les Etats qui avec leurs préoccupations d’armement en sont encore « à l’age des grands sauriens» (J Huxley).

- Le nucléaire n’a d’avenir que si l’on revient au texte fondateur. Il est opportun de rappeler que selon son statut l’A.I.E.A a pour objectif de hâter et d’accroître la contribution de l’énergie atomique à la paix, la santé et la prospérité dans le monde entier (article 2). Le texte constitutif évoque à plusieurs reprises la nécessité de tenir compte des besoins particuliers des pays sous développés. L’agence doit assurer l’élévation du niveau scientifique générale des PVD pour préparer la voie à la science et à la technologie nucléaire, introduire les applications de la science nucléaire (emploi des radio-isotopes en médecine, agriculture et hydrologie) et contribuer au perfectionnement (création de réacteur de recherche). Le nucléaire comme la mer était porteur d’espoir mais les pays en voie de développement n’ont pas dans ce domaine réussi la percée réalisée dans le secteur maritime.

Certes l’Agence a octroyé des bourses d’études, créé des centres régionaux, envoyé des experts et des missions d’assistance mais les Pays en Voie de Développement ont exposé que la plus part des projets relatifs à l’utilisation pacifique de l’atome qu’ils pourraient mettre en œuvre exigent des ressources financières qui dépassent leurs possibilités. Les recherches qui ont été effectuées dans le cadre de l’AIEA ne leurs bénéficient que dans des domaines extrêmement limités, l’Agence ayant trop insisté sur les techniques de pointe qui concernent essentiellement les pays économiquement avancés. Ils constatent enfin que les E.D.A.N préfèrent fournir gratuitement du matériel aux pays de leur choix plutôt que de verser des contributions volontaires intégrées dans la masse commune. L’Agence intervient alors pour contrôler les accords de garanties de non utilisation militaire. On touche là à l’essentiel : l’espoir de coopération s’est évanoui et l’état discriminatoire accru.

Les conférences d’examen du T.N.P permettent de saisir l’intensité du conflit qui oppose les EDAN aux ENDAM. Alors que l’article 4 du statut prévoit le droit pour les
signataires d’entreprendre des recherches afin de produire ou d’utiliser l’énergie nucléaire à des fins pacifiques sans aucune discrimination, selon les autorités administratives directrices de l’A.I.E.A elles-mêmes, le T.N.P est réduit à son seul aspect de contrôle et n’est pas mis en œuvre tel qu’il est décrit notamment dans ses dispositions permettant l’assistance au développement. Les États du groupe 77 et la Suisse ont ainsi protesté contre l’interruption non fondée des livraisons et les ENDAM ont créé un groupe consultatif ad hoc qui voudrait faire reconnaître à l’A.I.E.A un droit d’interprétation des traités.


Il est temps de revenir à C.A Colliard : la solution de sagesse consiste à recourir à l’intervention internationale non seulement sous la forme du contrôle mais aussi sous la forme de la gestion. Ce sont les centres régionaux ou multilatéraux du combustible qui ont été envisagés par l’A.I.E.A (retour au source et au rapport Lilienthal). Les risques de prolifération seraient limités, la gestion internationale permettrait de mieux choisir les sites et réduirait les coûts, le stockage des déchets serait contrôlé plus facilement.

L’éthique correspond à la reconnaissance de valeurs et le système juridique traduit des valeurs qui lui sont extérieures. L’éthique est inhérente à la vie, la vie qui se dérobe et la vie qui surgit. L’éthique est antérieure au droit mais elle a besoin du droit.

Inventer un système juridique nucléaire, c’est raisonner en terme de civilisation « et plaider plus énergiquement encore en faveur d’une véritable société internationale où les grandes puissances n’auraient pas de droits supérieurs aux petites et moyennes nations, où la guerre, fléau devenu définitif par le seul effet de l’intelligence humaine, ne dépendra plus des appétits ou des doctrines de tel ou tel État » (A.Camus Combat 8 Août 1945).

Rêve ? Utopie ? Mais on sait que les hommes ne peuvent agir qu’en se mouvant vers des fantômes (P. Valery).

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L’ENERGIE NUCLEAIRE face a la démocratie directe
Nuclear Energy facing direct democracy

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RÉSUMÉ

L’utilisation de l’énergie nucléaire dépend d’une législation nationale qui admet dans son principe la technique en question. Il est en outre nécessaire d’établir une réglementation permettant de projeter et construire des centrales nucléaires et de les exploiter dans des conditions raisonnables. Il faut enfin des règles autorisant la réalisation de dépôts permanents pour y stocker les déchets radioactifs.

De nombreux pays n’ont jamais choisi la voie nucléaire, d’autres ont décidé de l’abandonner. Cependant, le défi global de l’effet de serre force les gouvernements et les parlements à reconsidérer la question.

Suite à la fameuse conférence internationale « Atoms for Peace » à Genève en 1955, l’utilisation pacifique de l’énergie nucléaire en Suisse fut réglée en 1957 par l’introduction de l’art. 24quinquies de la Constitution, lequel fut suivi par la loi fédérale du 23 décembre 1959 sur l’énergie atomique. La première centrale nucléaire commerciale (Beznau-1 en Argovie) fut mise en service en 1969. Actuellement, cinq centrales nucléaires sont en service, assurant 40 % de la production suisse d’énergie électrique (contre 55 % provenant de forces hydrauliques). Depuis 1976, des groupes antinucléaires tentèrent à plusieurs reprises d’amener le pays à abandonner le nucléaire, profitant du système politique suisse qui permet de lancer une initiative constitutionnelle moyennant 100'000 signatures de citoyens ayant le droit de vote. Les résultats se présentent comme suit :

- En 1979 (juste avant l’accident de Three Mile Island), le peuple rejeta une première initiative antinucléaire par 51.2 % des voix ;
- en 1984, le peuple rejeta l’initiative intitulée « Pour un avenir sans nouvelles centrales atomiques » par 55 % des voix ;
- en 1990, le peuple rejeta l’initiative lancée après l’accident de Tchernobyl et intitulée « Pour un abandon progressif de l’énergie atomique » par 52.9 % des voix ; mais en même temps, peuple et cantons acceptèrent l’initiative en faveur d’un moratoire qui visait à empêcher toute autorisation de construire, de mettre en service et d’exploiter de nouvelles centrales nucléaires pour une durée de dix ans, par 54.5 % des voix ;

Le scrutin de 2003 autorisa le Conseil fédéral à mettre en vigueur, le 1er février 2005, la nouvelle loi fédérale sur l’énergie nucléaire ainsi que les ordonnances d’exécution. La nouvelle loi permet de continuer à utiliser l’énergie nucléaire et fournit des instruments juridiques en vue du stockage souterrain des déchets radioactifs.

Il s’en suit que la démocratie directe pratiquée en Suisse n’a pas eu pour effet d’empêcher l’utilisation de l’énergie nucléaire. Au contraire, les préoccupations des citoyens quant aux problèmes globaux que pose le réchauffement de l’atmosphère tendent en faveur de l’énergie nucléaire.

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SUMMARY

Utilisation of nuclear energy depends on a national legislation that permits the technique in question. In addition, it is necessary to establish a regulation permitting the construction and safe operation of nuclear power plants in reasonable conditions. Finally, there is need for rules allowing the realisation of a final repository for the disposal of radioactive waste.

Numerous countries never chose the nuclear path, others decided to leave it. However, the global challenge of the greenhouse effect forces governments and parliaments to reconsider the question.

Following the renowned international “Atoms for Peace” conference held in Geneva in 1955, the peaceful utilisation of nuclear energy in Switzerland was regulated in 1957 by the adoption of Art. 24st of the Constitution, which was followed by the Federal Atomic Act of 23 December 1959. The first commercial nuclear power plant (Beznau-1 in the Canton of Argovia) was commissioned in 1969. Today, five nuclear power plants are in operation, representing 40 % of Swiss electricity production (against 55 % originating from hydro power). Since 1976, anti-nuclear groups have several times tried to guide the country towards nuclear phase-out by taking advantage of the Swiss political system which permits the launching of a constitutional initiative by means of 100’000 signatures of citizens entitled to vote. The results are the following:

• In 1979 (just before the accident of Three Mile Island), the people rejected a first anti-nuclear initiative by 51.2 % of the votes;
• in 1984, the people rejected the initiative called “For a future without new nuclear power plants” by 55 % of the votes;
• in 1990, the people rejected the initiative launched after the accident of Chernobyl and called “For a phase-out of nuclear energy” by 52.9 % of the votes; but at the same time, people and Cantons accepted the initiative in favour of a moratorium in order to prevent any authorisation to construct, commission and operate new nuclear power plants for ten years by 54.5 % of the votes;
• in 2003, the people rejected the initiative for the prolongation of the moratorium (the initiative so-called “Moratorium-plus”) by 58.4 % of the votes, and likewise rejected the initiative called “Nuclear phase-out” by a majority of 66.3 % of the votes.

The referendum of 2003 authorized the Federal Council to put into force, as of 1st February 2005, the new Act on Nuclear Energy and the executive ordinances. The new Act
permits the continued utilisation of nuclear energy and provides for legal instruments to facilitate the realisation of a geological repository for the disposal of radioactive waste.

To date, direct democracy as practised in Switzerland has not resulted in suppression of the utilisation of nuclear energy. To the contrary, the uneasiness of the public concerning global problems resulting from atmospheric warming tends to favour nuclear energy.

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1 Introduction

L’utilisation de l’énergie nucléaire dépend d’une législation nationale qui admet dans son principe la technique en question. Il est en outre nécessaire d’établir une réglementation permettant de projeter et construire des centrales nucléaires et de les exploiter dans des conditions raisonnables. Il faut enfin des règles autorisant la réalisation de dépôts permanents pour y stocker les déchets radioactifs.

De nombreux pays n’ont jamais choisi la voie nucléaire, d’autres ont décidé de l’abandonner. Cependant, le défi global de l’effet de serre force les gouvernements et les parlements à reconsidérer la question. La Suisse a opté de son plein gré pour le nucléaire et connu, comme d’autres pays, l’opposition antinucléaire. Hormis les moyens juridiques usuels, cette opposition a surtout recouru aux moyens spécifiques qu’offre la démocratie directe en Suisse – donnant ainsi lieu aux divergences qui durent depuis une trentaine d’années.

2 L’utilisation de l’énergie nucléaire en Suisse


3 Le système suisse de l’initiative populaire

La Suisse est une république en forme d’État fédéral, et elle pratique, du moins partiellement, ce qu’on appelle la démocratie directe. Celle-ci se vante d’une longue tradition qui remonte notamment à la « Landsgemeinde » (une sorte d’assemblée de citoyens cantonale) toujours existante dans deux cantons\(^1\), ainsi qu’à la « Gemeindeversammlung »

\(^1\) Glaris et Appenzell Rhodes-Intérieures (depuis le 14e siècle).

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
(assemblée de citoyens communale) subsistant dans de nombreuses communes suisses. Selon les principes de la démocratie directe, le peuple ne se borne pas à élire les représentants du parlement, mais se prononce aussi sur des projets de loi (par voie de référendum) ou propose lui-même des lois ou des compléments à la Constitution (par voie d’initiative). Pour lancer une telle initiative constitutionnelle sur le plan fédéral, il faut recueillir 100'000 signatures de citoyens ayant le droit de vote\(^2\). L’initiative est soumise au vote du peuple et des cantons; elle est acceptée lorsque la majorité des votants et la majorité des cantons l’approuvent\(^3\).

4 L’opposition des groupes antinucléaires par des initiatives populaires

Depuis les années 1970, des groupes antinucléaires tentèrent, à plusieurs reprises, d’amener le pays à abandonner le nucléaire, profitant du système de l’initiative populaire. Ils parvinrent, entre 1976 et 1999, à recueillir les signatures requises pour six initiatives constitutionnelles dirigées contre l’utilisation de l’énergie nucléaire. Le résultat des scrutins correspondants se présente comme suit :

- En 1979 (juste avant l’accident de Three Mile Island), le peuple rejeta la première initiative antinucléaire intitulée « Pour la sauvegarde des droits populaires et de la sécurité lors de la construction et de l’exploitation d’installations atomiques » par 51.2 % des voix (965'927 non contre 920'480 oui) ;
- en 1984, le peuple rejeta l’initiative intitulée « Pour un avenir sans nouvelles centrales atomiques » par 55 % des voix (931'245 non contre 762'792 oui) ;
- en 1990, le peuple rejeta l’initiative lancée après l’accident de Tchernobyl et intitulée « Pour un abandon progressif de l’énergie atomique » par 52.9 % des voix (915'739 non contre 816'289 oui) ; mais en même temps, peuple et cantons acceptèrent l’initiative en faveur d’un moratoire intitulée « Halte à la construction de centrales nucléaires » qui visait à empêcher toute autorisation de construire, de mettre en service et d’exploiter de nouvelles centrales nucléaires pour une durée de dix ans, par une majorité de 54.5 % des voix (946'077 oui contre 789'209 non) ;
- en 2003 enfin, le peuple rejeta l’initiative pour la prolongation du moratoire expiré en 2000 (l’initiative dite « Moratoire-plus ») par 58.4 % des voix (1'341'512 non contre 955'593 oui) et rejeta de même l’initiative intitulée « Sortir du nucléaire – pour un tournant dans le domaine de l’énergie et pour la désaffectation progressive des centrales nucléaires » par une majorité de 66.3 % des voix (1'540'164 non contre 783'718 oui).

Dans leur majorité, les votants suisses n’ont donc pas suivi les arguments des groupes antinucléaires qui insistaient sur les dangers de l’énergie nucléaire et affirmaient qu’il n’existait aucune solution aux problèmes liés à cette forme d’énergie, notamment pour le stockage permanent des déchets radioactifs. Les arguments pro-nucléaires ont fini par l’emporter, c’est-à-dire que la fermeture de centrales nucléaires en bon fonctionnement serait déraisonnable d’un point de vue technique et économique, et que la production suisse d’électricité qui n’émet très peu de gaz carbonique (40 % de la production provenant de centrales nucléaires, 55 % de forces hydrauliques) constitue un atout face au défi global du réchauffement de l’atmosphère – la protection du climat figurant au rang des tâches prioritaires de la politique de l’environnement.

\(^2\) Art. 139 de la Constitution ; tous les Suisses ayant 18 ans révolus qui ne sont pas interdits pour cause de maladie mentale ou de faiblesse d’esprit ont les droits politiques en matière fédérale (Art. 136 de la Constitution).

\(^3\) Art. 142 de la Constitution.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
5 Autres moyens de contestation

Hormis ceux politiques, il existe bien entendu d’autres moyens de s’opposer à une installation nucléaire, notamment :

• la voie de droit civil⁴ ;
• la voie de droit administratif⁵ ;
• la voie de droit cantonal sur l’utilisation du domaine public⁶ ;
• la voie de recours auprès de la Cour européenne des droits de l’homme⁷.

À l’exception du cas de Nidwald, ces démarches n’ont pas obtenu gain de cause, c’est-à-dire qu’elles ne sont pas parvenues à entraver les procédures se rapportant aux centrales nucléaires visées.

6 La nouvelle loi fédérale sur l’énergie nucléaire


La nouvelle loi sur l’énergie nucléaire règle en particulier :

• les principes de la sécurité nucléaire (art. 4/5) et de la surveillance (art. 70 - 75) ;
• le régime des autorisations (autorisation générale, autorisation de construire, autorisation d’exploiter, art. 12 - 25) et des procédures à suivre (art. 42 – 69) ;
• la désaffectation des installations nucléaires (art. 26 – 29) ;
• l’évacuation des déchets radioactifs (art. 30 - 34) ;
• la procédure à suivre pour effectuer des études géologiques et réaliser un dépôt en profondeur (art. 35 - 41) ;
• le droit d’expropriation (art. 51) ;
• les voies de droit (art. 76) ;
• l’interdiction de transporter des matières nucléaires contenant du plutonium dans l’espace aérien suisse (art. 10) ; et à titre de disposition transitoire : un moratoire de dix ans à partir du 1er février 2005.

⁴ Cf. l’arrêt du Tribunal fédéral du 25 janvier 1980, centrale de Goesgen (droit de propriété foncière, recours du propriétaire voisin rejeté); la centrale est en service depuis 1979.
⁷ Cf. les arrêts de la Cour du 26 août 1997, affaire Balmer-Schafroth et al. c. Suisse, et du 6 avril 2000, affaire Athanassoglou et al. c. Suisse ; les arrêts concernaient les décisions du Conseil fédéral de prolonger l’autorisation d’exploiter la centrale de Mühlberg, respectivement celle de Beznau-2 ; la Cour a jugé que l’art. 6, par. 1, de la Convention européenne des droits de l’homme (droit à un tribunal), n’est pas applicable à une procédure concernant la prolongation de l’autorisation d’exploiter une centrale nucléaire, lorsque l’issue de la procédure n’est pas directement déterminante pour le droit à la vie, à l’intégrité physique et au respect des biens des requérants.
⁸ Art. 107 de la loi sur l’énergie nucléaire.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
du 1er juillet 2006 relatif à l’export d’assemblages combustibles usés en vue de leur retraitement (art. 106 al. 4).9

La nouvelle loi a pour but de simplifier et mieux coordonner les procédures d’autorisation. De plus, elle ajoute un élément politique au régime de l’autorisation générale, préconisé aussi par l’industrie nucléaire: la décision du Conseil fédéral est soumise à l’approbation de l’Assemblée fédérale et la décision de l’Assemblée est elle-même sujette au référendum facultatif; c’est-à-dire qu’à la demande de 50'000 citoyens, l’autorisation générale en question sera soumise au vote du peuple.10

En tenant compte de la nouvelle loi sur l’énergie nucléaire qui ne prévoit aucune limitation légale quant à l’autorisation d’exploiter des centrales nucléaires, lesquelles pourront rester en service tant que leur sécurité de fonctionnement sera assurée, le Conseil fédéral a supprimé la limitation de durée alors en vigueur pour l’autorisation d’exploiter la centrale de Beznau-2 (mise en service en 1971).11

Un effet indirect de la nouvelle loi sur l’énergie nucléaire a été le retrait de l’initiative cantonale zurichoise du 11 mars 2002, intitulée « Questions atomiques devant le peuple », qui visait à soumettre au vote les concessions pour le stockage souterrain de déchets radioactifs. Les initiants ont cédé, le 17 janvier 2005, face à la nouvelle loi fédérale qui n’accorde plus de compétences aux cantons en matière nucléaire, la Confédération disposant d’une compétence globale avec effet dérogatoire subséquent (« le droit fédéral prime le droit cantonal »).12

7 Conclusion

Il s’en suit que la démocratie directe pratiquée en Suisse n’a pas eu pour effet d’empêcher l’utilisation de l’énergie nucléaire comme l’avaient souhaité les groupes opposants. Au contraire, les préoccupations des citoyens quant aux problèmes globaux que pose le réchauffement climatique tendent en faveur de l’énergie nucléaire, et le scrutin de 2003 a plutôt consolidé la position de l’énergie nucléaire en lui conférant une légitimation démocratique.

Annexe


9 Ces deux dispositions sont un signe de bienveillance du parlement envers les groupes opposants au nucléaire.

10 Art. 141 de la Constitution ; art. 48 de la loi sur l’énergie nucléaire.


12 Art. 3 et 90 de la Constitution.
LICENSING THE NEXT GENERATION OF REACTORS IN THE U.S.A.
Recent Experience, Key Issues, and Challenges

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ABSTRACT

Over the past 20 years, the U.S. Nuclear Regulatory Commission (NRC) has spent much effort on revising its procedures for reviewing nuclear power plant designs. Earlier procedures, instituted by the NRC’s predecessor, the Atomic Energy Commission, permitted the resolution of important safety and environmental issues to be delayed until construction was underway. Moreover, the principal means of public participation in the resolution was through the medium of the courtroom trial. However, under new procedures, which have been upheld in the federal courts, nearly all safety and environmental issues are resolved before construction begins, and the public participates in the resolution of these issues without having to engage in a full-blown trial. The agency believes that safety and public participation are better served by the new procedures, and that the agency is thus well-positioned to review new designs. Nonetheless, the agency continues to seek improvements in its processes.

1 INTRODUCTION

I am pleased to be able to participate in Nuclear Inter Jura 2005. These biennial conferences are an important opportunity for lawyers who come from many nations and whose work involves nuclear technology in many ways to discuss nuclear law in a relatively informal way, and thereby to acquire insights that might be harder to gain under other circumstances. Thanks especially to our Slovenian hosts.

The organizers of this conference have wisely devoted a special session to nuclear law in the new millennium. The topic is important because there is considerable new interest in nuclear power, interest rooted in the greatly increased demand for energy around the world, and in concerns that the burning of fossil fuels is contributing to global warming. I am not here to speak on energy policy. My agency, the Nuclear Regulatory Commission (NRC), was created to regulate, not promote nuclear power, nor to engage in energy policy at all. But, of course, my agency’s actions are read in
the light of their effects on the future of nuclear power. And so, predictably enough, much of the criticism of the agency takes the form of arguing either that we over-regulate, and so in effect further an anti-nuclear policy, or under-regulate, and thus further a pro-nuclear policy.

However, because our mission is neither to promote nuclear power, nor demote it (if I may use the word this way), we have to judge our actions by other standards: safety and security, of course, but also standards that have to do with legal virtues, such as conformance to statutes and rules of administrative law, fairness to parties, efficiency of processes, transparency, contribution to the understanding of nuclear technology, international cooperation, and so on. Hardly a year has passed in which my office has not been engaged in a major project aimed at better achievement of these goals, and we have often had the pleasure of contending with the public, the industry, and the courts, over our choices of new licensing procedures.

I wish to speak in particular about our work in the licensing of standardized designs. In doing so, I will be returning to some of the themes sounded by earlier presenters in this special session. Some of you know the facts that I will be recounting, but perhaps you have not heard them recounted from precisely my point of view, which is not one of policy victories and defeats, nor court battles won or lost. It is rather one of trying to recover the essential problems we were trying to solve, or, to use more realistic language, the difficulties we are trying to cope with in a reasonably successful way. The particular wins and losses may soon be forgotten, but the difficulties are permanent and a constant prod to invention and improvement.

2 LICENSING NEW DESIGNS

I want to look at two main questions of licensing, questions that are posed regardless of variations in governments and licensing agencies. The first is whether the regulator can permit construction of a nuclear power plant to begin before the regulator has approved the complete design. The second question is whether the public will be only an observer of the licensing process or, if more than an observer, what mechanisms will be made available for its participation. Over the past 20 years or so, the NRC has pressed for new answers to these questions, and has persuaded both Congress and the federal courts to allow it to proceed on what it believes is the best course for the opening years of the new century. I take up the question of timing first.

2.1 Timing of a Final Design

When the NRC was established in 1974, it inherited from its predecessor agency, the U.S. Atomic Energy Commission, a licensing structure that experience has taught us was too unpredictable and too needlessly formal in the mechanisms it provided for public participation in licensing. The unpredictability stemmed in large part from what is sometimes called fast-tracking, the practice, then widespread in American construction, not just nuclear, of starting construction before the whole design was complete. The opportunity for fast-tracking in nuclear construction was built into the statute that established federal regulation of nuclear power, the Atomic Energy Act of 1954 (AEA), Public Law No. 83-703, 42 U.S.C. §§ 2011 et seq. The Act called first for granting a construction permit and then, when all information was available, and construction was complete and acceptable, the granting of an operating license. AEA § 185a., 42 U.S.C. §2235. The statute did
not say explicitly that construction could begin before the design was complete, but the Atomic
Energy Commission early on adopted the position that a construction permit could be granted on the
basis of an incomplete design. This policy was greatly debated and, as with so many questions in
the United States, heavily litigated, even reaching the U.S. Supreme Court, which upheld the
Commission’s position. *Power Reactor Development Co. v. International Union of Electrical,

The advantages of fast-tracking seemed clear: There was the promise of being able to begin
and end construction earlier, of being able to change course quickly in response to changing
availability or prices of materials and construction techniques. However, the flexibility sometimes
led to unpredictability. To take an example outside of nuclear construction -- just to remind
ourselves that the woes of construction are not unique to nuclear projects -- construction of the Javits
Center, New York City’s huge convention center, was fast-tracked for completion in 1983, a mere 3
years after ground-breaking. But it was not completed until 1986, burdening the City with hundreds
of millions of dollars in unexpected construction costs, and in lost convention business that had been
scheduled to begin in 1983, the hoped-for completion date. Poor quality control may have been a
leading culprit, but many have argued that a complete design should have been in place before
construction began, that the course and the costs of construction would thereby have been more
predictable.

The story was, as many of you know, too often repeated in nuclear construction, with longer
time-lines in too many cases. Of course, the NRC was not founded to speed completion or keep
down construction costs, but we have had our own concerns with the unpredictability, the great
variation in designs, and the consequent fracturing of agency attention and resources. And so by the
late 1980s we had taken the position that safety would be better served by more standardized designs
and by having in hand an essentially complete design before construction began. We thought that all
sides in the nuclear debate would be better served this way. With early resolution of essentially all
issues, utilities could see the future more clearly, and the NRC would meet less resistance to its
safety proposals, because it was easier to change an un-built design than an already built plant. Even
the AEC had taken some steps in the early 1970s away from fast-tracking. I mention one
noteworthy case, the so-called manufacturing license, which gave a vendor permission to build a
reactor at a manufacturing facility, and to move it to an AEC-approved site. One such license, to
manufacture a floating nuclear plant, was granted, to Westinghouse, in the 1970s, but no reactor was
ever built under the license. [1]

In the late 1980s, the NRC virtually left fast-tracking behind. It published a body of rules
that permitted the early and essentially complete resolution of both design and site issues, a
resolution that would be thoroughgoing enough to resist easy change during the years of
construction. That process consisted first of a design certification rulemaking, through which the
NRC would review, and possibly approve, an essentially complete nuclear power plant design. 10
C.F.R. Part 52, Subpart B. Utilities could also seek an Early Site Permit (ESP), which would resolve
a great many site-related issues, for example environmental impact issues, and possibly also
emergency preparedness issues. 10 C.F.R. Part 52, Subpart A. A utility could then seek an
authorization that combined in a single license both a construction permit and an operating license.
The utility seeking such a license could reference an already approved design and an early site
permit, thus limiting the number of unresolved issues to be addressed in the process leading to the

Proceedings of the International Conference Nuclear Inter Jura, Portorož , Slovenia, Oct. 9-14 2005
approval of construction. 10 C.F.R. Part 52, Subpart C. A key feature of the combined license was to be its incorporation of specified Inspections, Tests, Analyses, and Acceptance Criteria (known by the acronym ITAAC). The ITAAC would be the acceptance criteria which, if the licensee demonstrated it had performed and had met, would be sufficient to provide reasonable assurance that the facility had been constructed and would be operated in conformity with the license, the provisions of the Atomic Energy Act, and the NRC’s regulations. 10 C.F.R. § 52.97(b).

It is perhaps ironic that, once we had established something like the licensing regime that the opponents of the old fast-tracking had wanted, we found ourselves once again in court. But as before, the court upheld our approach, and the main features of our new rules were at the same time incorporated in statutory law by the Congress. Nuclear Information Resource Service v. NRC, 969 F.2d 1169 (D.C. Cir. 1992); see also AEA §§ 185b. and 189a.(1)(B), 42 U.S.C. §§ 2235(b) & 2239(a)(1)(B).

We have done a great deal under the new rules. The Commission has issued certifications for three designs, and has two more in the pipeline, with four more in pre-application reviews. Three applications for early site permits were submitted in the fall of 2003, and it is hoped that the review of one of these will be complete in late 2006 and the reviews of the rest in 2007. And just last month, NuStart Energy Development and Entergy Company announced their intentions to apply for combined construction permits and operating licenses, the first such applications under the agency's new rules, and the first applications for a construction permit since the accident at Three-Mile Island in 1979.

However, the very success of the new rules has showed us some of the shortcomings of what we so bravely but somewhat naively imagined in the late 1980s would work, and so we are now making use of 15 years experience to fine-tune the new process. The result, a draft of which is available on the NRC’s public web site, will be more detailed and self-contained than the original rules. [2]

Also, in a separate rulemaking, we will be incorporating our experience with security issues since the events of September 11, 2001. This rulemaking will require applicants for design certifications to submit a safety and security assessment addressing the relevant security requirements that have been established since September 11 for currently operating plants. We will be involving stakeholders in developing guidance for applicants on what should be included in such assessments, and applicants whose designs are under review before the rulemaking is complete will be encouraged, but not required, to submit such assessments. [3]

Lest anyone think that the new and revised rules will answer all possible questions, let me give you an example of an interesting question that is not dealt with explicitly in either the current rules or the draft rules. This is the question of when we should consider what we call severe accident mitigation design alternatives (or SAMDAs for short). What are these? They are what the terminology, with its somewhat awkward, multiply compounded, adjective, says they are: design alternatives that would mitigate the effects of severe accidents, which, according to the NRC’s dictionary, are accidents beyond what the plant is designed for. Mitigative design alternatives are usually considered in our environmental assessments of proposed standardized designs, where their costs and benefits are toted up and a decision is made whether to require one or more of them.

Everyone agrees that SAMDAs must be considered before the design is approved, but how much before? It is one thing to abandon fast-tracking, but quite another to resolve issues earlier than...
they need to be resolved. Should they, for example, be considered in the environmental report that must accompany the application for an early site permit? After all, the site review is in many respects an environmental review, and SAMDAs are an environmental issue. Applicants and the agency have not been in complete agreement here, the applicants wanting to postpone SAMDAs to the design certification proceeding, but the agency concluding that the environmental impacts of severe accidents, though not the mitigation design alternatives themselves, should be considered in the early site permit proceeding. Here the matter stands, at least for the time being.

Such questions will continue to arise, no matter how detailed and clear our rules may be. On NRC’s Web site you can see a list of 22 of them for early site permits alone. [4] There are always new challenges, and room for improvement in governmental processes.

2.2 The Role of Public

The uncertainty and expense engendered by allowing designs to be completed well after construction began was made more difficult to tolerate by another prominent feature of the licensing process the NRC inherited from its predecessors. This was the use of formal, trial-type procedures, complete with cross-examination and pre-trial discovery, as a way of engaging the public during the licensing of a plant. Of course, such procedures are slow and expensive, and being such, are to be used sparingly, with the result that they allow for public participation on only a very narrow range of issues, a result hardly satisfying to many members of the public. Moreover, though debate will continue on whether a long hearing in fact ever delayed the issuance of a license that was not already delayed for other reasons, such as construction errors, there is no question that long hearings contributed to the uncertainty and expense of long licensing proceedings. Another famous New York construction site comes to mind, the Shoreham nuclear power plant on Long Island, a completely constructed plant that never saw full power operation.

Again, as with the question of when design information should be complete, so too with the question of public participation. The AEC’s answer to the question had a statutory basis, but the basis was subject to more satisfactory interpretations than those put forward by the AEC. The statute said that the agency had to offer hearings on nuclear power plant licenses, but it did not say what sort of hearings. Early on the AEC took the position that the hearing had to be a full-blown trial. The NRC as early as 1982 [5] began to articulate the view, now reflected in fully revised regulations, 10 C.F.R. Part 2, Subparts C and L (2005), that, at the very least, licensing hearings did not need to be any more formal than required by the U.S. Administrative Procedure Act (APA), an almost 60-year-old statute of general applicability to federal administrative agencies that embodies a general respect for the use of expertise in the resolution of agency issues, and therefore, not surprisingly, does not require the high formality of trials. See APA, 5 U.S.C. §§ 554, 556, & 557. Of course, we were once again taken to court, but we prevailed. Citizens Awareness Network, v. NRC, 391 F.3rd 338 (1st Cir. 2004). These new processes are being used for the first time in our reviews of the three applications for Early Site Permits. [6]

We are at the same time looking for ways other than hearings to engage the public. For example, the rules on standardization themselves offer an example. The certification proceeding is not an adjudicatory licensing proceeding and, therefore, can make use of the more open, flexible, and informal procedures of rulemaking. Thus, issues that used to be settled in a trial near the time of
completion of construction are now settled in informal rulemaking before construction is authorized. It is perhaps a negative effect of the years spent on licensing trials that we are not very far along in developing what the European Commission calls consultative bodies. Our rulemakings are principally open consultative procedures, to use EU terminology. But outside the licensing arena, we have used such bodies, for example in the revision of the agency’s reactor oversight process. We are also using more informal workshops and meetings to communicate with the public and provide for its participation, for example, in carrying out our responsibilities under the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 et seq.

The improvement of our own processes is, of course, taking place in a larger international context, and we can draw from that context. When the U.S. Atomic Energy Act was substantially revised in 1954 to provide for civilian nuclear power development, nuclear technology was not yet widespread. What we did in the United States was not so intimately related as it is now to what is done elsewhere. The market is now thoroughly international, and this has had some influence on our choice of procedures. For example, we chose to certify designs through rulemaking rather than licensing not only for the greater flexibility that rulemaking procedures provided, but also because rulemaking left the door open to easier consideration of foreign designs.

Recognizing that global demand for the civilian use of nuclear power has increased, and that the nuclear industry and regulatory authorities are maturing into global endeavors, NRC Chairman Nils Diaz proposed to his fellow Commissioners in July 2005 that they approve Stage 1 of a Multinational Design Approval Program (MDAP). The Commission approved moving forward with Stage 1. [7] The MDAP Stage 1 would use the technical review portion of the U.S. design certification process and would incorporate the expertise of the regulator of the country-of-origin and other interested regulators to expedite and improve the safety review. Later stages, if approved by the Commission, would lead to convergence on acceptable engineering codes, quality assurance requirements, safety research acceptance and codification, reciprocity on component manufacturing oversight, and the like. In all stages of the MDAP, each nation’s regulator would retain full responsibility for the licensing of the reactors and regulatory decisions for that nation.

At the Senior Regulators’ Meeting during the International Atomic Energy Agency’s General Conference in September 2005, Chairman Diaz provided a briefing for regulators. The primary objective of the MDAP is to provide protection of public safety and the environment by (1) ensuring the effectiveness and efficiency of nuclear power plant design, review, safety analysis, and associated, and (2) providing for a practical forum for multinational cooperation and ultimate convergence on safety standards, practices and implementation.

To conclude my discussion of our new licensing procedures: Over the past 20 years or so, the NRC has moved far from positions the AEC initially took. While our rules still permit fast-tracking, our priorities go to early resolution of issues and standardization of designs. Although we will, under limited circumstances, conduct trials on nuclear issues, usually in an enforcement context, our default position is the sort of administrative hearing envisioned 60 years ago by the Administrative Procedure Act. We believe these positions are less costly to all concerned, and more conducive to decisions in which carefully considered safety decisions are made before major resources are committed. I have not delved into details, where, as is well known, the devil resides. I have focused instead on the initial choices in response to perennial questions about public participation and design information. I think the current resolutions are likely to be permanent, so
that, if in fact we are having trouble with the details, it is trouble we will have to suffer, not something we can avoid by going back to the fast-tracking and formal hearings of the past.

3 CONCLUSION

Let me say in closing that it is fortunate that when Congress established a regulator of nuclear technology, Congress gave considerable scope to the regulator so that it could, so to speak, reinvest its experience and come up with new regulatory arrangements, without having to return to Congress for permission. Thus, our current procedures for design certification and public participation are of our own making. This is most fortunate, for, at least in nuclear matters, an agency can generally change faster than a legislature, and thus can position itself to regulate in a way that allows the innovation of which the private sector is capable to move us forward to more productive, safer, designs.

I hope you have found my remarks useful, and I thank you for your attention.

ACKNOWLEDGEMENTS

I greatly appreciate the contribution of Steven F. Crockett, Special Counsel in the Office of the General Counsel, U.S. Nuclear Regulatory Commission, to the preparation of this paper.

REFERENCES

[1] For one account of Westinghouse’s efforts, see http://www.atomicinsights.com/aug96/Offshore.html
[2] The draft text can be found through the following link to NRC’s RuleForum at our website: http://ruleforum.llnl.gov/cgi-bin/rulemake?source=draft_p52&st=risk
REPORT OF DISCUSSIONS FROM SESSION 4
MILLENIUM SESSION – REPORT

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As the chairman opened the session, he noted cum grano salis that its particular title could either mean that the afternoon would be devoted to the discussion of long term prospective issues – which was certainly the case for certain reports – or simply that some other presentations could not fit in another session. In any case, he had no doubt that the reports would generate lively exchanges of views. He also thanked the speakers for having all made available their reports in advance of the Congress.

Concerning the topics in the agenda of the session, M.M. Jyrki Javanainen and Olivier Robert, in their reports on “the Nuclear Installation Licensing and Democratic Decision-making” in Finland and on “L’énergie nucléaire face à la démocratie directe”, each addressed the issue of the involvement of the public in the development of nuclear regulations, in the light of two concrete and recent national experiences. The first was a presentation of a case study on the consultation of the public during the licensing of the fifth power reactor in Finland and of a new radioactive waste repository, both sited in Olkiluoto. The second was an analysis of the particular mode of public consultations which is in practice in Switzerland (“initiative populaire”) and the experience of its application to recent challenges to the use of nuclear energy in this country.

Two other reports, by Mr. Jussi Manninen and Mrs. Christiane Truee respectively were critical reviews of some aspects of the EU’s nuclear policy. Mr. Manninen addressed the efforts – so far unsuccessful – of the European Commission to establish a European nuclear safety regime (the “Nuclear Package”). Mrs. Truee offered her views on the need for a significant revision of the European Treaty.

The presentation by Mr. Peter John Riley was essentially a documented pledge for the continuation of national programmes on the peaceful use of nuclear energy.

As for Mr. Stephen Burns, his report focused on the streamlined US NRC procedures to facilitate the licensing of the next generation of nuclear reactors in the United States.

Finally, Mr. Jean-Marie Raynaud was unfortunately not available to introduce his paper on “L’invention d’un système juridique” (meaning nuclear law) but the Chairman invited all participants to read carefully his interesting study.

Each presentation was followed by many questions and comments from the participants. The comments addressed to Mr. Manninen gave him the opportunity to insist on what he considered as a too extensive interpretation of the 29/99 judgement of the European Court of Justice that is used by the European Commission in order to support its nuclear package.
proposals. The discussions after the presentation of Mr. Javanainen illustrated the difference between national legislations on crucial concepts regarding radioactive waste management such as the geographical extent of the “neighbouring communities” that must be involved in a participation process.

The paper of Mrs. Christiane Truee prompted a number of reactions concerning what was felt by some as a somewhat exegetic analysis of the Euratom Treaty as opposed to the practical experience of several lawyers in the assembly. Replying to a question on how to prepare the general public to vote on complex issues such as a nuclear phase out, Mr. Robert showed the information leaflet provided by the Swiss authorities in view of the abovementioned consultations. After his presentation, Mr. Burns underlined the advantages brought by the changes he had commented, especially those that may allow a better dialogue between the NRC and the potential opponents to a licensing project.

At the close of the session, Mr. Reyners concluded by praising the quality of the various presentations which had stimulated a useful discussion. He thanked the audience for its active participation and Miss Chloée Degros for her support as Secretary of the session.

This report was kindly prepared by Miss Degros.
HOW AND TO WHAT EXTENT ARE THE PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW APPLICABLE TO RADIOACTIVE WASTE MANAGEMENT?

Working Group 5 - Radioactive waste management
President(s) : Gustaaf MATTHIJUS (ONDRAF - Belgium) r
Mariano MOLINA (ENRESA – Spain)

1 INTRODUCTION

Environmental law is one of the most dynamic and innovative areas of Legal Science and Practice. The variety and novelty of the issues to be regulated is surely an important factor. However, for almost two decades its rate of development has been marked fundamentally by consideration of the environment as a global asset, beyond national interpretations and policies. As is recognised in the Declaration of Rio, the States are interdependent and shall ensure the integrity of the Earth, our home, in a spirit of global partnership.

The global nature afforded to the conservation, protection and restoration of the environment gives a relevant position to international legislative tasks. Instead of a police strategy, which would be destined inevitably to failure, International Environmental Law prefers to make use of the concept of partnership, cooperation between States, societies and populations organised around simple and harmonising principles of universal dimension. This is the spirit of certain international standards that are sometimes described as “Soft Law”, but that many of us perceive as being paradoxically mandatory.

Nuclear Law came about and was consolidated at international level before International Environmental Law, and long before the latter took on its global nature. It emerged from the feeling that prevention and control of radiation hazards required specific legal instruments. Its preventive function focused initially on people, the protection of health being its main objective. It later extended to include other major areas, such as safety of installations, protection of property and compensation for damages. Finally, environmental protection was more explicitly integrated. The legal regulation of radioactive waste management has developed in almost all countries as part of the process of growth of Nuclear Law. It shares the objectives and principles of such Law and may be considered being a sub-division of it. Given its scope, radioactive waste legislation has fully participated in interaction and convergence between Nuclear Law and Environmental Law. On the one hand,
radioactive waste management legislators were pioneers in developing methods for the
categorization and safe handling of such wastes, in order to differentiate the stages of
management, to conceive interdependent institutional schemes and to achieve secure systems
for advanced financing, as well as the right of future generations. In the opinion of many,
environmental jurists have been ground breakers in appreciating with pragmatism and
functionality the multidimensional nature of the legal object to be protected, paving the way
in the application and the generalization of concepts as innovative as the principle of
environmental impact assessment and precaution. At present there is a clear and objective
relationship between the two legislative areas, in as much as they share the same goal:
protection of the environment. However, the process has frequently developed by way of
separate actions. On the second hand, this has been so because of the highly specific nature
of nuclear risk and of the technologies for its prevention, and on the other as a result of the
multidimensional nature of the environment.

An additional consideration. The development of Environmental Law has frequently
benefited from the international context, from the first bilateral Treaties at the beginning of
the 20th century to the boom in the appearance of international initiatives in the nineteen
Environmental Law “is the product of an essentially legislative process involving the
interplay of international organizations, conference diplomacy, codification and development,
and international courts, and a relatively subtle interplay of treaties, non binding declarations
or resolutions, and customary law.”1 Curiously, a similar result has been obtained in the
legislation of radioactive wastes, but via a different process involving more exchanges among
scientific and technical experts and less diplomatic actions.

In this field, and barring the area dedicated to the control of fissile materials relating to
weapons, we have had to wait for the adoption of the Joint Convention on the safety of spent
fuel management and on the safety of radioactive waste management, in 1997, for the advent
of a harmonising legal instrument. Paradoxically, cooperation, the exchange of experiences
and efforts to bring about international standards on the safety and management of radioactive
wastes have been intense and coordinated among the different countries since the very
beginnings of the peaceful use of nuclear energy.

These reflections elicit a number of important questions for those of us who need to
share both legal interpretations:
• Are there significant differences, or even incompatibilities, between Environmental Law
  and Nuclear Law in general?
• Aside from formal questions, do we consider nuclear Law as part of the environmental
  law or as a different kind of law?
• Are there any precepts in Environmental Law that might not be applicable when regulated
  under Nuclear Law?

2 PROCEDURAL ASPECTS

These issues led WG5 to consider the question as being of sufficient scope and current
interest for it to be selected as the central topic of its work.

During a first meeting in Paris, in June 2003, WG5 decided to undertake an analysis
allowing it to determine possible incompatibilities between International Environmental Law
and Nuclear Law. The starting point was to be an inventory of international texts on
Environmental Law. It was then considered that this work could be completed in a second

1 International Law and the Environment P. BIRNIE, A BOYLE, p.10 (Oxford University Press, 2002).

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
step using the most important European texts. It should be noted that, in this reasoning, the working group would have to pay attention to the following:

- To distinguish the texts from the interpretations made by the various actors,
- Not to adopt excessively ambitious objectives and to limit the investigation to 3 or 4 topics to be specified, i.e.: safety, security and sustainable development.

Following the usual WG5 working method, a questionnaire would then be sent to the various representatives registered by INLA in order to determine how the national laws take into account the provisions of international law. Lastly, the report of the working group would address whatever incompatibilities might have been raised and bring in suggestions aimed at putting an end to these situations.

In a second meeting in Brussels in June 2004, the Group decided to focus the on-going work on confronting principles inspiring Environmental Law and Nuclear Law. It was agreed, for continuation of the study, that the international regime relating to radioactive waste management should be compared with the principles of environmental law, as underlined in the international conventions. For this purpose a paper produced within the Group had synthesized these principles. The need for benchmarking of this international regime against the national laws, in a second phase, was once again stressed. As this study might be rather complicated to perform, for instance for the federal States, the analysis would have to focus on a few specific points. The steps finally adopted were as follows:

- Initially, the comparison would be made at international level between the environmental law and the nuclear law relating to radioactive waste management. The Joint convention signed in Vienna on September 5th, 1997 was chosen as the main text for analysis.
- Secondly, the analysis would focus on national approaches. A questionnaire would be prepared for the States, asking them to concentrate on 3 or 4 important national nuclear laws.

The third meeting in Paris (December 2004) definitively formulated the topic for the Congress as follows: “How and to what extent are the principles of international environmental law applicable to radioactive waste management law?” The group examined the document entitled “Preparation of the Report on Radioactive Waste Management and the Protection of the Environment”, dated 15th November 2004, written by a selected sub-group. The comments sent were circulated in advance and taken into account. Concerning the questionnaire, the Group highlighted the importance of asking countries which principle were explicit in their national nuclear legislation. A set of four principles – Sustainable Development, Precautionary Principle, Public Participation and Right of Access to Justice – were chosen for specific consideration when filling in the questionnaire. This latter was sent early in March 2005.

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2A principle is considered to be “explicitly” provided for if a section or paragraph of a legal text enounces its content as defined in the questionnaire or in a very similar way, even without a direct reference to its name. For example, the precautionary principle would be explicitly provided for in two kinds of assertions:

1. In a section or paragraph containing the very name of the principle, such as art. 174.2 EC Treaty: Community policy on the environment (...) shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.

2. In a section or paragraph enouncing a general rule of conduct within the meaning of the principle, such as the Preamble of the UN Convention on Biological Diversity: where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.

On the contrary, a principle can be “implicitly” present in many kinds of legal measures. In this sense, members were not expected to provide the working group with a teleological interpretation on the principles that underlay their legislation. However, if they felt that a non-explicit treatment may be of interest for our questionnaire, their contribution would be very much appreciated.
At last, a reduced meeting in Paris (June 2005) was organized in order to adopt the final report. This aim was easily achieved thanks to the important work already made on the international side of the problem, and thanks to the ambitious analysis of the national answers received to the questionnaire sent in March. The reduced meeting worked on a draft report sent in advance and on the suggestions made by members of the working group. The final report was then adopted, before it is transmitted to the organization of the Congress.

3 COMPARISON BETWEEN INTERNATIONAL ENVIRONMENTAL LAW AND INTERNATIONAL NUCLEAR LAW

The present comparison is limited to an analysis of the situation at international level. Non-binding statements, or guides, are taken into account as well as treaties or other binding provisions because, at international level (i) environmental law is often made up of “soft law” and (ii) nuclear law comprises a large number of technical standards or guidelines which are in the form of recommendations or are expressed in general (non-binding) terms even in formal treaties. Such flexibility at international level does not mean that the rules and obligations agreed by Contracting Parties are not likely to be applied in a stringent way at national level.

For each Principle:
§(a) summarises the relevant provisions in environmental law;
§(b) refers to the corresponding provisions in the 1997 Joint Convention and in the 1995 IAEA “Principles of Radioactive Waste Management” which are the two texts of universal scope dealing specifically with radioactive waste management;
§(c) considers to what extent these texts are consistent with environmental law requirements.

Annex 6.1 summarizes the concordances between the Joint Convention and the International Environmental Principles chosen.

3.1 Right to a healthy environment

(a) The right to live in a healthy environment has developed within environmental law as an instrument to protect the natural resources necessary to maintain human health and life. It is linked to the recognition of fundamental values generally enshrined in declarations of rights and public freedoms.

Primary sources: the 1972 Stockholm Declaration (Principle 1); the 1992 Rio Declaration (Principle 1).

On this point, the 1972 Stockholm Declaration (Principle 1) speaks of “an environment of a quality that permits a life of dignity and well-being” and the 1992 Rio Declaration refers to the entitlement to “a healthy and productive life in harmony with nature”. This terminology is very general, along the same lines as other international statements on human rights.

(b) The Joint Convention (like most nuclear law instruments) refers to a high level of safety and to adequate protection of man and the environment against radiological hazards. Article 1 provides that the objectives of this Convention are "to achieve and maintain a high level of safety worldwide" and "to ensure that during all stages of spent fuel and radioactive waste management there are effective defenses against potential hazards so that individuals, society and the environment are protected from harmful effects of ionizing radiation". The reference in the Preamble to UN Chapter 22 of Agenda 21 (adopted at Rio 1992) "reaffirming the paramount importance of the safe and environmentally sound management of radioactive
"waste" is also particularly relevant. Articles 4(iv), 7(i), 11(iv), 14(i) and 24(1)(iii) refer to this right by explicitly mentioning the protection of the environment.

(c) The whole purpose of waste management is to protect the environment and the rules of nuclear safety and radiation protection which are applicable to radioactive waste are necessarily more stringent than general statements on the obligation to maintain a healthy environment.

3.2 Prevention principle

(a) The prevention principle takes into account the fact that activities which damage the environment often go unnoticed, as the effects only appear a long time after such activities take place and at a point where their consequences may already be irremediable.

This principle requires that measures be taken as early as possible as soon it appears that a project will have an impact on the environment. It also favours measures directed at the origin of the damage, rather than measures which simply focus on the consequences of such harm. Furthermore, it is generally recognised that preventive measures are less expensive than reparatory measures, even if these measures are not mutually exclusive. Regulations on environmental impact studies required for major project planning and for the construction or modification of installations with an important effect on the environment are based in particular on this principle. It also means that the best available techniques must always be chosen. However, the “economically acceptable” cost of this technological choice is often required, in particular with regard to the proportionality principle.

Primary sources: In international law, this principle was recognised specifically in the 1972 Stockholm Declaration (Principle 21), the 1992 Rio Declaration (Principle 2) and in the Treaty establishing the European Community (Article 174).

Articulated in the same manner by Stockholm 1972 and Rio 1992, the prevention envisaged relates to transboundary harm only. The definition is general and must be supplemented by clarifications to be drawn from a number of treaties and from case law and doctrine.

(b) Prevention is the main objective of the Joint Convention. Comparison with international environmental law demonstrates the following:

- The scope of application of the Joint Convention is not limited to international impacts but also includes prevention of domestic damage;
- Prevention shall apply "at all stages" of radioactive waste management (Articles 1, 4 and 11), implying early action.
- The technologies used shall be "supported by experience, testing or analysis" (Article 7(iii) and Article 14(iv)); this seems equivalent to the concept of “best available techniques”.
- The limits of exposure to radiation shall take social and economic factors into account (Article 24(1)(iii) and (3)).
  (see also Principles 1, 2 and 3 of IAEA Principles of Radioactive Waste Management 1995)

(c) The rules on prevention are very similar in environmental and nuclear law but may be more comprehensive in the latter, according to the subject matter.
3.3 Polluter pays principle

(a) According to its original definition in the OECD Recommendation of 26 May 1972 (C 72.128) on Guiding Principles Concerning International Economic Aspects of Environmental Policies and the OECD Recommendation of 14 November 1974 on the Implementation of the Polluter Pays Principle (C 74.223), this principle is an economic policy instrument designed to allocate the cost of protecting the environment (to internalise this cost) in order to avoid distortion of trade. Subsequently, its scope and purpose have been considerably broadened (OECD Recommendation of 1989\(^3\)) and it has been finally adopted as a principle of international environmental law (1992 Rio declaration, Principle 16, for example). The corresponding rule is now included in a number of international conventions dealing with protection of the environment. Although its provisions vary, the polluter should bear in general an extensive part of the environmental cost: taxes for public action or other preventive costs, remedial and restoration costs, as well as compensation for pollution or incidental damage to the environment. This evolution influences, therefore, the field of civil liability law. However, application of the polluter pays principle is subject to some restrictions, in particular the taking into account of economic factors.

(b) With respect to the legal regime of radioactive waste management, it is clear from the Joint Convention that the operator (licence-holder) bears the full cost of all waste management and decommissioning operations. This results from the prime responsibility of the operator (Article 21), the obligation to maintain adequate financial resources (Article 22(ii) and (iii)) and the very comprehensive definition of activities within radioactive waste management and decommissioning (Article 2(i)).

(c) We can conclude that the relevant provisions of nuclear law globally satisfy the economic integration element of the polluter pays principle.

The same conclusion applies with respect to the civil liability implications of the principle because under the revised Paris and Vienna Conventions the absolute liability of the operator is explicitly extended to nuclear damage caused to the environment from radioactive waste, including after its disposal.

3.4 Environmental impact assessment principle

(a) This principle provides that the necessary measures should be taken to assess the potential impact on the environment of projects that are liable to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, to allow for public participation in such procedures.


(b) This principle is confirmed by the Joint Convention in Articles 8 and 15, 6(1)(ii) and (iv) and 13(1)(ii) and (iv). It is also enshrined in the IAEA Principles 2 §311 and 9 §331. In the field of radioactive waste management, this principle allows us to pursue the more policy-orientated principles of prevention and precaution.

(c) Fully consistent.

\(^3\) Recommendation of the Council concerning the Application of the Polluter-Pays Principle to Accidental Pollution, C(89)88(Final), OECD 1989.
3.5 Public information principle

(a) The public information principle is the corollary of the participation principle. It is also necessary for the application of the prevention and precautionary principles. In order to be in a position to effectively protect the environment, people require information on the current state of the environment and on projects which could represent a potential hazard. This principle has a privileged status in environmental matters.


(b) The importance of informing the public is recognised by the Preamble (paragraph (iv)) of the Joint Convention. The Convention provides for the obligation to make available to the public information on the safety of radioactive waste management facilities (Article 6(1)(iii) and Article 13(1)(iii)) as well as summary reports of Joint Convention meetings (Article 34).

(c) Access to information has always been a sensitive subject in the field of nuclear energy but it should be noted that the Joint Convention shows progress in this respect as compared to the Nuclear Safety Convention. In comparison with environmental law, the provisions in the Joint Convention may appear somewhat weak and an implementation mechanism is lacking. It should be pointed out also that nuclear activities are covered by the Aarhus Convention (and by the EC Directive 2003/4), at least indirectly, taking into account the terms of Article 2 of the Convention (Article 2(1)(b) of the Directive) which defines environmental information to include "factors, such as substances, energy, noise and radiation...".

3.6 Co-operation principle

(a) The principle of co-operation implies not only co-operation between different states, but also between the state and the economic sector, environmental protection associations, consumers, producers, etc. Implementing this principle often means consulting all stakeholders. It also leads to a tendency to prefer contractual solutions over regulations set by public authorities.

Primary sources: In international relations, this principle applies in particular to North-South relations. For instance, developed countries often have the duty to help developing countries in protecting the environment by providing them with their technical knowledge. The 1992 Rio Declaration recognised the principle of co-operation in Principles 7, 9 and 27.

This is rather a principle of general international law, not specific to environmental protection. In fact, Rio 1992 (Principle 9 and 27) promote international cooperation on sustainable development (not on environmental protection per se).

(b) International co-operation is at the root of nuclear law, in particular of the rules on radioactive waste management. It is the only type of waste for which an international legal regime of universal scope has been adopted, namely the Joint Convention and the 1995 IAEA Principles. See in particular Paragraph (ix) of the Preamble, Articles 1(i), 4(iv), 6(1)(iv),
11(iv) and 13(1)(iv) in the Joint Convention. See also in particular Principle 3 §313 of the 1995 IAEA Principles.

(c) Fully consistent.

3.7 Fair distribution /proportionality

(a) The fair distribution or proportionality principle implies that a State’s duty to protect the environment is proportionate to its capacity to do so.

*Primary sources:* In international law, this principle is recognised by Principle 23 of the 1972 Stockholm Declaration and Principles 7 and 11 of the 1992 Rio Declaration which recognize the distinction between developed and developing countries.

(b) International nuclear law, including the law governing the management of radioactive waste, does not enshrine this principle, due to the specific character of the nuclear risk.

(c) On this point, radioactive waste management law at international level does not follow international environmental law.

3.8 Limitation of production of waste

(a) The principle of limitation of production demonstrates the main objective of any regulations on waste management, i.e. reducing its volume to the greatest extent possible up to the complete recycling of all waste. This principle is not universally acknowledged as a general principle of environmental law but it is a basic principle underlying the management of waste. For this reason, it shall be considered herein.

*Primary sources:* Chapters 20 and 22 of Agenda 21 (Rio) encourage policies and practices to minimise and limit, where appropriate, the generation of radioactive waste. Other general texts examine this issue: OECD Recommendation of the Council on a Comprehensive Waste Management Policy C(76)155/Final, 28 September 1976 (in relation to waste in general); and UNEP Cairo Guidelines and Principles for Environmentally Sound Management UNEP/WG 122/3-Annex III, 9 December 1985 (in relation to hazardous waste with the exception of radioactive waste).

(b) The Joint Convention provides that generation of radioactive waste should be kept to the minimum practicable (Articles 4(ii) and 11(ii)). It should be pointed out that this requirement shall be "consistent with the type of fuel cycle policy adopted" and therefore there is a clear differentiation between limitation of waste and reprocessing of fuel. The requirement to limit waste to the greatest extent possible does not include a requirement to reprocess fuel. See also Principle 7 of the IAEA 1995 Principles.

(c) Fully consistent.

3.9 Sustainable development principle

(a) The sustainable development principle imposes a choice in relation to development. Development is intended to satisfy the needs of present generations; however, it must not deprive future generations of the possibility of satisfying their legitimate needs. It is particularly important in relation to the use of non-renewable natural resources and activities which irremediably destroy the vital environment of humans and animals, including air, water...
and bio-diversity. The scope of this principle is considerable. It requires the identification of long-term priorities as well as the re-definition of existing relationships between ecology, economy and technical progress. It also gives priority to the management of the environment in accordance with applicable regulations, as sustainable development can only be attained by co-operation between producers, consumers, citizens and authorities. Consequently, recent legislation tends to set goals and establish legal requirements to meet those goals; in particular, such legislation tends to use contractual instruments and long-term collaboration.

Primary sources: This principle was recognised at the 1992 Rio Conference (Principle 3). It is now enshrined in a number of environmental conventions.

(b) Using the same terminology as in international environmental law, the Joint Convention fully incorporates this principle in Article 1(ii). A specific rule on its application is set out in Article 4(vi) and (vii) and in Article 11(vi) and (vii).

(c) There is full consistency. The only problem which may be raised relates to the possible obligation to ensure “recoverability” of radioactive waste from a repository: Is such an obligation implied by this Principle and is it therefore relevant to other type of waste creating a long term risk?

3.10 Precautionary principle

(a) The precautionary principle, which is interpreted in many ways, is based on the same concerns as the prevention principle. According to the precautionary principle, the absence of absolute scientific certainty about the effects of a substance or an activity on the environment is not a sufficient reason for not taking preventive measures, where there are firm indications of potential serious damage.

Combined with the prevention principle, this principle means that measures should be taken before there is firm proof of the harmful character of an activity or substance. Such measures should focus on the origin of the harm and should be aimed at preventing the occurrence of damage to the environment.

The precautionary principle came about in the mid eighties, developed on the basis of the Vorsorgeprinzip of German Law, and was included for the first time in Principle 11 of the World Charter for Nature in 1982 and then became positive law – with a more precise definition – through a number of treaties, in particular in the field of sea environment protection. It was also incorporated into Community Law with the Maastricht Treaty, and as a result into the Legal Systems of the EU member countries consulted. The principle as formulated by Rio 1992 applies to the prevention of an "uncertain risk" i.e. in the absence of full scientific evidence.

Primary sources: The 1992 Rio Declaration recognised the precautionary principle (Principles 15 and 17). Other international texts have also recognised it. The European Union introduced it in the Single European Act without however providing a definition.

(b) In view of the high level of development of nuclear science and technology and of the experience acquired through sophisticated risk analyses, it is obvious that almost all risks associated with the use of nuclear energy are well known. However, the biological effects of low radiation doses remain uncertain and the precautionary approach is justified to prevent this risk. This approach has been adopted and maintained by the ICRP (linear theory without threshold) in their recommendations which are embodied in international radiation protection standards. In a later report, the ICRP acknowledged the relevance of the precautionary approach.
(c) The Joint Convention (Article 24) refers to these standards. However there is no provision in the Joint Convention on uncertain risks and the precautionary principle.

3.11 Right to access to justice in environmental matters

(a) The right to access to justice in environmental matters enables an individual to challenge environment-related decisions before a judicial court or another independent and impartial body established by law.


(b) The Joint Convention does not make provision for this right to access to justice in order to enable an individual to challenge a decision e.g. in relation to siting of a radioactive waste or spent fuel facility.

(c) At international level, radioactive waste management law is inconsistent with international environmental law in this regard. However, procedures initiated by individuals against administrative decisions under the Aarhus Convention (and its implementing Directives referred to above) may relate to nuclear activities.

3.12 Public participation in the decision-making process

(a) The principle of public participation in the decision-making process is closely linked to the universal, interdependent and irremediable character of environmental damage, which justifies the right of every individual to participate in the environmental decision-making process. According to this principle, everyone has access to environmental information, including information related to hazardous substances and activities, and the public is involved in the drafting of projects which have a serious impact on the environment or on territorial planning. This principle was established by Rio 1992 and introduced into international conventions on the environment, in particular the 1998 Aarhus Convention.


(b) The Joint Convention does not provide for an obligation to consult the public in relation to radioactive waste and spent fuel management, where it imposes an environmental impact assessment. The procedural requirements in relation to siting are limited to provision of information. This principle has never been adopted in nuclear law at international level and there are therefore no provisions in this respect in the field of radioactive waste management.

(c) It should be acknowledged that the Joint Convention is not consistent with international environmental law in this regard. However, as mentioned above, the Aarhus
Convention (and the EC Directive 2003/35), in its provisions concerning public participation, explicitly refers to nuclear activities (see list in Annex 1: "nuclear power stations and other reactors including the dismantling or decommissioning of such power reactors, installations for the reprocessing of irradiated nuclear fuel, installations designed for the production or enrichment of nuclear fuel, for the final disposal of irradiated fuel, radioactive waste, etc...").

4 OVERVIEW OF THE APPLICATION OF THE PRINCIPLES IN DOMESTIC ENVIRONMENTAL LAW – COUNTRIES ANSWERS

This section of the Report is split in two parts. First one briefly analyses the responses provided by the countries in relation to eight of the environmental principles that the group estimated not to be especially conflictive on the side of waste management legislation. For each of the principles there is a summary of countries responses. These latter are differentiated according to their relation with environmental national law or waste management law.

The second part of this section is devoted to a more extended analysis of the responses to the questionnaire just for four selected principles. They appeared not to be so matching in the two legal areas explored: Sustainable Development, Precautionary Principle, Public Participation and Right of Access to Justice. As mentioned above, in these cases the questionnaire was complemented with specific questions concerning each of the four principles.

The questionnaire could be found in Annex 6.4.

4.1 Right to a healthy environment

4.1.1. Environmental legislation. In all the countries analyzed two principles may be observed to stand out especially for their relevance, and to provide inspiration for the others in many aspects. These are what the authors have called mega principles and are the Right to a Healthy Environment and the Principle of Sustainable Development. The Right to a Healthy Environment appears in almost all of the countries consulted as a category of fundamental law affecting persons, linked to the right to enjoy a decent lifestyle and to social and human development. Consequently, the expression of such rights is normally to be found at constitutional level. This has been reflected in the responses to the questionnaire: six countries clearly indicate that their respective Constitutions reflect this principle.

4.1.2. Legislation on radioactive wastes. Only two countries recognize that the principle is openly included in the legislation regulating radioactive waste management. In both cases, the principle is included in the Atomic Energy Act. Another country comments that, in the widest sense, the Nuclear Energy Act reflects the principle of the right to a healthy environment. The rest of the countries consider that their regulations provide coverage for the principle, either due to its being a constitutional precept, or to the fact that the objective of the law is to ensure compliance with the principle. They coincide in pointing out that the ultimate objective of radioactive waste management is to protect human health and the environment. Most of the countries consider the laws and decrees on protection against ionizing radiations to be part of the legislation on radioactive wastes.

4.2 Prevention Principle

4.2.1. Environmental legislation. All the countries consulted confirm that the Prevention Principle is explicitly contemplated in their respective environmental legislations.
It is considered to be a principle having a strongly instrumental and management-related nature, aimed at orienting the different regulatory activities on activities potentially affecting the environment. It is also considered to be a principle appropriately established and developed, following its clear definition in the Stockholm Declaration in 1972. All of the countries consider this principle to be a fundamental part of Environmental Protection. Consequently, it is underlined in framework or general laws on the environment. One of the countries replied that the issue was explicitly contemplated in its Constitution and Environmental Code; a further three also include it in their respective environmental codes, and the remainder provide references to general legislation (for example, Pollution Prevention Acts) or indicate that the principle appears in the different sector legislations (air, water, wastes, noise, etc.).

4.2.2. Legislation on radioactive wastes. Three countries coincide in pointing out that their nuclear energy legislation explicitly contemplates the principle. The majority opinion is that the legal framework covering nuclear operators, one of which is the radioactive waste manager, with its characteristics of preliminary authorization, the requirements of a safety case, etc., constitutes in itself a preventive regime. Two countries reinforce this idea in also underlining the fact that their legal regulations on radioactive wastes are subject to standards on Environmental Impact Assessment.

4.3 Polluter pays principle

4.3.1. Environmental legislation. All the countries confirm that the principle is adequately covered by their respective legislations. There is unanimous agreement in considering that the aim of the principle is for the causer of the pollution to assume the costs involved in prevention and repair, without receiving any type of compensatory financial aid. The countries surveyed provide clear legislative texts in this respect, in which the principle is considered to be an element of complete internalization of the costs of pollution prevention and correction, unlike the possibilistic approach of article 16 of the Declaration of Rio. Two countries reply that the principle is contemplated in their Constitutions, three in their Environmental Codes and the rest in their environmental framework legislation or respective sector-specific codes.

4.3.2. Legislation on radioactive wastes. The nuclear legislations of all the countries consulted except one explicitly contain the principle of “the polluter pays”. The country in question states that although the principle is not openly demonstrated, the entire legislative development and its application are guided by the precept. In general, the principle appears in the atomic energy laws of the different countries, except in two cases, where reference is to the energy-related legislation.

4.4 Environmental Impact Assessment Principle

4.4.1. Environmental legislation. Environmental impact assessment is a systematic practice in all the countries that participated in the questionnaire. It is conceived as a basic instrument deriving from the preventive objectives of the environmental legislation and adding the concepts of participation – as regards the need for the potentially affected communities and individuals to be taken into account – and integration – inasmuch as it

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4. “National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution...”.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
requires the multidisciplinary contribution of experts and the weighted consideration of costs and benefits. Three countries include the principle in their Environmental Codes and the rest in specific laws of a general nature. Although supranational in its scope, in the countries belonging to the European Union Strategic Environmental Impact Assessment (SEA) is obligatory for Plans and Programmes, the aim being to complete environmental control from the phases prior to the project and thus reinforce the efficiency of the assessment instrument.

4.4.2. Legislation on radioactive wastes. All the countries respond that the legislation regulating their Environmental Impact Assessments includes the main radioactive waste management facilities, among them those for waste disposal temporary storage and treatment. Two countries coincide in pointing out that the organizations responsible for the radiological aspects of impact assessment are their respective regulatory authorities.

4.5 Public Information Principle

4.5.1. Environmental legislation. Although this principle is only dealt with in passing in the Joint Convention, WG5 has found it to be strongly implemented and developed in the countries consulted. All are part of the Aarhus Convention and include profuse references to the requirements for and benefits of public information in relation to environmental issues in their different laws and standards developments. The right to access Environmental Information is reflected in the legislation of all the countries. Its definition acquires the highest importance in two countries, which include it in the Constitution and in the Freedom of Information Act, respectively. Two countries include the principle in their Environmental Codes and a further three in specific laws.

4.5.2. Legislation of radioactive wastes. The principle of public information is included manifestly in the waste-related legislation of all the participating countries. In six cases the obligation to comply with this principle is reflected in the Nuclear Energy Act. It is significant that all the countries should understand and develop the need for an active information policy with regard to radioactive waste management activities. In this respect, one country comments that the legislation attributes these tasks to its national waste management agency, other replies that nuclear licensees are required to provide public information annually and two others indicate that legally their respective regulatory authorities are responsible for providing systematic information.

4.6 Co-operation principle

The Principle of Cooperation is not only aimed to address cooperation between states in international grounds but to promote it at national level between the different actors involved in environmental protection. The principle is linked to fairness and solidarity in the Rio Declaration although there is not a common consensus about the actions deriving from it. It is agreed that interchange of relevant environmental information, joint cooperation in R + D tasks, scientific and technical assistance and early notification in case of emergency situations are some of the activities coming out. On the domestic side the principle sets a basic obligation of the state to take into account those concerned or affected by environmental decisions. The right of everyone to participate in the mandates of environmental conservation is the other side of the principle.

4.6.1. Environmental legislation. All the countries consulted had legal provisions derived from the Cooperation Principle directed at the international level. One country
confirms that the national interpretation of the principle is included in the Constitution. Two of them present the principle on the national sense, whilst a third one points out that there is an active policy of governmental departments to promote internal cooperation. Another country states that the principle is integrated in environmental legislation via the environmental risk assessment principle, the information principle and the participation principle. There is a country reporting that the cooperation principle concerning environmental management is included in an Act on International Cooperation for Development.

4.6.2. Legislation on radioactive wastes. Most of the correspondents have not explicitly enunciated this principle in the waste management legislation. However, many of them consider the principle to be affecting as far as the hierarchy of the national environmental legislation which provides for it is above that of waste management. In some other cases, the responses remit to the corresponding international treaties. Although international and domestic co-operation is a common practice in this area, two countries clearly insist that their legislation openly commits nuclear authorities and waste management agencies to cooperate with waste producers.

4.7 Fair distribution/proportionality

4.7.1. Environmental legislation. Although contemplated in the Stockholm Declaration in 1972, the principle of proportionality really acquired its full strength as from the Declaration of Rio in 1992. It embodies a global and integrating spirit, such that the objectives of environmental protection and sustainable development be accessible to all States. In this respect, it is a principle that clearly transcends the area of national policies and that is part of overseas policy actions concerning the environment. Possibly for this reason, most of the countries consulted have replied that the principle is not contained in their environmental legislation or that they do not know in what type of standards it is explicitly contemplated. One country, however, places it among the demands of its Constitution, as a result of which it is obligatory with respect to any other type of law. A third country refers to its legislation on cooperation in development. It is noteworthy that two countries consider that the requirement for proportionality might acquire national standing, inasmuch as their laws require a) that environmental policy be in keeping with the needs of social and economic development and b) that the analysis of risk and application of environmental impact assessment be in keeping with the importance of the impacts analyzed and their possible occurrence.

4.7.2. Legislation on radioactive wastes. Only one country whose Constitution contains the principle of proportionality considers that this mandate openly affects the legislation on radioactive wastes.

4.8 Limitation of production of waste

4.8.1. Environmental legislation. Although this is not a general environmental principle, it is a key objective in all radioactive waste management policies. The limitation of waste production is generally accompanied by actions promoting the recycling and valuation of waste materials. In this respect, the principle is often formulated as the principle of waste production minimization. All the countries consulted have incorporated the principle in their legislations. Similarly to what occurs with other principles, the countries that have an Environmental Code – three – generally include the principle. The rest contemplate it
explicitly in their standards pertaining to the waste sector or in their general environmental protection legislation.

4.8.2. Legislation on radioactive wastes. The obligation on limiting the production of radioactive wastes is an objective in all the countries consulted. Three countries have incorporated this principle in their nuclear energy laws. Significant in these cases is the fact that the laws have been passed in the last ten years, and that they may be considered as possibly being the most innovative in this sector. Another country expressly applies this principle in the regulations through which radioactive waste management is enacted, and links its instrumentation to the requirement for management optimization. The rest of the countries indicate that limiting wastes is a requirement of their management practices.

In one case, the responsibility falls to the national radioactive waste agency. In a second country waste limitation is one of the objectives of strategic management plans, and a third considers the issue to be legally contemplated as a result of the new energy law, and that it will be improved upon with the regulation on sustainable development currently in the preparation phase.

4.9 Sustainable Development Principle

Sustainable Development is possibly one of the latest principles to be incorporated in environmental protection tasks. This Megaprinciple has received backing especially since the Declaration of Rio in 1992, although there are previous references in numerous international texts, for example in a number of European Community considerations and plans. Its definition may be considered to have multiple facets and, in the strictest sense, to be diffuse.

As from Rio 92, and in subsequent work carried out within the framework of PNUMA/UNEP, the concept of Sustainable Development is understood as being a “general paradigm belonging essentially to the field of economic science”. Its objective is to include environmental costs, which are generally not internalized, in the process of economic and social decision-making. It should be added, however, that this approach aims to be universal such that the entire spectrum of situations and stages of economic and social development of our planet be addressed. Consequently, it includes the idea that protection of the environment is a part of the process of development and, vice versa, that poverty, quite apart from being unacceptable from the point of view of ensuring decent conditions for human beings, is one of the most aggressive ways of affecting the environment. In this respect, the principle does not address simply the harmonization of economy, social development protection of the environment, but also appeals to moral values such as solidarity, this being an absolute necessity for the achievement of the ethical demands of intra-generational equality.

Furthermore, the Principle of Sustainable Development aspires to be transcendental. It shares the goals of the right to a healthy environment, extending its obligations to cover specifically the generations of the future and, in general, the continuity of mankind. In this respect it incorporates the demand for inter-generational equality into the requirements and need for a healthy environment as a condition and a fundamental right of all human beings.

In view of these considerations, the difficulties involved in expressly and specifically defining this principle may be easily appreciated. In assessing the degree of compliance by the national legislations, the INLA WG5 has taken into account the reflections of the European Union in this respect. It should be remembered that the EC Treaty assigns to the Community the mission of promoting “a sustainable and non-inflationary growth respecting

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the environment. The EC has been reluctant to legislate in this respect, aware of the fact that today the conditions of sustainable development require a pragmatic approach and that this principle is, in the first instance, a criterion of re-ordering policies. The 5th European Union Action Programme “Towards sustainable development” understands this in terms of “a policy and strategy of continuous economic and social development not acting to the detriment of the environment nor of the natural resources on whose quality depend the continuation of the activity and the development of human beings”. At present there is no regulation serving as a framework for Sustainable Development or providing indicators or elements quantifying the extent to which a project is sustainable.

This does not mean that no progress is being made towards achieving the objectives of this principle, but simply that its true utilitarian and prospective nature and consensus regarding its objectives “do not currently presuppose its effectiveness and its legally binding nature”.

In order to overcome these difficulties, WG 5 has selected as an extensively and universally accepted definition that provided by the Brundtland commission: “Sustainable Development is a development satisfying the needs of today’s generation without compromising the capacity of future generations to satisfy their own needs”. The question was put to the countries consulted, which were asked to clarify how their national legislations contemplated the application of sustainable development and whether there was any jurisprudence regarding the issue. Finally, at a level more applicable to radioactive waste management, the aim was to gain insight into how the solutions of deep geological disposal and the requirement that the wastes be retrievable were considered from the point of view of their “sustainability”.

4.9.1. Environmental legislation. Six countries responded that the Principle was clearly included in their respective legal systems. Two of these countries indicated that it was contemplated in their Constitutions. A third reflected the principle in its Environmental Code and a further two referred to their different environmental laws. A single country answered that the issue was not reflected in its legislation but that it considered it to be applicable inasmuch as it belonged to the European Union and had signed the Declaration of Rio 92.

Analysis of the replies on the development of the principle in the standards shows the following orientations:

- In no case was there any mention of regulations developing the requirements of the principle.
- There is a strong opinion that the principle should be considered as a guideline for the formulation of policy programmes and strategic plans and that policies stimulating economic and social development and environmental protection measures and their economic and financial instruments are valid only to the extent to which they adhere to their rules. In this respect, one of the national correspondents pointed out that there is an important discussion going on in his country regarding the appropriateness of the principle’s being regulated by the courts of justice.
- A second tendency underlines multiple references to the requirement for sustainable development in the legislation governing land management and planning and land usage. In this respect, the local and municipal authorities play an outstanding role and the formulation of sustainable development is widened to include express

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7 European Union. 5th Action Programme.  
8 MARTÍN MATEO, Ramón. Opus cit.  
9 Report by the Brundtland Commission.
mention of the shared objectives of satisfying social, economic and environmental needs.

- Consideration that the practical application of the concept of Sustainable Development is closely linked to the use of Environmental Impact Assessment instruments and methodologies. The countries that defend this position coincide with those that place the emphasis on development of sustainable strategies by local agents.

4.9.2. Legislation on radioactive wastes. The replies of the countries with regard to the demands corresponding to this principle are clearly polarized.

- On the one hand, once country reports that the principle of sustainable development is not included in its legislation on radioactive wastes. It points out, however, that in the energy sector, the Federal Sustainable Development Plan underlines the phasing out of nuclear energy as a policy aimed at promoting this principle.

- Two countries are of the opinion that their legislation on radioactive wastes contemplates the principle. Another country estimates that, being a principle contemplated in the Constitution, it is necessarily binding upon any legislation or sector-specific regulation. Another country replies that the precept is explicitly expressed in the case of the law on the management of high level long-lived wastes.

- Two countries, one of which does not have the principle included in its nuclear legislation, consider it to be incorporated since they have ratified the Joint Convention.

- One country reports that it has a jurisprudence relating to a case of practical application of this principle, although it is posed in terms of the principle of justification. The authorization of a reprocessing plant by the Government was the subject of a lawsuit brought by an environmentalist organization. The requesting party considered that its request was justified in the terms expressed by article 6.1 of the EURATOM Directive. The plaintiffs opposed this decision, arguing that the assessment of the economic benefits of the installation had been incorrect due to its not considering the capital costs inherent to this “practice”. The Court of Appeal finally decreed that although in this specific case the capital costs had already been spent, and could not consequently be separated, they should be taken into account for future projects in evaluating their economic feasibility.

WG5 has wanted to carry out a small survey on the influence of the concept of sustainable development on the consideration of different radioactive waste management options, especially those considered to be definitive or final. The question is beginning to be debated by the international organizations and has become especially relevant following the entry into force of the Joint Convention in 2001. The IAEA itself concluded during the Córdoba Conference in 2000 that the extended storage of radioactive wastes was not a sustainable practice and that it offered no solution for the future. WG5 has opted for the concept of retrievability in underground disposal solutions in order to gain insight into the approach being adopted by the countries when drawing up their management options.\(^{10}\)

The replies received point to this being a subject of great interest and indicate that there is no common criterion when it comes to addressing the issue. The process is currently under development and the discussions at national level may be seen to reflect the controversy that exists internationally. In this respect, four countries declare that their radioactive waste

\(^{10}\) The IAEA has tackled the question of retrievability in the paper: “The long-term storage of radioactive waste: Safety and Sustainability. A position paper of international experts” Vienna 2003. The IAEA feels that “retrievability remains an option only as long as institutional controls and the necessary technical expertise exist and where a suitable alternative management option for the waste has been developed”. "Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005"
legislations do not adopt any position as regards the sustainability of the concept of retrievability in geological disposal. Three countries report that retrievability is a practice adopted by their legislation or practices. In one of these last three, the Environmental Code dictates that the definitive disposal of high level wastes must allow for retrieval. In a second of these, the nuclear energy act underlines geological disposal as being the solution to be adopted and requires retrievability. However, this country maintains that the concept of retrievability is linked to the principle of prevention and not to sustainable development. Finally, the third country comments that retrievability has been incorporated in the design of its storage facilities as a result of public consultations. This requirement is currently part of the decision-making process. The correspondent does not believe that this question responds to the demands of sustainable development.

4.10 Precautionary Principle

Related to the principle of prevention to such an extent that its existence as an independent principle might be arguable, it exceeds the latter conceptually inasmuch as it takes not only the current status of science as a reference but incorporates scientific uncertainty in decision-making in relation to the environment. In the event of possible errors resulting from a lack of scientific certainty, the decision is taken to err in the side of safety, thus reversing the burden of proof in risk management processes.

The formulation of this principle in International Law underlines a series of conditions required for its application:

- Firstly, the principle is applicable when there is a risk of serious and irreversible damage and not in the event of risks that might be weighed as minor.
- In addition, the principle is based on the lack of absolute certainty regarding risk. If there is a high or very high probability of damage occurring, the principle of prevention should be applied and not that of precaution.
- The assessment of costs should be taken into account when applying the principle, this being in all cases subjected to a test of proportionality.

In the nuclear field, and especially in radioactive waste management, the application of this principle is of particular interest, for example in the eventual case of private individuals opposing certain practices or the licensing processes of facilities.

Given the rapid progress of certain scientific disciplines, and of theoretical approaches themselves, which rebuke or permanently revise their postulates, the determination of absolute certainty in any scientific assertion is impossible on many occasions. This makes risk management, and with it the application of this principle, a delicate issue with a great many nuances.

In view of these difficulties, the modulation or interpretative bias brought to this principle by jurisprudence should be very important, to such an extent in fact that it is in judicial decisions that it is taking its full meaning. The Court of Justice of the European Communities has already issued certain determinations regarding this principle\textsuperscript{11}. Outside the area of the environment, its application has been extended to Community actions in relation to the management of risk, for example in health and foodstuffs\textsuperscript{12} or the protection of

\textsuperscript{11} For example, in its sentence on case 6/99 Greenpeace, Decision of the ECJ on 21.3.2000, Rec. I-1651.

consumers. The International Court of Justice has also voiced its opinion in relation to the principle, for example in the case of Nuclear Tests II or the Gabčíkovo-Nagymaros affair.

For this reason, in the questionnaire questions have been introduced not only on the legislative treatment of the precautionary principle, but also on cases eventually brought before the national Courts.

On occasions, the countries have replied linking the precautionary principle to that of prevention or with very similar interpretations in two cases. In three cases, there is a very explicit formulation of this principle in the standards, one more other with constitutional standing, while in others there is no specific formulation of the principle and its practice has been imposed via the jurisprudential route and EC law. As regards nuclear standards, there is no explicit formulation of the principle in any of the countries, although its consequences may be found to be implicit in the policies and practices relating to radiological protection. Interestingly, one country points to the embodiment of this principle in its law renouncing nuclear energy.

4.11 Right to access to justice in environmental matters

Access to justice or the right of individuals to appeal in environmental matters concerning them depends directly on the development of the other two principles contemplated in the Aarhus Convention, i.e.: the degree of information of such individuals and their participation in decision-making in this respect, since the exercising of legal action before the Courts is, in short, a form of participation. This right is regulated in article 9 of the Aarhus Convention.

Two aspects may be seen to be of particular interest as regards the exercising of this principle:

- That relating to active legitimization.
- That relating to the determination of the bodies before which this right may be exercised, be it an exercising of appeal by administrative procedure or a process before a judicial body, and in the latter case the determination and consequences of the jurisdictional order.

A brief analysis of both is presented below. In general, greater emphasis is laid on the environmental legal perspective than on the nuclear, since as regards the case in hand the latter presents few differences with respect to the former.

4.11.1 Active legitimization: Determination of active legitimization is the main point of interest in the development of this principle. While the Aarhus Convention, to which the States that have participated in the questionnaire are part, defines the group of private individuals legitimized for the initiation of administrative or judicial proceedings with some simplicity, the concept in fact implies major difficulties.

The notion of a public legitimized to initiate proceedings is based on the wider concept of the public having a stake holding in environmental decisions, this referring to the set of three rights regulated by Aarhus. It would be appropriate to dwell on this briefly. According to the Aarhus Convention (art. 2), the stake holding public is understood as being the public

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16 On being asked about the application of this principle in the specific field of Nuclear Law, all the countries except one stated that the reply given in the environmental domain was applicable.
17 All have signed the Aarhus Convention. For the moment, it has been ratified by all except by Switzerland.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
affected by or potentially affected by decisions taken in relation to the environment or that has an interest to raise in decision-making.

The Convention expressly includes in this group those non-governmental organisations working in favor of the environment. From the wording it may be gathered that these organizations must be involved specifically in the protection of the environment, as a result of which, for example, the coverage by the definition of a generic involvement in favour of human rights or of local neighborhood interests might be doubtful. Furthermore, and what is more important, the Convention allows the States to impose requirements restricting or limiting the active legitimization of such associations.

In addition, the Aarhus Convention itself (art. 6, section 5) points out that each party should, where appropriate, encourage anybody having the intention of submitting a request for authorization to identify the public affected, inform the said public of the objective of the request to be submitted and undertake debate with it prior to submitting the request. By virtue of this precept, the economic actors themselves – in our case the nuclear operators – may contribute to clarifying the concept. However, leaving the actors to undertake complete definition of the limits would be contrary to the very spirit of the Convention, the aim of which is to establish objective mechanisms for determination of the affected public.

Article 6 of Aarhus refers to public participation more than it does to access to justice. This means that even before initiating the process it is advisable to clearly determine the concept of the affected public, and that such determination constitutes an important clue as regards active legitimization were the process to occur.

In view of the replies received in response to our questionnaire, we might present the following considerations:

1. The exercising of this right is not denied to the affected public in the strictest sense, this almost constituting an axiom among the countries consulted. The notion of the affected public in the strictest sense has been enunciated in the form of “direct economic interest”, special interest or “sufficient interest”, all of these denominations being understood as oriented towards the same thing. As a result, active legitimization is quite clear in the case of a private individual affected by a given project for reasons of vicinity, for example, in the case of construction of a radioactive waste management facility. Occasionally, it is even a requirement in certain processes that there be appeal to property rights affected by a given activity.

2. As we move further away from a specific interest based on direct vicinity or affected property, we will encounter greater difficulties in legitimizing diffuse interests as regards environmental processes. For example, certain representatives indicate specifically that as regards active legitimization it is not possible to use arguments based simply on concern for the environment or on competitive disadvantage due to the environmental management of a commercial rival. In this respect, another reply expresses its disappointment at the fact that costs of the process and the possibility of the plaintiff being condemned to pay such costs act as an important barrier removing the incentive for anybody wishing to exercise the right to access to justice in relation to the environment – the same reply announces a legislative modification in this respect in the near future.

3. Active legitimization commonly extends to environmental organizations, which are normally required to be dedicated specifically to protection of the environment (three cases). Certain countries formulate additional requirements, such as a certain accreditation by way of national registers.

4.11.2 Determination of the administrative or judicial body: The Aarhus convention recognizes the right to appeal, both before the ordinary Administration as a result of decisions
by the administrative bodies, and before Justice. In the first case, this right relates to the right of the parties administered to oppose the acts of their Administration, while the second commonly relates to the right to effective access to justice. The questionnaire has had effect in this second case.

An effective access to justice judicial and the right to a fair trial is generally recognized at constitutional level in the States that replied to the questionnaire. As regards nominalization of the process, the replies come straight to the point in underlining the possibility of initiating criminal proceedings before the environmental crimes commission or of taking the contentious-administrative route for acts or omissions of the Administration. The civil route appears to be more restricted, and it is specifically here that the restrictions on active legitimization referred to in the previous point are encountered.

4.12 Public Participation in the decision-making process

The Right to Public Participation in environmental decision-making especially links environmental and human rights. Compared to former approaches, in which the rights of the citizen conclude with access to information, the right to participate takes a further step in recognizing the right to participate in the management of public affairs, on the one hand, and, on the other, provides additional instruments for the sustenance and better achievement of the individual right to a healthy environment. In view of the above, it is possible to state that: a) the right to participation in environmental affairs is contemplated as a specific component of the right to participation in general; b) that participation in environmental questions complements the full operation of democratic rule of law and shares terrain with the tasks of Public law; and c) makes the citizen co-responsible for environmental protection tasks.

Following a period during which the Right to Public Participation was vague and diffuse in its scope, the entry into force of the Aarhus Convention in 2001 favored a more specific and objective understanding. The Convention establishes the basis and conditions for the implementation of mechanisms for participation in particular processes and allows for participation at the beginning of decision-making processes. Particularly noteworthy is the effort to integrate the public when options are open through the requirement for practical provisions promoting participation in the drawing up of plans and programmes relating to the environment. Aarhus rightly considers that the exercising of the right to public participation in environmental decision-making brings with it the need to improve environmental education and increase awareness of environmental problems.

WG5 has made several detailed studies of aspects relating to the processes of public participation in radioactive waste management. At the Helsinki in 1994 and the Congress held in Cape Town in 2003, WG5 analyzed forms of public allegation in waste disposal facility sitting processes and the possible incompatibility between different legislations in relation to such arrangements. The question once again is seen to be linked to environmental principles overall and its inclusion in the regulations governing radioactive waste management. In this case the application of the principle of Public Participation is wider in scope. Following the adoption of Aarhus and the entry into force of its application in other supranational legislations, such as Community Directive 2003/35/CE, of May 26th 2003, Public Participation is required to cover at least the following assumptions:

a) Participation by the stakeholder public whenever a decision-making process is initiated, with the possibility of its pertinent observations and opinions being submitted in writing or through public hearing or investigation.

b) Participation of the public in the drawing up of plans and programmes relating to the environment, within a transparent and equitable framework.
c) Participation by the public during the preparation of regulatory provisions or standards instruments of general application.

4.12.1. Environmental legislation. All the countries surveyed include the principle in their legislations, although one of them manifests that it is not specifically differentiated from common administrative procedure. Within the scope of the environmental legislations, one of the countries consulted replies that the Principle is part of its constitutional texts, and another that it is included in its Environmental Code. The rest of the countries, except for the last above mentioned, include the Principle in different sector-specific laws and decrees.

As regards the forms of participation, the replies received indicate as follows:
- All the countries contemplate Environmental Impact Assessment (EIA) for projects and the system of Strategic Assessment of the Environmental Impact of Plans and Programmes (SEA).
- Two countries refer to mechanisms for public surveys or debates different from those foreseen in the Environmental Impact regulations.
- Three countries refer to standards regulating the arrangements for allegations.
- Two countries refer to professional and institutional forms of participation of a consultative nature, of the environmental council type. In one case, these are general in nature, while in the other sector-specific objectives are also underlined (Water, National Parks, etc.).

Overall, it is noteworthy that the development in the standards of the precepts of the principle of public participation should be considered to be evolved and abundant in the legislations on land use and territorial planning, on the one hand, and in the legislation regulating urban development and environmental permits at municipal level, on the other. In this second case, the countries refer to the possibilities for strong interaction between the citizens and the local authorities and communities.

4.12.2. Legislation on radioactive wastes. The principle of public participation has been transferred to the legislation on wastes in all the countries participating in the questionnaire. In the replies a clear relationship may be observed between the hierarchical rank of the standards of enactment and the degree of definition and progress of the definitive waste disposal programmes and strategies, especially those relating to spent fuel and high level wastes. For example, one country reports that the principle is explicitly contemplated in its Environmental Code for all issues relating to arrangements for its high level wastes underground laboratory. Another country refers to its public administrative procedure and to the right included in the Nuclear Energy Act to object to proposals regarding new nuclear facilities. Three countries refer openly to the regulations on Environmental Impact Assessment as a mechanism for participation, without prejudice to other possibilities such as public allegations. This confirms the level of rooting of the EIA, which is repeatedly configured as a standard belonging intrinsically to nuclear legislation. The standards on land planning are another of the areas underlined for the development of public participation.

The questionnaire attempted to gain insight into special formulae specifically promoting participation in decision-making processes regarding radioactive waste management. The issue is relevant inasmuch as the trend at international level – a trend that has provided positive achievements – is to bring about maximum public involvement in these processes. WG5 is aware of initiatives in countries that have regulated the right to veto waste facility sites by the affected populations that have culminated with the approval of a repository. In other countries this same system has also made it possible for progress to be achieved with site selection programmes. At national level, one country has used the formula of public consultation to reorient its national policies and management systems. Among the countries
consulted, one quotes “public debate”, the organization and development of which are included in its legal system. The debate will be used in discussions on the research performed over the last 15 years, which is required to provide specific proposals on the definitive management of high level wastes next year. The debate first aims to dispel public reluctance regarding the question of nuclear waste and secondly to contribute to defining the democratic process of decision-making subsequent to the debate. The same correspondent also underlines the importance of another legal instrument, public polls, indicating that tacitly a negative result is binding as regards the implementation of a nuclear installation. Another country includes in the regulations enacting its Nuclear Energy law a special plan for public participation in the licensing of geological repositories. A third country reports that its current General Radioactive Waste Plan issued by the Government emphasizes the need to promote public participation, although no standards yet exist in this respect.

5 MAIN FINDINGS AND CONCLUSIONS

- In most of the cases, international environmental law and radioactive waste international legislation share outstanding principles.

- WG 5 have found two cases – the principle of right to public participation in decision-making and the principle of right to access to justice – where the legislation on radioactive waste and the international law on environment have not been developed in the same way. The Joint Convention on safety of spent fuel and radioactive waste management does not provide the obligation of consulting the public, but solely to provide information. The Convention does not envisage the possibility of an individual to challenge a decision on sitting facilities for managing radioactive waste or spent fuel.

- In a third situation, the principle of right to public information, as presented in the Joint Convention was developed in a limited way. There is also a lack of a clear implementing scheme for this principle in the Convention.

- The three inconsistencies above may be overruled when considering that the provisions of the Aarhus Convention are directly applicable to activities concerning nuclear facilities and radioactive waste management. These two sectors are in Annex 1 of the Convention which lists all the activities regulated by the treaty.

- On the other hand, the way the principle of prevention is approached in the international legislation on waste management is more comprehensive that it is in environmental law. Although the aim of both kind of a law is mainly prevention oriented, environmental legislation needs to take into account real possibilities for application, the right “tempo” to implement the different measures and policies and the specific needs of those countries in an early state of development. Waste management legislation is strict on that. It clearly conditions the practices to be undertaken to fulfilling the necessary measures in order to avoid damages as soon as activities begun. A proper sample of this could be found when looking how the two laws address the principle of fair distribution/proportionality. While this principle is deep at the centre of actions for sustainable development, nuclear legislation does not enshrine it due to the specific nature of radiological risks and therefore to the highest priority given to safety in the nuclear field. International environmental law and international radioactive waste management are not consistent on this point.
Among the countries consulted, and from the point of view of environmental legislation, certain of these principles are of constitutional standing in practically all cases - this is the case for the right to a healthy environment, the right to information in the general sense and the principle of cooperation, in the sense both of international cooperation and of cooperation by the authorities in achieving objectives associated with the environment, especially in federal systems.

A second category of principles consists of those that are contemplated either by the constitutional texts of the States or by common environmental legislation. This is the case for the principles of sustainable development and of the polluter pays.

The remaining principles are typically regulated at the environmental legislative level, without being explicitly reflected in the Constitutions of the States. This is the case for the principle of public information on environmental matters, prevention – and in relation to this principle, that of environmental impact assessment – and the precautionary principle.

The principle of proportionality is not generally formulated in the constitutional texts of the States, nor does it receive any explicit formulation at State legislative level, and is considered to be applicable only to the extent to which it impregnates or gives meaning to the Rules as a general principle of International Law.

Finally, the principles formulated in Aarhus are included at both the constitutional and legislative levels, albeit with different degrees of development. Normally, these principles are enounced generically in the Constitutions as fundamental rights, and are developed specifically in the environmental legislation, and in certain cases acquire some degree of specificity in nuclear legislation.

As regards the nuclear legislation, it may be appreciated that the principles of cooperation and proportionality are applicable only when covered by the environmental or State legislation, within a more general framework. Explicitly formulated in the nuclear legislation, and even in that referring to radioactive wastes, are the principles of the right to a healthy environment, sustainable development, prevention and environmental impact assessment, polluter pays, limitation of waste production, environmental information and participation in decision-making. The principle of access to justice – in relation to active legitimisation, i.e. the determination as to who has the right to initiate action before Tribunals – shows little variation in relation to environmental and nuclear matters.
6 **ANNEXS**

6.1 **Table demonstrating the concordance of the Joint Convention with international environmental principles**

<table>
<thead>
<tr>
<th>№</th>
<th>Principle</th>
<th>Origin</th>
<th>Articles concerned</th>
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<tbody>
<tr>
<td>1</td>
<td>Healthy environment</td>
<td>Stockholm, Rio</td>
<td>Preamble (xv), Article 4 (iv), Article 7 (i), Article 11 (iv), Article 14(i)</td>
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<td></td>
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<td>Article 24(1)(iii)</td>
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<td>2</td>
<td>Sustainable development</td>
<td>Rio</td>
<td>Article 1(ii), Article 4(vi) and (vii), Article 11(vi) and (vii)</td>
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<td>3</td>
<td>Prevention principle</td>
<td>Stockholm, Rio + ILC 2001</td>
<td>Article 1, Article 4, Article 7(iii), Article 11, Article 14(iv), Article 17(iii), Article 24(1)(iii) and 3</td>
</tr>
<tr>
<td>4</td>
<td>Precautionary principle</td>
<td>Rio</td>
<td>Not included</td>
</tr>
<tr>
<td>5</td>
<td>Polluter-pays</td>
<td>Rio</td>
<td>Only indirect references</td>
</tr>
<tr>
<td>6</td>
<td>Co-operation</td>
<td>Rio + ILC 2001</td>
<td>Preamble (ix) Article 1(i), Article 4(iv), Article 6(1)(iv), Article 11(iv), Article 13(1)(iv)</td>
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<td>7</td>
<td>Environmental Impact Assessment principle</td>
<td>Rio + ILC 2001</td>
<td>Articles 6(1)(ii) and (iv), Article 8, Article 13(1)(ii) and (iv), Article 15</td>
</tr>
<tr>
<td>8</td>
<td>Fair distribution/Proportionality</td>
<td>Stockholm, Rio</td>
<td>Not included</td>
</tr>
<tr>
<td>9</td>
<td>Public information</td>
<td>Rio + ILC 2001</td>
<td>Preamble (iv) Article 6(1)(iii), Article 13(1)(iii), Article 34</td>
</tr>
<tr>
<td>10</td>
<td>Public participation in decision-making process</td>
<td>Rio</td>
<td>Not included</td>
</tr>
<tr>
<td>11</td>
<td>Access to justice</td>
<td>Rio</td>
<td>Not included</td>
</tr>
<tr>
<td>12</td>
<td>Limitation of production (waste)</td>
<td></td>
<td>Article 4(ii), Article 11(ii)</td>
</tr>
</tbody>
</table>

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19 However, Articles 2(i), 21 et 22(ii) and (iii) can be considered to express this principle.

20 This is not universally acknowledged as a general principle of environmental law but it is a fundamental principle of waste management. Consequently it has been examined here.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
### 6.2 Summary of national answers to the principles in environmental law

<table>
<thead>
<tr>
<th>Principle</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy environment</td>
<td>Numerous Acts, not mentioned at constitutional level</td>
<td>At constitutional level and also in Environmental Code</td>
<td>At constitutional level</td>
<td>Not explicitly</td>
<td>At constitutional level and in the Environmental Code</td>
<td>At constitutional level</td>
<td>At constitutional level</td>
<td>At constitutional level and transposed to regional legislation</td>
</tr>
<tr>
<td>Sustainable development</td>
<td>In urban planning law and EIA development</td>
<td>At constitutional level and also in Environmental Code</td>
<td>Not explicitly</td>
<td>At constitutional level</td>
<td>In Environmental Code</td>
<td>In various environmental Acts</td>
<td>In various environmental Acts</td>
<td>At federal and regional legislation levels</td>
</tr>
<tr>
<td>Prevention</td>
<td>In various environmental Acts</td>
<td>At constitutional level and also in Environmental Code</td>
<td>Important in the Environmental Code</td>
<td>Explicitly in the Environmental Code</td>
<td>In various environmental laws</td>
<td>In various environmental Acts</td>
<td>In various environmental Acts. Case law also exists concerning the application of the principle in EIS.</td>
<td>At federal, regional and sector legislation levels</td>
</tr>
<tr>
<td>Precaution</td>
<td>Reply merges with the principle of prevention</td>
<td>Via EC Treaty. Otherwise, explicit only in law on foodstuffs</td>
<td>Not explicitly, but interpretation close to the principle of prevention</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly</td>
<td>Explicitly in Environmental Code</td>
<td>Not explicitly. Requirements to research, monitor and prepare to respond to potentially hazardous situations.</td>
<td>Explicitly in regional environmental legislation</td>
</tr>
</tbody>
</table>
### Polluter pays

<table>
<thead>
<tr>
<th>Principle</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>At constitutional level and also in Environmental Code</td>
<td>In waste legislation</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly in several environmental Acts</td>
<td>Explicitly at federal and regional legislation levels</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Cooperation

<table>
<thead>
<tr>
<th>Principle</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generically in the international context but not in the environmental legislation</td>
<td>Inter-regional cooperation in the Constitution. Yes in the international context</td>
<td>Explicitly in the sense of cooperation between economic agents and the State</td>
<td>Explicitly in the Environmental Code</td>
<td>Explicitly yes, requirements for co-operation or sharing of regulatory jurisdiction between federal, state and local governments.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Environmental Impact Assessment

<table>
<thead>
<tr>
<th>Principle</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>In specific Acts</td>
<td>In the Environmental Code and specific Regulations</td>
<td>In specific Acts</td>
<td>In Environmental Code and specific Regulations</td>
<td>Explicitly in several regional Acts</td>
<td>In specific regional legislation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Proportionality

<table>
<thead>
<tr>
<th>Principle</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Mentions only of EIA conditions</td>
<td>Yes, merged with the principle of cooperation</td>
<td>At constitutional level</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No except in relation to other principles</td>
<td></td>
</tr>
</tbody>
</table>

### Public Information

<table>
<thead>
<tr>
<th>Principle</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>In two types of laws: on general freedom of information and specifically environmental information</td>
<td>At constitutional level and in Environmental Code</td>
<td>Yes, via direct transposition of the EC Directive</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly in several Acts</td>
<td>Explicitly in main regional environmental laws</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
### Public Participation

<table>
<thead>
<tr>
<th>Public Participation</th>
<th>In various environmental laws</th>
<th>At constitutional level: collaboration in environmental protection considered obligatory. At legislative level in decision-making process.</th>
<th>In sector-specific legislation and in general State Law</th>
<th>Not specifically environmental nor differentiated from common administrative procedure</th>
<th>Yes, in Environmental Code in Explicitly</th>
<th>Yes, in several environmental Acts and in general State Law</th>
<th>Reply merges with that on public information. Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle</td>
<td>United Kingdom</td>
<td>France</td>
<td>Spain</td>
<td>Switzerland</td>
<td>Slovenia</td>
<td>Hungary</td>
<td>USA</td>
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<td>--------------------------------------------</td>
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<td>-----</td>
</tr>
<tr>
<td><strong>Access to Justice</strong></td>
<td>In any case in Criminal Law or in State Law in the event of omission. In Civil Law, requirements of direct economic interest and vicinity. Possible costs act as deterrent. System under reform</td>
<td>Environmental Code awards active legitimization to Associations. Generally, direct economic interest is a requirement</td>
<td>In any case in Penal Law or State Law in the event of omission. In Civil Law, appeal to breach of right, such as property</td>
<td>Generally, right to access in Constitution. In Environmental matters a special interest is required: reasons such as &quot;concern&quot; or competition not valid. Right of associations conditioned to application of EIA and other requirements of constitution</td>
<td>In Environmental Code</td>
<td>Yes</td>
<td>Yes, for those directly affected. Some specific environmental laws enable a general right of litigation for those not directly affected.</td>
</tr>
<tr>
<td><strong>Limitation on waste production</strong></td>
<td>Yes, in policy / strategy and in regulations on packaging</td>
<td>Explicitly in Environmental Code</td>
<td>In legislation on wastes</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly in Environmental Code</td>
<td>Yes in specific Act.</td>
</tr>
</tbody>
</table>
### 6.3. Summary of national answers to the principles in nuclear law and legislation on radioactive waste management

<table>
<thead>
<tr>
<th>Principles</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Healthy environment</strong></td>
<td>In many laws since the 1946 Atomic Energy Act</td>
<td>Understood, albeit not explicitly</td>
<td>Yes, in the nuclear energy act(widest sense)</td>
<td>Understood, albeit not explicitly</td>
<td>Yes, in the widest sense</td>
<td>Yes, explicitly</td>
<td>Not explicitly, although derived from the constitutional purposes</td>
<td>Understood, albeit not explicitly</td>
</tr>
<tr>
<td><strong>Prevention</strong></td>
<td>Yes, in Nuclear Law, in connection with the right to a healthy environment</td>
<td>Not explicitly, unless in connection with EIA</td>
<td>Not explicitly, unless in connection with EIA</td>
<td>Explicitly, as a principle governing the use of nuclear energy</td>
<td>Explicitly, as a principle governing the use of nuclear energy</td>
<td>_</td>
<td>Explicitly, as a principle governing the use of nuclear energy</td>
<td>Not as such, but implicit in other laws. Also in the ONDRAF institutional Decree</td>
</tr>
<tr>
<td><strong>Precaution</strong></td>
<td>Reply reflects merge with the principle of prevention</td>
<td>Not explicitly, but present in radiological protection principles. Case Law only for foodstuffs</td>
<td>Not explicitly, but the interpretation is close to that of prevention</td>
<td>Not explicitly, but present in radiological protection principles. No Case Law</td>
<td>_</td>
<td>_</td>
<td>Not explicitly. Nuclear licensees must demonstrate &quot;reasonable assurance&quot; of compliance with the standards.</td>
<td>Not explicitly, but embodied in a law on the progressive phasing out of nuclear energy</td>
</tr>
<tr>
<td><strong>Polluter pays</strong></td>
<td>Yes, in legislative development and especially the Energy Act of 2004.</td>
<td>Yes, in the electricity industry act and in the organization of Enresa</td>
<td>Yes, in the electricity industry act and in the organization of Enresa</td>
<td>Explicitly</td>
<td>Explicitly in nuclear law</td>
<td>Explicitly in nuclear law</td>
<td>Explicitly in several Acts affecting radioactive waste management facilities.</td>
<td>Explicitly in nuclear law</td>
</tr>
<tr>
<td>Principles</td>
<td>United Kingdom</td>
<td>France</td>
<td>Spain</td>
<td>Switzerland</td>
<td>Slovenia</td>
<td>Hungary</td>
<td>USA</td>
<td>Belgium</td>
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<td>-----</td>
<td>---------</td>
</tr>
<tr>
<td>Cooperation</td>
<td>Yes, generically</td>
<td>Not explicitly</td>
<td>Not explicitly</td>
<td>Not explicitly, but incorporated in application of the law (cooperation between economic agents and the State)</td>
<td>Not explicitly</td>
<td>–</td>
<td>Not explicitly. Some provisions regarding state cooperation or oversight exist.</td>
<td>Explicitly, as regards inter-regional responsibility for radioactive wastes</td>
</tr>
<tr>
<td>Environmental Impact Assessment</td>
<td>Yes, in licensing laws</td>
<td>Yes, in licensing laws referring to general EIA legislation</td>
<td>Yes, in licensing laws referring to general EIA legislation</td>
<td>Yes, in licensing laws referring to general EIA legislation</td>
<td>Yes, in licensing laws</td>
<td>Yes</td>
<td>Yes, in specific Act on Nuclear Waste Policy</td>
<td>Yes, in licensing laws</td>
</tr>
<tr>
<td>Proportionality</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes, inasmuch as it is present at Constitutional level</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Public Information</td>
<td>Yes, in direct application of the system foreseen for the Environment</td>
<td>Yes, in direct application of the system foreseen for the Environment and also in waste regulations</td>
<td>Not explicitly; yes in institutional regulation</td>
<td>Explicitly, with greater emphasis in the case of wastes</td>
<td>Explicitly in nuclear law</td>
<td>Explicitly in nuclear law</td>
<td>Yes, there are requirements for reporting to the public</td>
<td>Yes, in the ONDRAF institutional Decree</td>
</tr>
<tr>
<td>Public Participation</td>
<td>Yes, in licensing laws</td>
<td>Yes, in application of Environmental Law and especially for HLW. Two types: public debate and public consultation</td>
<td>Merged with law on information: asking questions and participating in consultation bodies. No explicit legal provisions (present only in policy/strategy).</td>
<td>Yes, as right to object under nuclear law. Also specifically for geological repositories</td>
<td>Only implicitly in nuclear law, but present through Environmental Law</td>
<td>Explicitly. No specific provisions on waste management; should be understood in terms of generic nuclear energy provisions</td>
<td>Yes, in Atomic Energy Act and State Federal Law</td>
<td>Reply merged with previous issue (public information): yes</td>
</tr>
<tr>
<td>Principles</td>
<td>United Kingdom</td>
<td>France</td>
<td>Spain</td>
<td>Switzerland</td>
<td>Slovenia</td>
<td>Hungary</td>
<td>USA</td>
<td>Belgium</td>
</tr>
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<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Access to Justice</td>
<td>The provisions of environmental law are generally applicable</td>
<td>The provisions of environmental law are generally applicable</td>
<td>The provisions of environmental law are generally applicable</td>
<td>Yes, in licensing law, both administrative and judicial instances and for both private individuals affected and associations</td>
<td>-</td>
<td>Yes, for those directly affected or recognized in the Nuclear Waste Policy Act.</td>
<td>The provisions of environmental law are generally applicable</td>
<td></td>
</tr>
<tr>
<td>Limitation on waste production</td>
<td>Yes, in policy / strategy and in regulation on packaging. Also in RW management practices</td>
<td>Yes, regulatory route on RW</td>
<td>Yes, in policy / strategy and in regulation on packaging. Also in RW management practices</td>
<td>Explicitly in nuclear law</td>
<td>Explicitly in nuclear law</td>
<td>Explicitly in nuclear law</td>
<td>No explicitly in Law.</td>
<td>Yes, in the wide sense in the ONDRAF institutional Decree</td>
</tr>
</tbody>
</table>
6.4 Questionnaire sent to WG5 country correspondents.

INLA Working Group V
Radioactive Waste Management


WG5- COUNTRY QUESTIONNAIRE

Topic: “How and to what extent are the principles of international environmental law applicable to radioactive waste management law?”


1. General remarks

The questionnaire below has been designed by a selected group of WG5 members to carry out a survey on the compliance of national legislation with the main principles of international environmental law when these are applicable to radioactive waste management.

To facilitate its completion, the questionnaire is based on a previous analysis of the situation at international level which identified some twelve major principles (please find attached the document entitled “International Law, Principles, Codes and Guidelines. Comparison between Environmental Protection and Radioactive Waste Management”).

For each of the principles the questionnaire asks whether they are explicitly enshrined both in the national basic environmental legislation and in the national basic nuclear/radioactive waste legislation\(^{21}\). In order to avoid duplication, WG5 correspondents are

\(^{21}\) If a section or paragraph enounces the content of a principle as defined in our paper or in a very similar way, even without a direct reference to its name, please consider that this principle is “explicitly” provided for. For example, the precautionary principle would be explicitly provided for in two kinds of assertions:

1. In a section or paragraph containing the very name of the principle, such as art. 174.2 EC Treaty: Community policy on the environment (...) shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.

2. In a section or paragraph enouncing a general rule of conduct within the meaning of the principle, such as the Preamble of the UN Convention on Biological Diversity: where there is a threat of significant reduction or loss of biological diversity, lack of full
kindly asked to answer these questions referring only to their national law (including, if asked, case-law), but not to Community law, nor to international treaties in force in their countries.

The drafting group has identified a set of five principles (Sustainable Development, Precautionary Principle, Prevention Principle, Access to Justice in Environmental Matters, Public Participation in Decision-Making) whose legal understanding and application could be prevented by several factors: novelty of their enactment, lack of experience in their usage, lack of regulations developing their fundamentals, etc. All these cases could be considered to be somewhat controversial and at the centre of a prolific debate. With this in mind, the questionnaire specifically expands on them. Questions (highlighted in yellow) are essentially aimed at determining whether national case-law or other decisions are affecting this discussion.

2. **Questionnaire**

1. **RIGHT TO A HEALTHY ENVIRONMENT**
   
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.

   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

2. **SUSTAINABLE DEVELOPMENT PRINCIPLE**

   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.

   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

   How does your national legislation develop this principle? Is there any relevant experience in your national case-law (either environmental or nuclear law) concerning the application of this principle? To what extent is retrievability of radioactive waste after disposal considered to be one of the requirements to comply with the principle of Sustainable Development?

3. **PREVENTION PRINCIPLE**

   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.

   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

4. **PRECAUTIONARY PRINCIPLE**

   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.

   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

   Scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.

On the contrary, a principle can be “implicitly” present in many kinds of legal measures. In this sense, members are not expected to provide us with a teleological interpretation on the principles which underlay their legislation. However, if you feel that a non explicit treatment can be of interest for our questionnaire, we will appreciate very much your contribution.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
WG5.35

Please comment on these provisions where the principle applies to the licensing of new facilities for radioactive waste management. Is there any relevant national case-law where:
- a court or tribunal has ruled on the manner in which this principle should be implemented?
- this principle has been invoked to justify rejecting a licence for a waste facility/waste repository?
5. **POLLUTER PAYS PRINCIPLE**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

6. **CO-OPERATION PRINCIPLE**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

7. **ENVIRONMENTAL IMPACT ASSESSMENT PRINCIPLE**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

8. **FAIR DISTRIBUTION/PROPORTIONALITY**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

9. **PUBLIC INFORMATION PRINCIPLE**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

10. **PUBLIC PARTICIPATION IN THE DECISION-MAKING PROCESS**
    Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
    Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.
    Are there any specific regulations that encourage or set out procedures governing public participation in decision-making radioactive waste management other than the opening of a period of public information and the right to request further information or make observations?

11. **RIGHT TO ACCESS TO JUSTICE IN ENVIRONMENTAL MATTERS**
    Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
    Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.
    Does the Law require specific criteria to be fulfilled in order to be entitled to sue when opposed to a licensing process (such as having a direct economic interest, residence in the vicinity, certain legal form as association, etc)? Is there a single procedure to follow when
suing the operator of a facility or the Authority (Common Law, Public Law, Criminal Law, etc)?

12. LIMITATION OF PRODUCTION OF WASTE

Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.

Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.
COMMENT ET DANS QUELLE MESURE LES PRINCIPES INTERNATIONAUX DE DROIT DE L’ENVIRONNEMENT SONT-ILS APPLICABLES A LA GESTION DES DECHETS RADIOACTIFS ?

Groupe de travail 5 – Gestion des déchets radioactifs
Président(s) : Gustaaf MATTHIJS (ONDRAF - Belgique) r
Mariano MOLINA (ENRESA – Espagne)

1 INTRODUCTION


Les mesures à adopter pour assurer la conservation, la protection et la restauration de l’environnement sont par essence l’occasion d’importants textes internationaux. Plutôt que de recourir à une stratégie répressive, inévitablement vouée à l’échec, le droit international s’est orienté vers le concept de coopération entre les États, les sociétés et les populations, coopération basée sur des principes simples et fédérateurs de dimension universelle. C’est ce même esprit qui anime certaines recommandations internationales parfois appelées « soft law », que beaucoup d’entre nous perçoivent paradoxalement comme contraignantes.

Pour sa part, le droit nucléaire est apparu et s’est développé au niveau international avant le droit international de l’environnement, et bien avant que ce dernier n’acquière la dimension mondiale qu’il a aujourd’hui. Il est né du sentiment que la prévention et le contrôle des dangers liés aux rayonnements ionisants doivent faire l’objet de règles juridiques spécifiques. Sa fonction préventive s’est tout d’abord focalisée sur la population, la protection de la santé étant le principal objectif visé. Plus tard, elle s’est étendue à d’autres problématiques majeures comme la sûreté des installations, la protection de la propriété ou encore l’indemnisation des dommages. Enfin, elle a couvert de façon plus explicite la protection de l’environnement.
Le droit de la gestion des déchets radioactifs s’est, lui, développé dans presque tous les pays comme une conséquence du processus de croissance du droit nucléaire. Il partage en effet les objectifs et les principes de ce droit, et peut être considéré comme une de ses composantes. De par les domaines qu’il couvre, le droit relatif aux déchets radioactifs a pleinement participé au développement de l’interaction et de la convergence entre le droit nucléaire et le droit de l’environnement.

D’une part, ses rédacteurs ont été des pionniers, développant des méthodes pour catégoriser et manipuler en toute sécurité les déchets radioactifs, déterminant différentes phases dans la gestion des déchets, créant des schémas institutionnels interdépendants et concevant des systèmes sûrs de financement, ainsi que le droit des générations futures. Pour beaucoup, les juristes en environnement ont été les premiers à apprécier avec pragmatisme et fonctionnalité les multiples dimensions de l’objet qu’ils se chargeaient de protéger par la réglementation, ouvrant la voie à l’usage et la généralisation de concepts aussi innovants que le principe d’étude d’impact ou le principe de précaution. À présent, il existe un lien clair et objectif entre ses deux domaines du droit qui partagent dorénavant le même but, la protection de l’environnement, bien que leur développement passe souvent par des voies distinctes.

Cette situation s’explique d’autre part par la haute spécificité du risque nucléaire et des technologies de prévention associées, ainsi que par la nature polymorphe de l’environnement.


Ces remarques provoquent de nombreuses questions qui ont paru au groupe de travail n°5 (appelé dans la suite du document GT5) suffisamment importantes pour leur consacrer le présent rapport :

- Existe-t-il des différences, voire même des incompatibilités, entre le droit de l’environnement et le droit nucléaire en général ?
- Mis à part des questions formelles, peut-on considérer le droit nucléaire comme partie intégrante du droit de l’environnement ou comme une branche distincte du droit ?
- Certains préceptes de droit de l’environnement ne sont-ils pas applicables lorsqu’ils rentrent dans le champ d’application du droit nucléaire ?
ASPECTS PRATIQUES

Les questions posées en fin d’introduction ont conduit le groupe de travail 5 (GT5) à sélectionner la problématique générale sous-jacente comme sujet du rapport 2005, considérant sa portée suffisamment large et son intérêt réel pour tous les membres de l’AIDN, même non spécialisés dans la gestion des déchets radioactifs.

A l’occasion d’une première réunion à Paris en juin 2003, le GT5 a décidé d’entreprendre une analyse mettant au jour d’éventuelles incompatibilités entre le droit international de l’environnement et le droit nucléaire. Le point de départ de cette démarche a été un inventaire des textes internationaux relatifs à l’environnement, dont le groupe souhaitait qu’il soit dans un second temps complété par les textes communautaires les plus importants en la matière.

Dans cette démarche, le GT5 a particulièrement prêté attention aux points suivants :
- Bien distinguer les textes eux-mêmes des interprétations qui en sont faites,
- Ne pas se fixer d’objectifs trop ambitieux, mais concentrer l’étude sur 3 ou 4 thémes à déterminer, comme par exemple la sûreté, la sécurité ou encore le développement durable.

Se conformant à la méthode de travail habituelle, le GT5 a alors envisagé l’élaboration d’un questionnaire à destination des différents adhérents de l’AIDN afin de déterminer dans quelle mesure les droits nationaux prennent ou non en compte les dispositions de droit international précédemment sélectionnées.

Enfin, le GT entendait clore son rapport 2005 en dressant un tableau aussi exact et exhaustif que possible des incompatibilités révélées et en apportant des suggestions permettant, le cas échéant, d’y remédier.

Une seconde réunion à Bruxelles en juin 2004 a pour le GT5 été l’occasion de cibler le travail restant à faire sur la comparaison entre les grands principes inspirant le droit international de l’environnement et le droit nucléaire. Ainsi, dans la suite de l’étude, le régime juridique international relatif à la gestion des déchets radioactifs serait comparé aux principes du droit de l’environnement figurant dans les conventions internationales. Un document synthétisant les principes retenus a dans ce sens été établi à l’intérieur du GT.

Le besoin de confronter le régime international aux droits nationaux a une seconde fois été souligné. Cette étude pouvant être assez difficile à mener, pour les États fédéraux par exemple, l’analyse se devait de se concentrer sur quelques points spécifiques. Les étapes finalement retenues pour la rédaction du rapport sont les suivantes :
- Dans un premier temps, comparaison au niveau international entre les principes du droit de l’environnement et le droit nucléaire consacré à la gestion des déchets radioactifs. La convention commune signée à Vienne le 5 septembre 1997 a dans ce sens été sélectionnée comme texte pertinent de référence ;
- Dans un second temps, analyse des approches nationales. Un questionnaire sera préparé à l’intention des États, leur demandant de concentrer leur travail sur 3 ou 4 textes réglementaires nationaux importants dans le domaine du nucléaire.

La troisième réunion de Paris, en décembre 2004, a permis d’arrêter définitivement la formulation du titre du rapport à soumettre au Congrès, à savoir « Comment et dans quelle mesure les principes internationaux de droit de l’environnement sont-ils applicables à la gestion des déchets radioactifs ? ». 

A propos du questionnaire, le GT a souligné l’importance de demander aux États quels principes figurent explicitement dans leurs réglementations nucléaires nationales. Quatre principes – développement durable, principe de précaution, principe de participation et droit d’accès à la justice – ont été choisis pour faire l’objet de développements spécifiques dans le questionnaire. Ce dernier a été envoyé en mars 2005.

Enfin, une réunion restreinte a eu lieu à Paris en juin 2005 afin d’adopter le rapport définitif du GT5. Cet objectif a pu être facilement atteint grâce à l’important travail réalisé sur le plan international, et grâce à l’analyse ambitieuse faite des réponses nationales au questionnaire envoyé en mars. Les membres du GT assistant à cette réunion restreinte ont travaillé d’une part sur le projet de rapport préalablement envoyé à tous les membres du GT, et d’autre part sur les suggestions et commentaires faits à cette occasion. Le rapport définitif a ensuite été adopté, avant d’être transmis à l’organisation du congrès et d’être traduit.

3 COMPARAISON ENTRE LE DROIT INTERNATIONAL DE L’ENVIRONNEMENT ET LE DROIT INTERNATIONAL NUCLEAIRE

La présente comparaison se limite à une analyse de la situation au niveau international. Les recommandations dépourvues de force contraignante et les guides ont été pris en compte, tout comme les traités et toutes les autres dispositions contraignantes. Cette position s’explique en effet par une double réalité : d’un part, la « soft law » est une composante importante du droit international de l’environnement ; d’autre part, le droit nucléaire comprend de nombreuses normes techniques ou directives qui se retrouvent exprimées sous forme de recommandations ou de formulations générales à portée non contraignante, même dans des traités officiels. Une telle flexibilité au niveau international ne signifie pas pour autant que les règles et obligations acceptées par les parties contractantes n’auront pas de force contraignante dans l’ordre juridique national.

Pour chaque principe,

§(a) résume les principales dispositions pertinentes du droit de l’environnement,
§(b) fait référence aux dispositions correspondantes de la convention commune précitée de 1997 et des « Principes de gestion des déchets radioactifs » publiés par l’AIEA en 1995, qui sont les deux textes de portée universelle traitant spécifiquement de la gestion des déchets radioactifs,
§(c) analyse dans quelle mesure ces textes nucléaires répondent aux exigences posées par le droit de l’environnement.

L’annexe 6.1 reprend les concordances entre les principes de droit de l’environnement retenus et les dispositions de la convention commune de 1997.

3.1 Droit à un environnement sain

(a) Le droit de l’environnement a utilisé le droit de vivre dans un environnement sain comme instrument permettant la protection des ressources naturelles nécessaires au maintien de la santé et de la vie humaines. Ce droit est avant tout lié à la reconnaissance de valeurs fondamentales par des déclarations de droits et de libertés publiques.

Sources : déclaration de Stockholm, 1972 (principe 1) ; déclaration de Rio, 1992 (principe 1).
Sur ce point, la déclaration de Stockholm de 1972 (principe 1) parle d’un « environnement dont la qualité permette de vivre dans la dignité et le bien-être », tandis que la déclaration de Rio de 1992 (principe 1) évoque le « droit à une vie saine et productive en harmonie avec la nature ». La terminologie ici employée est très générale, calquée sur d’autres déclarations internationales relatives aux droits de l’Homme.

(b) La convention commune de 1997, comme la plupart des instruments de droit nucléaire, se réfère à un haut niveau de sûreté et à une protection adaptée de l’Homme et de l’environnement contre les effets nocifs des rayonnements ionisants. L’article 1 indique que les objectifs de la convention sont d’« atteindre et maintenir un haut niveau de sûreté dans le monde entier » et de « faire en sorte qu’à tous les stades de la gestion du combustible usé et des déchets radioactifs, il existe des défenses efficaces contre les risques potentiels afin que les individus, la société et l’environnement soient protégés, aujourd’hui et à l’avenir, contre les effets nocifs des rayonnements ionisants ».

Les articles 4 iv), 7 i), 14 i) et 24 1. iii) de la convention font référence à ce droit en mentionnant explicitement la protection de l’environnement.


(c) Tout l’objectif de la gestion des déchets radioactifs est précisément la protection de l’environnement. Dans ce sens, les règles relatives à la sûreté nucléaire et à la radioprotection qui sont applicables aux déchets radioactifs sont nécessairement plus rigoureuses que des déclarations générales sur l’obligation de préserver un environnement sain.

3.2 Principe de prévention

(a) Le principe de prévention part du postulat suivant : certaines activités affectant l’environnement passent souvent inaperçues, du fait que les effets de leur impact ne sont visibles que longtemps après leur exploitation, et souvent qu’au moment où leurs conséquences sont irréversibles.

Ce principe invite à ce que des mesures soient prises aussi tôt que possible, dès qu’il est clair qu’un projet aura un impact sur l’environnement. Il favorise également la prise de mesures liées aux sources d’un dommage, et non seulement aux conséquences d’une telle atteinte. Cette démarche est renforcée par le constat général que des mesures de prévention coûtent souvent moins chers que des mesures de réparation, même si ces deux types de mesures ne s’excluent pas.

Les réglementations relatives à l’exigence d’études d’impact environnementales lors de l’élaboration de grands projets et de construction ou modification d’installations ayant un impact potentiellement important sur l’environnement sont fondées sur le principe de prévention.

Ce principe signifie également que les meilleures techniques disponibles doivent toujours être choisies. Cependant, le critère d’acceptabilité économique des choix techniques est souvent requis, en particulier eu égard au principe de proportionnalité.

Sources : déclaration de Stockholm, 1972 (principe 21) ; déclaration de Rio, 1992 (principe 2) ; traité établissant l’Union européenne (article 174).

Faisant l’objet d’un article commun dans les déclarations de Stockholm et de Rio, la prévention envisagée se réfère uniquement à des dommages internationaux. La définition donnée est très générale et se doit d’être précisée par d’autres traités, de la jurisprudence et de
la doctrine.

(b) La prévention est le principal objectif de la convention commune de 1997. Une comparaison avec le droit international de l’environnement met en lumière les points suivants :

− le champ d’application de la convention commune n’est pas limité aux impacts internationaux mais couvre également la prévention des dommages nationaux ;
− la démarche préventive s’applique à tous les stades de la gestion des déchets radioactifs (articles 1, 4 et 11), ce qui implique une action très en amont ;
− les technologies utilisées doivent s’appuyer « sur l’expérience, des essais et des analyses » (article 7 iii) et article 14 iv)), ce qui équivaut au concept de « meilleures techniques disponibles » ;
− les limites d’exposition aux rayonnements ionisants doivent prendre en compte les facteurs sociaux et économiques (article 24 1. iii) et 3.).

(c) Les dispositions encadrant la prévention sont presque identiques en droit de l’environnement et en droit nucléaire. Elles peuvent être plus complètes en droit nucléaire, du fait de la sensibilité et de l’importance du sujet.

3.3 Principe pollueur-payeur

(a) Selon sa définition originale donnée dans la recommandation OCDE du 26 mai 1972 sur les principes directeurs relatifs aux aspects économiques des politiques de l'environnement sur le plan international (C 72.128) et la recommandation OCDE du 14 novembre 1974 sur la mise en œuvre du principe pollueur-payeur (C.74.223), le principe pollueur-payeur est un instrument de politique économique créé pour affecter des coûts à la protection de l’environnement (internalisation des coûts) afin d’éviter les distorsions de concurrence.

Par la suite, son champ d’application et son objectif ont été considérablement ouverts (recommandation OCDE de 1989), jusqu’à son adoption en tant que principe de droit international de l’environnement. La règle en découle fait maintenant partie de nombreuses conventions internationales portant sur la protection de l’environnement.

Bien que les rédactions varient, le pollueur doit en général supporter d’importants coûts liés à l’environnement : taxes pour financer l’action de l’État ou d’autres dépenses liée à la prévention, coûts de réparation et de restauration plus dommages intérêts en cas de pollution ou d’atteinte à l’environnement.

Cette évolution a grandement influencé le champ du droit de la responsabilité civile. Cependant, l’application du principe pollueur-payeur est limitée par plusieurs restrictions, dont la prise en compte de facteurs économiques.

Source : déclaration de Rio de 1992 (principe 16)

(b) Concernant le régime juridique applicable à la gestion des déchets radioactifs, il est clair, dans la convention commune de 1997, que l’exploitant doit supporter la totalité des coûts liés à la gestion de tous ses déchets et aux opérations de démantèlement. Ceci ressort de la responsabilité première de l’exploitant (article 21), de l’obligation de s’assurer de ressources financières suffisantes (article 22 ii) et iii)) et de la très large définition des activités liées à la gestion des déchets radioactifs et au déclassement (article 2).

(c) Nous pouvons conclure que les dispositions pertinentes du droit nucléaire satisfont à l’exigence d’intégration économique du principe pollueur-payeur.
La même conclusion s’impose concernant les implications de ce principe en matière de responsabilité civile dans la mesure où les conventions de Paris révisée et de Vienne prévoient l’entièrre responsabilité de l’exploitant pour des dommages nucléaires affectant l’environnement et causés par des déchets radioactifs, même après leur stockage.

3.4 Principe d’une étude d’impact

(a) Ce principe implique que des mesures appropriées doivent être prises afin d’évaluer l’impact potentiel sur l’environnement de certaines activités susceptibles d’avoir des effets nocifs importants sur la biodiversité, dans le but de supprimer ou de diminuer de tels effets et, si possible, de prévoir la participation du public dans ces procédures.


(b) Ce principe est repris par la convention commune de 1997 dans ses articles 6 1. ii) et iv), 8, 13 1. ii) et iv), 15. Il figure également dans les principes 2 §311 et 9 §331 de l’AIEA. Pour ce qui est de la gestion des déchets radioactifs, ce principe renvoie aux principes plus politiques de prévention et de précaution.

(c) Compatibilité avérée.

3.5 Principe d’information du public

(a) Le principe d’information du public est le corollaire du principe de participation. Il est également nécessaire à l’application des principes de prévention et de précaution.

Afin d’apporter une protection effective et efficace à l’environnement, le public a droit d’être informé sur l’état actuel de l’environnement et sur les projets qui pourraient présenter des risques potentiels. Ce principe a acquis un statut privilégié dans les problématiques environnementales.


(b) L’importance d’informer le public est reconnue par le préambule, § iv), de la convention commune de 1997. La convention prévoit l’obligation de mettre à la disposition du public des informations sur la sûreté des installations de gestion des déchets radioactifs (article 6 1. iii) et article 13 1. iii)) ainsi qu’un rapport de synthèse des réunions des parties contractantes (article 34).

(c) L’accès à l’information a toujours été un sujet sensible du nucléaire. Mais il est à noter que la convention commune apporte de nombreuses avancées dans ce sens, comparativement à la convention sur la sûreté nucléaire.

Confrontées au droit de l’environnement, les dispositions de la convention commune peuvent paraître faibles, avec le manque évident d’un mécanisme de mise en œuvre du droit reconnu à l’information. Il doit à ce propos être souligné que les activités nucléaires sont couvertes par la convention d’Aarhus (et par la directive communautaire 2003/4), au moins indirectement, si l’on considère l’article 2 de cette convention (et l’article 2 1. b) de la
directive) qui définit l’expression « information sur l’environnement » comme incluant « des facteurs tels que les substances, l’énergie, le bruit et les rayonnements […] ».

3.6 Principe de coopération

(a) Le principe de coopération n’implique pas seulement une coopération entre différents États, mais également entre l’État et le secteur économique, des associations de protection de l’environnement, des consommateurs, des producteurs, etc. Appliquer ce principe revient souvent à consulter toutes les parties prenantes. Il conduit également à préférer des solutions contractuelles à des réglementations édictées par les autorités publiques.

Dans les relations internationales, ce principe s’applique principalement aux relations Nord – Sud. Ainsi, les pays développés ont souvent le devoir d’aider les pays en voie de développement à protéger leur environnement en partageant avec eux leurs connaissances techniques.

Ce principe n’est pas spécifique à la protection de l’environnement et fait plutôt partie des principes généraux de droit international. De fait, la déclaration de Rio de 1992 promeut la coopération internationale en matière de développement durable, et non pas de protection de l’environnement per se.

Sources : déclaration de Rio, 1992 (principes 7, 9 et 27).

(b) La coopération internationale est à la base du droit nucléaire, et en particulier de tout ce qui touche à la gestion des déchets radioactifs. Il s’agit de plus de la seule catégorie de déchets pour laquelle un régime juridique international de portée universelle a été adopté, à travers la convention commune de 1997 (voir en particulier le préambule § ix), l’article 1 i), l’article 4 iv), l’article 6 1. iv), l’article 11 iv) et l’article 13 iv)) et les principes de l’AIEA de 1995 (voir en particulier le principe 3 §313).

(c) Compatibilité avérée.

3.7 Principe de proportionnalité

(a) Le principe de proportionnalité signifie que le devoir d’un État de protéger son environnement ne doit s’entendre que proportionnellement à sa capacité de le faire.

Sources : déclaration de Stockholm, 1972 (principe 23) ; déclaration de Rio, 1992 (principes 7 et 11), qui fait la distinction entre pays développés et en voie de développement.

(b) Le droit nucléaire international, y compris les dispositions relatives à la gestion des déchets radioactifs, ne prend pas en compte ce principe, du fait de la spécificité du risque nucléaire.

(c) Sur ce point, le droit international relatif à la gestion des déchets radioactifs ne respecte pas le droit international de l’environnement.

3.8 Limitation de la production de déchets

(a) Le principe de limitation de la production de déchets reprend l’objectif principal de toute réglementation relative à la gestion des déchets, à savoir la réduction maximale du volume des déchets jusqu’à leur recyclage. Ce principe n’est pas universellement reconnu comme un principe général de droit de l’environnement, mais il est sous-jacent dans l’ensemble de la gestion des déchets. C’est pour cette raison qu’il est intégré dans la présente étude.

(b) La convention commune de 1997 indique que la production de déchets radioactifs doit être aussi faible que possible (article 4 ii) et article 11 ii)), cette exigence s’entendant « compte tenu du type de politique adoptée en matière de cycle du combustible ». Il est donc instauré une claire différence entre la limitation des déchets et le retraitement du combustible, l’exigence de limiter les déchets au niveau le bas possible n’impliquant pas d’exigence de retraitement. Voir également les principes AIEA de 1995 (principe 7).

(c) Compatibilité avérée.

3.9 Principe de développement durable

(a) Le principe de développement durable impose de faire un choix relatif au mode de développement. Le développement s’entend comme permettant aux générations présentes de répondre à leurs besoins, sans cependant priver les générations futures de la possibilité de satisfaire les leurs. Ce principe est particulièrement important pour l’usage des ressources naturelles non renouvelables et les activités qui pourraient porter une atteinte irréversible à l’environnement vital des hommes et des animaux, dont l’air, l’eau et la biodiversité.

Le champ d’application de ce principe est très ouvert. Il nécessite l’identification de priorités à long terme, ainsi qu’une nouvelle définition des relations entre l’écologie, l’économie et le progrès technique.

Il favorise également une gestion de l’environnement conforme aux réglementations existantes, un développement ne pouvant être durable que s’il existe une réelle coopération entre les producteurs, les consommateurs, les citoyens et les autorités. En ce sens, une tendance très nette de la réglementation récente consiste tout d’abord à déterminer des objectifs, puis, dans un second temps, à fixer des mesures permettant de les atteindre. De même, on favorise l’utilisation d’outils contractuels et de collaboration à long terme.

Sources : déclaration de Rio, 1992 (principe 3) ; présent dans peu de conventions internationales portant sur l’environnement.

(b) Utilisant la même terminologie que le droit international de l’environnement, la convention commune de 1997 inclut pleinement ce principe dans son article 1 ii). Des règles spécifiques d’application sont détaillées dans les articles 4 vi) et vii), 11 vi) et vii).

(c) Compatibilité avérée. Le seul problème pouvant être soulevé concerne la possible obligation de prévoir la réversibilité d’un stockage de déchets radioactifs. Cette « obligation » est-elle induite par le principe de développement durable et vaut-elle également pour les autres types de déchets créant des risques à long terme ?
3.10 Principe de précaution

(a) Le principe de précaution, dont les interprétations sont multiples, est fondé sur les mêmes considérations que le principe de prévention. Ici, l'absence de certitudes, compte tenu des connaissances scientifiques et techniques du moment, sur les effets d’une substance ou d’une activité sur l’environnement, ne doit pas retarder l'adoption de mesures effectives quand il existe des indices sérieux de risques de dommages graves.

Combiné au principe de prévention, ce principe incite à l’adoption de mesures avant qu’une preuve certaine ne soit apportée du caractère dangereux d’une substance ou d’une activité. De telles mesures devraient être centrées sur l’origine des dommages potentiels, avec pour objectif de prévenir la réalisation des risques identifiés.

Le principe de précaution est apparu dans les années 1980, tiré du Vorsorgeprinzip du droit allemand. Il est mentionné pour la première fois dans le principe 11 de la Charte mondiale sur la nature de 1982, avant de devenir un principe mieux défini de droit positif dans un grand nombre de traités, en particulier dans le domaine de la protection de l’environnement marin.

Il est également entré dans le droit communautaire par le traité de Maastricht, et par conséquent dans les droits nationaux des États membres de l’Union européenne, sans pour autant qu’une définition claire en soit donnée.

Sources : déclaration de Rio, 1992 (principes 15 et 17).

(b) Étant donné le haut niveau de connaissances acquis dans les sciences et technologies nucléaires, et l’expérience tirée d’analyses de risques très poussées, les risques engendrés par l’utilisation de l’énergie nucléaire sont dans leur ensemble bien connus et appréhendés.

Pourtant, les effets sur la santé humaine de l’exposition à de faibles doses de radioactivité restent incertains ; dans ce domaine, le principe de précaution trouve une application justifiée. Cette approche a été retenue et maintenue par la Commission internationale de protection radiologique (CIPR) dans ses recommandations internationales de radioprotection ; dans un rapport ultérieur, la CIPR ira même jusqu’à reconnaître la pertinence d’une approche centrée sur la précaution.

(c) La convention commune de 1997 (article 24) se réfère aux recommandations de la CIPR. Pourtant, elle ne contient aucune disposition relative à des risques incertains et au principe de précaution.

3.11 Droit d'accès à la justice en matière environnementale

(a) Le droit d’accès à la justice en matière environnementale permet à un individu d’attaquer des décisions liées à l’environnement devant un tribunal ou devant toute autre entité indépendante et impartiale établie par la loi.


(b) La convention commune de 1997 ne prévoit pas ce droit d’accès à la justice, qui permet à une personne d’attaquer une décision relative à l’implantation d’une installation de gestion de déchets radioactifs ou de combustible usé.
(c) Au niveau international, le droit de la gestion des déchets radioactifs n’est pas compatible avec le droit de l’environnement sur ce point. Cependant, des procédures judiciaires entamées par des individus à l’encontre de décisions administratives sous l’hospice de la convention d’Aarhus (et les directives communautaires d’application susmentionnées) pourraient concerner des activités nucléaires.

3.12 Principe de participation

(a) Le principe de participation du public dans des procédures décisionnaires est étroitement lié aux caractères universel, interdépendant et irréversible de certains dommages environnementaux, qui justifie le droit de chaque personne à participer à la prise de décisions environnementales.

Selon ce principe, toute personne :
− a le droit d’accéder à l’information environnementale, y compris à des informations relatives à des substances ou activités dangereuses ;
− peut être impliquée dans l’élaboration de projets qui peuvent avoir un impact sérieux sur l’environnement ou l’aménagement du territoire.


(b) La convention commune de 1997 ne prévoit pas l’obligation de consulter le public pour la gestion des déchets radioactifs et du combustible usé, mais elle impose la réalisation d’études d’impact. Les dispositions procédurales relatives au choix de sites indiquent seulement qu’il convient de « mettre à la disposition du public des informations sur la sûreté ».

Le principe de participation n’a jamais été adopté en droit international nucléaire, de même qu’aucune disposition n’existe en la matière pour la gestion des déchets radioactifs.

(c) En l’espèce, la convention commune de 1997 n’est pas compatible avec le droit international de l’environnement. Cependant, comme mentionné précédemment, la convention d’Aarhus (et la directive communautaire 2003/35) s’applique explicitement, pour ses dispositions relatives à la participation du public, aux activités nucléaires (voir la liste en annexe 1 : « Centrales nucléaires et autres réacteurs nucléaires, y compris le démantèlement ou le déclassement de ces centrales ou réacteurs ; installations pour le retraitement de combustibles nucléaires irradiés ; installations destinées à la production ou à l’enrichissement de combustibles nucléaires, au traitement de combustibles nucléaires irradiés ou de déchets hautement radioactifs, à l’élimination définitive de combustibles nucléaires irradiés, exclusivement à l’élimination définitive de déchets radioactifs, exclusivement au stockage (prévus pour plus de dix ans) de combustibles nucléaires irradiés ou de déchets radioactifs dans un site différent du site de production »).
4 APPLICATION DE CES PRINCIPIES DANS LES DROITS NATIONAUX NUCLEAIRES ET DE L’ENVIRONNEMENT

Le présent chapitre est scindé en deux parties. Toutes les réponses apportées par les correspondants nationaux sont synthétisées en annexe 6.2 pour ce qui concerne le droit de l’environnement, et en annexe 6.3 pour ce qui touche au droit nucléaire.

La première partie analyse brièvement les réponses apportées par les correspondants nationaux aux questions portant sur les huit principes environnementaux que le GT5 a jugé compatibles avec le droit international applicable à la gestion des déchets radioactifs. Pour chacun de ces principes, un premier paragraphe résume la position des droits nationaux de l’environnement, tandis que les droits nationaux applicables à la gestion des déchets radioactifs font l’objet d’un second paragraphe.

La seconde partie de ce chapitre est consacrée à une analyse plus détaillée des réponses nationales apportées aux questions particulières posées sur quatre principes apparus comme posant des difficultés pour leur application en droit nucléaire : le principe de développement durable, le principe de précaution, le droit d’accès à la justice en matière environnementale et enfin le principe de participation.

Le questionnaire envoyé figure en annexe 6.4.

4.1 Droit à un environnement sain

4.1.1 Droit de l’environnement

Dans tous les pays consultés, deux principes peuvent être pointés comme suscitant un intérêt particulier et étant pour les autres principes une sources d’inspiration dans de nombreux domaines. Ces super principes, comme les a dénommés la doctrine, sont le droit à un environnement sain et le principe de développement durable.

Le droit à un environnement sain apparaît, dans presque tous les pays consultés, comme un droit fondamental des peuples, lié au droit de jouir d’une vie décente et du développement. De tels droits sont souvent reconnus au niveau constitutionnel. C’est en effet ce qui ressort des réponses apportées au questionnaire : six pays ont indiqué que leurs Constitutions respectives reconnaissent le droit à un environnement sain.

4.1.2 Droit applicable aux déchets radioactifs

Seuls deux pays indiquent que ce principe est explicitement inclus dans leurs réglementations relatives à la gestion des déchets radioactifs. Dans les deux cas, il figure dans une loi sur l’énergie nucléaire. Un troisième pays signale que sa loi sur l’énergie nucléaire renvoie, indirectement et en sous-entendu, au droit à un environnement sain.

Les autres pays considèrent que leurs réglementations appliquent ce principe, soit parce qu’il est mentionné à l’échelon constitutionnel, soit parce que l’objectif principal de cette réglementation est précisément de préserver au mieux la santé humaine et l’environnement.

Pour la majorité des pays consultés, les lois et décrets relatifs à la protection contre les rayonnements ionisants font partie de la réglementation applicable aux déchets radioactifs.

4.2 Principe de prévention

4.2.1 Droit de l’environnement

Les réglementations environnementales des pays consultés ont toutes explicitement intégré le principe de prévention. Considéré comme décisif et outil décisionnaire, ce principe
a poussé les différentes activités de contrôle à se concentrer sur les activités pouvant affecter l’environnement.

Tous les pays le jugent défini et détaillé de manière adéquate, suivant en cela la définition claire qu’en a donnée la déclaration de Stockholm de 1972. Il est, dans toutes les réglementations nationales étudiées, un fondement de la protection de l’environnement. De ce fait, on le retrouve dans les législations générales sur l’environnement. Dans un des pays consultés, ce principe figure explicitement dans la Constitution et le Code de l’environnement. Dans trois autres, il est mentionné dans les Codes de l’environnement. Les pays restants indiquent qu’il y est fait référence dans une réglementation générale (exemple : lois sur la prévention des pollutions) ou dans les réglementations sectorielles (air, eau, déchets, bruit, etc.).

4.2.2 Droit applicable aux déchets radioactifs

Trois pays s’accordent à noter que leur législation nucléaire prend explicitement en compte ce principe. Pour la majorité, le cadre réglementaire applicable aux exploitants nucléaires, dont le gestionnaire de déchets radioactifs, constitue en soi un régime préventif. Deux pays vont dans ce sens en soulignant que leurs réglementations nationales relatives aux déchets radioactifs imposent la production d’études d’impact.

4.3 Principe pollueur-payeur

4.3.1 Droit de l’environnement

Tous les pays affirment que ce principe est intégré dans leurs réglementations respectives, avec un même objectif : la personne à l’origine d’une pollution doit supporter tous les coûts liés à la prévention et aux réparations, sans recevoir d’aide financière compensatrice d’aucune sorte.

Dans tous les pays interrogés, des dispositions réglementaires claires font de ce principe un élément d’internalisation des coûts de prévention et de lutte contre la pollution, contrairement à l’approche retenue par le principe 16 de la déclaration de Rio de 1992.

Le principe pollueur-payeur a été intégré dans les Constitutions de deux pays, les Codes de l’environnement de trois pays, dans le cadre réglementaire ou des codes spécifiques pour les autres pays.

4.3.2 Droit applicable aux déchets radioactifs

Les réglementations nucléaires de tous les pays consultés, à l’exception d’un, font explicitement référence au principe pollueur-payeur. Dans le pays d’exception, le principe n’est pas clairement énoncé, mais la réglementation et la pratique s’en inspirent.

Le principe apparaît dans les lois nationales sur l’énergie nucléaire sauf dans deux pays, où il figure dans la réglementation relative à l’énergie.

4.4 Principe d’une étude d’impact

4.4.1 Droit de l’environnement

La réalisation d’études d’impact est une pratique commune à tous les pays ayant répondu au questionnaire. En effet, ces études sont conçues comme un instrument fondamental tiré des objectifs de prévention de la réglementation environnementale, auxquels se sont ajoutés les concepts de participation – besoin de prendre en compte l’avis des
communautés et personnes concernées – et d’intégration – ces études nécessitent des contributions multidisciplinaires d’experts et un bilan coûts / avantages.

Trois pays ont incorporé le principe dans leurs Codes de l’environnement, les autres le faisant figurer dans des lois spécifiques de portée générale.

Bien que par nature supranationales, les évaluations environnementales sont obligatoires, pour et dans les pays appartenant à l’Union européenne, lors de l’établissement de certains plans et programmes. Les buts recherchés sont d'assurer un niveau élevé de protection de l'environnement et de contribuer à l'intégration de considérations environnementales dans l'élaboration et l'adoption de tels plans et de programmes.

4.4.2 Droit applicable aux déchets radioactifs

Tous les pays consultés ont indiqué que les réglementations nationales relatives aux études d’impact sont applicables aux principales installations de gestion de déchets radioactifs, parmi lesquelles les installations de stockage, d’entreposage et de traitement. Dans deux pays, les organisations responsables des aspects radiologiques des études d’impact sont les autorités de contrôle.

4.5 Principe d’information du public

4.5.1 Droit de l’environnement

Bien que ce principe n’ait fait l’objet de négociations qu’à l’occasion de son intégration dans la convention commune de 1997, le GT5 l’a trouvé fermement ancré dans les réglementations de tous les pays consultés. Il est à noter que tous sont signataires de la convention d’Aarhus et ont intégré dans leurs lois et développements réglementaires d’abondantes références aux exigences et avantages tirés du principe d’information du public concernant des sujets environnementaux.

Ainsi, le droit d’accéder à l’information environnementale est inscrit dans les réglementations de tous les pays consultés. Son expression est même de la plus haute importance dans deux pays, qui l’ont respectivement incluse dans la Constitution et la loi sur la liberté d’information. Deux autres pays mentionnent ce principe dans leurs Codes de l’environnement, et trois autres dans des lois spécifiques.

4.5.2 Droit applicable aux déchets radioactifs

Le principe d’information du public est manifestement inclus dans les réglementations applicables aux déchets radioactifs de tous les pays consultés. Dans six cas, l’obligation de se conformer à ce principe figure dans une loi sur l’énergie nucléaire.

Il parait en effet important que tous les pays comprennent et développent une politique d’information active pour ce qui concerne les activités de gestion des déchets radioactifs. Dans ce sens, un pays indique que ces attributions relèvent de la responsabilité de l’agence nationale chargée de la gestion des déchets radioactifs ; un autre que les exploitants nucléaires doivent fournir annuellement de l’information au public ; deux autres qu’une information systématique ressort de la compétence de leurs autorités administratives respectives.

4.6 Principe de coopération

Le principe de coopération ne s’adresse pas seulement aux relations entre États sur la scène internationale, mais également, sur le plan national, aux relations entre les différents acteurs impliqués dans la protection de l’environnement. Il est lié aux notions d’équité et de
solidarité mentionnées dans la déclaration de Rio, mais les actions en découlant ne font pas consensus. Les échanges d’informations environnementales pertinentes, la coopération en matière de recherche et développement, l’assistance scientifique et technique ou encore une notification rapide en cas de situation d’urgence sont quelques unes des applications possibles de ce principe.

Au plan national, ce principe crée pour l’État l’obligation de prendre en compte les personnes concernées ou impliquées par des décisions environnementales. Revers de la médaille, ce principe implique également le droit, voir le devoir de chacun à participer à la conservation de l’environnement.

4.6.1 Droit de l’environnement

Dans tous les pays consultés, il existe des dispositions réglementaires inspirées de ce principe de coopération et centrées sur l’international. Un pays indique que l’interprétation nationale de ce principe est inscrite dans la Constitution. Deux autres pays présentent une vision nationale du principe, tandis que dans un quatrième, les autorités gouvernementales mènent une politique active de promotion de la coopération interne. Un autre pays mentionne l’intégration de ce principe dans la réglementation environnementale via les principes d’études d’impact, d’information et de participation. Enfin, un pays signale que le principe de coopération appliqué à la gestion de l’environnement figure dans une loi sur la coopération internationale pour le développement.

4.6.2 Droit applicable aux déchets radioactifs

La plupart des pays interrogés n’ont pas explicitement repris le principe de coopération dans leurs réglementations relatives aux déchets radioactifs. Cependant, beaucoup considèrent ce principe comme effectif, dans la mesure où le rang hiérarchique des textes environnementaux dans lesquels ce principe est intégré est plus élevé que le rang des textes relatifs à la gestion des déchets radioactifs. Dans certains autres cas, les réponses renvoient aux traités internationaux correspondants.

Bien que la coopération internationale et nationale soit une pratique courante dans ce domaine, deux pays insistent sur le fait que leur réglementation oblige les autorités nucléaires et les agences de gestion des déchets radioactifs à coopérer avec les producteurs de déchets.

4.7 Principe de proportionnalité

4.7.1 Droit de l’environnement

Bien que mentionné dans la déclaration de Stockholm de 1972, le principe de proportionnalité n’a réellement pris tout son sens que dans la déclaration de Rio de 1992. Il est animé par un esprit mondial et fédérateur, qui rend les objectifs de protection de l’environnement et de développement durable accessibles à tous les États. Dans ce sens, le principe de proportionnalité transcende les politiques nationales et inspire les actions stratégiques internationales de protection de l’environnement.

C’est peut-être pour cette raison que la plupart des pays consultés a répondu ne pas avoir intégré ce principe en droit national de l’environnement, ou ne pas savoir dans quel texte réglementaire ce principe peut être explicitement visé. Dans un pays, pourtant, il fait partie des exigences mentionnées dans la Constitution et s’impose, à ce titre, à tous les textes législatifs et réglementaires. Un autre pays fait ici référence à sa législation sur la coopération pour le développement. Enfin, il convient de noter que pour deux pays, l’exigence de proportionnalité pourrait acquérir une force nationale car a) la politique environnementale va...
de pair avec les besoins de développements social et économique et b) les analyses de risques comme les études d’impact doivent être cohérentes avec l’importance des impacts étudiés et de leur possible réalisation.

4.7.2 Droit applicable aux déchets radioactifs

Seul un pays dont la Constitution reprend le principe de proportionnalité considère qu’il s’applique à la réglementation relative aux déchets radioactifs.

4.8 Limitation de la production de déchets

4.8.1 Droit de l’environnement

Même s’il ne s’agit pas d’un principe environnemental général, le principe de limitation de la production des déchets est un objectif général important de la politique de gestion de tous les déchets. Ce principe est en général assorti d’actions de promotion du recyclage et de valorisation des matériaux usagés. Dans ce cadre, il est souvent formulé comme un principe de minimisation de la production de déchets.


4.8.2 Droit applicable aux déchets radioactifs

L’obligation de réduire la production de déchets radioactifs est un objectif dans tous les pays consultés. Trois pays ont intégré ce principe dans leurs lois sur l’énergie nucléaire. Il convient à ce propos de souligner que ces lois, adoptées dans les dix dernières années, sont considérées comme les plus innovantes du secteur. Un autre pays applique explicitement ce principe via la réglementation applicable aux déchets radioactifs, et le lie à l’obligation d’optimisation des ressources. Les autres pays indiquent que la réduction des déchets est une exigence venue de la pratique.

Dans un État, la limitation de la production des déchets est de la responsabilité de l’agence nationale chargée des déchets radioactifs. Dans un second pays, la limitation des déchets est un des objectifs inscrits dans les plans stratégiques de gestion des déchets. Enfin, un troisième pays indique que le sujet est maintenant traité dans une nouvelle loi sur l’énergie et qu’il sera encore approfondi par la réglementation relative au développement durable actuellement en cours de préparation.

4.9 Principe de développement durable

Le développement durable est peut-être l’un des derniers principes à avoir été incorporé dans le droit de l’environnement. Ce super principe connaît un succès particulièrement important depuis la déclaration de Rio de 1992, bien que de nombreux textes internationaux antérieurs, dont des considérations et plan de l’Union européenne, le mentionnaient. Sa définition est polymorphe et assez peu claire pour des juristes.

A l’exemple de la déclaration de Rio de 1992 et des travaux ultérieurs menés dans le cadre du PNUE/ONU, le concept de développement durable est compris comme « un paradigme général appartenant essentiellement au champ des sciences économiques ». Son but est d’inclure les coûts environnementaux, qui ne sont en général pas internalisés, dans les
processus de décision économique et social.

Cette approche se veut résolument universelle, dans la mesure où l’ensemble des situations et phases du développement économique et social de notre planète est visé. Il engendre ainsi l’idée que la protection de l’environnement fait partie du processus de développement et, vice-versa, que la pauvreté, en plus d’être inacceptable du point de vue de la dignité humaine, est l’une des voies les plus agressives d’atteinte à l’environnement. En ce sens, ce principe ne prône pas simplement l’harmonisation de l’économie, du développement social et de la protection de l’environnement, mais en appelle également à des valeurs morales telles que la solidarité, nécessité absolue pour répondre aux exigences éthiques de l’équité intra-générationnelle.

Le principe de développement durable aspire également au transcendantalisme. Il partage les objectifs du droit à un environnement sain, en les étendant aux générations futures et, plus généralement, à la continuité de l’humanité. Ainsi, il fusionne l’exigence d’égalité inter-générationnelle aux obligations et besoins d’un environnement sain comme une condition et un droit fondamental accordé à tout être humain.

Ces quelques considérations montrent bien les difficultés rencontrées pour définir avec précision ce principe. Pour évaluer le degré de compatibilité des législations nationales, le GT5 a pris en compte les réflexions de l’Union européenne en la matière. A ce propos, il doit être rappel que le traité de l’Union européenne assigne à la Communauté une mission de « promotion d’un développement durable et non inflationniste respectant l’environnement ». L’Union européenne a toujours été réticente à légiférer en cette matière, consciente que, de nos jours, les conditions d’un développement durable nécessitent une approche pragmatique et que ce principe est, en tout premier lieu, un critère de nouvelle définition des politiques. Le cinquième programme communautaire d’action pour l’environnement « Vers un développement soutenable » le comprend comme une politique et stratégie de développement économique et social continu n’intervenant pas au détriment de l’environnement ou des ressources naturelles, sur la qualité desquelles repose la poursuite du développement des êtres humains. A ce jour, il n’existe pas de réglementation servant de cadre au développement durable et donnant des indicateurs ou éléments permettant de dire jusqu’où un projet est durable.

Ceci ne signifie pas qu’aucun progrès n’est fait pour atteindre les objectifs de ce principe, mais que sa nature réellement utilitaire et prospective, ainsi qu’un consensus autour de ses objectifs ne présupposent pas de son efficacité et de sa nature juridique obligatoire.

Afin d’aplanir ces difficultés, le GT5 a choisi de travailler sur une définition universellement acceptée de ce principe, venant du travail de la commission Brundtland : « le développement durable est un développement satisfaisant les besoins des générations présentes sans compromettre la capacité des générations futures de répondre aux leurs ».

La question a été posée aux pays consultés de savoir comment leurs réglementations nationales intègrent l’application du principe de développement durable et s’il existe des cas de jurisprudence en la matière. Concernant la gestion des déchets radioactifs, il leur a été demandé dans quelle mesure les solutions de stockage géologique et les exigences de réversibilité correspondent ou non à de la « durabilité ».

4.9.1 Droit de l’environnement

Six pays ont répondu que le principe de développement durable est clairement inclus dans leurs réglementations nationales. Dans deux d’entre eux, il figure dans la Constitution ; dans un troisième, il est repris dans le Code de l’environnement ; dans deux autres, il est mentionné dans des lois générales sur l’environnement.
Le principe n’est pas explicitement repris dans la réglementation d’un seul État, qui le considère comme applicable du fait de son appartenance à l’Union européenne et de la signature de la déclaration de Rio de 1992.

L’analyse des réponses concernant la mention de ce principe dans les réglementations nationales fait ressortir les orientations suivantes :

− Dans aucun cas il n’est fait mention de réglementations spécifiquement consacrées aux exigences découlant de ce principe,
− Selon une idée largement partagée, ce principe devrait être considéré comme une directive à suivre lors de l’établissement de programmes politiques ou de plans stratégiques. De plus, les politiques stimulant le développement économique et social, les mesures de protection de l’environnement ainsi que les instruments économiques et financiers mis en œuvre pour les atteindre ne devraient acquérir une force juridique que s’ils suivent ces règles. En ce sens, un correspondant national a souligné l’importance d’un débat national en cours pour savoir si ce principe peut être précisé et encadré par la jurisprudence.
− Une seconde tendance semble être la multiplication des références aux exigences d’un développement durable dans les réglementations relatives à l’urbanisme et à l’aménagement du territoire. Ici, les autorités locales et municipales jouent un rôle important, élargissant encore la notion de développement durable pour y inclure des objectifs partagés de satisfaction des besoins sociaux, économiques et environnementaux.
− La mise en œuvre concrète du concept de développement durable est étroitement liée à l’usage des instruments et méthodologies développés autour des études d’impact. Les pays défendant cette position sont également ceux qui mettent l’accent sur le développement de stratégies durables par les acteurs locaux.

4.9.2 Droit applicable aux déchets radioactifs

Les observations faites par les pays consultés concernant les exigences liées au principe de développement durable peuvent se résumer de la façon suivante :

− Un pays rapporte que le principe de développement durable n’est pas repris dans sa réglementation relative aux déchets nucléaires. Cependant, pour ce qui concerne l’énergie nucléaire, le plan fédéral de développement durable prévoit la sortie progressive de l’énergie nucléaire comme une politique centrée sur la promotion de ce principe.
− Pour deux autres pays, leurs réglementations relatives aux déchets radioactifs prévoient ce principe. Un quatrième pays indique que, le principe figurant dans la Constitution, son application est nécessairement obligatoire pour toute réglementation, spécifique ou non. Dans un autre pays, ce principe est explicitement repris dans une loi sur la gestion des déchets HAVL.
− Deux pays, dont un n’ayant pas inclus ce principe dans son droit nucléaire, estiment qu’il s’applique à eux de par la ratification de la convention commune de 1997.
− Dans un pays, il existe une jurisprudence relative à l’application pratique de ce principe, bien qu’elle fasse plutôt référence au principe de justification. En l’espèce, une association de protection de l’environnement a attaqué une autorisation administrative relative à une installation de retraitement. Le demandeur a fondé sa requête sur l’article 6.1 de la directive EURATOM, estimant que les bénéfices économique de l’installation n’avaient pas été correctement évalués, ne prenant pas en compte les frais financiers imputés à cette activité. La cour d’appel a finalement considéré que les frais financiers devraient être, dans les projets futurs, pris en compte.
dans les évaluations de faisabilité économique même si, dans le cas présent, ils avaient déjà été versés et ne pouvaient en conséquence être individualisés.

Le GT5 a voulu analyser plus avant l’influence du principe de développement durable sur les différentes options de gestion des déchets radioactifs, en particulier lorsqu’elles sont présentées comme définitives. Les débats relatifs à cette question ont débuté au sein des organisations internationales et sont devenus particulièrement importants depuis l’entrée en vigueur de la convention commune, en 2001. Pour sa part, l’AIEA, à l’occasion de la conférence de Cordoue en 2000, a conclu qu’un entreposage de longue durée des déchets radioactifs n’est pas une pratique durable, n’offrant aucune solution pour le futur. C’est pour cette raison que le GT5 a choisi de limiter son étude sur le concept de réversibilité à la solution de stockage géologique, voyant comment les pays ont pris en compte cette approche au moment de choisir des options de gestion de leurs déchets radioactifs.

Les réponses reçues montrent un grand intérêt pour ce sujet, en même temps que l’absence de critères communs pour l’aborder. Les discussions nationales semblent en cours, reflétant bien la controverse existant au niveau international. Quatre pays ont en ce sens indiqué que leurs réglementations applicables aux déchets radioactifs n’ont pas pris position sur le concept de réversibilité dans un stockage géologique.

Dans trois autres pays, la réversibilité a été adoptée par la réglementation ou la pratique. Dans le premier, le Code de l’environnement impose l’étude d’un stockage géologique réversible pour les déchets HAVL. Dans le deuxième, la loi sur l’énergie nucléaire indique que le stockage géologique est la solution de gestion retenue et qu’il doit être réversible. Mais ce pays lie le concept de réversibilité au principe de prévention, et non à celui de développement durable. Afin, le troisième pays signale que la réversibilité a été introduite dans l’architecture des installations de stockage suite à des consultations du public. Ici, l’exigence résulte donc du processus de décision – et donc de la mise en œuvre du principe de participation–, et non des exigences imposées par la prise en compte du principe de développement durable.

4.10 Principe de précaution

Lié au principe de prévention au point qu’il est possible de douter de son existence en tant que principe indépendant, le principe de précaution surpasse en théorie ce dernier car il ne se réfère pas seulement à l’état actuel de la science, mais également à l’incertitude scientifique dans les procédures décisionnelles liées à l’environnement. En cas d’éventuels dommages résultant d’un manque de certitude scientifique, la décision doit pencher du côté de la sécurité, faisant ainsi peser la charge de la preuve sur les procédures de gestion de risque.

La formulation de ce principe en droit international impose la réunion de plusieurs conditions pour son application :

− Tout d’abord, le principe n’est applicable qu’en cas de risque de dommage grave et irréversible, et non en cas de risque considéré comme mineur ;
− De plus, le principe est fondé sur l’absence de certitude absolue concernant le risque. Ainsi, s’il existe une probabilité forte, voire très forte, de réalisation d’un dommage, il conviendra de se référer non pas au principe de précaution mais à celui de prévention.
− L’application de ce principe requiert la prise en compte d’une évaluation des coûts, soumise dans tous les cas à une exigence de proportionnalité.

Dans le secteur nucléaire, et spécialement dans la gestion des déchets radioactifs, l’application de ce principe présente un intérêt tout particulier, par exemple en cas de personnes privées attaquant certaines pratiques ou autorisations de création d’installations nucléaires.
Vu les rapides progrès de certaines disciplines scientifiques et des approches théoriques elles-mêmes, dont les postulats sont en permanente évolution, l’affirmation de certitudes en matière scientifique devient souvent impossible. La gestion des risques devient donc un sujet très délicat assorti de multiples nuances.

Pour pallier ces difficultés, la jurisprudence peut jouer un rôle primordial en introduisant des modulations ou des interprétations ; c’est d’ailleurs à travers des décisions judiciaires que ce principe prend tout son sens. La Cour de justice des communautés européennes (CJCE) a déjà pris quelques décisions en la matière. Hors du domaine environnemental, l’application de ce principe a été étendue à des actions communautaires relatives à la gestion des risques, par exemple en matière de santé, de produits alimentaires ou de protection des consommateurs. La Cour internationale de justice (CIJ) a également déjà fait entendre sa voix concernant ce principe, par exemple dans les affaires Tests nucléaires II et Gabcikovo-Nagymaros.

Toutes ces considérations ont poussé le GT5 à introduire dans son questionnaire des questions non seulement sur le traitement réglementaire de ce principe, mais également sur les cas de jurisprudence éventuellement déjà portés devant les juridictions nationales.

Les pays consultés ont parfois été amenés à relier leurs réponses à celles apportées au principe de prévention, ou à faire des réponses très voisines. Dans trois pays, le principe de précaution est formulé de manière explicite dans la réglementation, dont un dans la Constitution. Dans les autres pays, il n’existe aucune indication de ce principe dans les textes, mais son application a été imposée par la jurisprudence ou par la réglementation communautaire.

Concernant le droit nucléaire, aucun des pays consultés n’a fait mention de disposition réglementaire reprenant explicitement ce principe, bien que les conséquences de son application soient visibles dans les politiques et les pratiques suivies en matière de radioprotection. Il est intéressant de noter qu’un pays fait état de l’incorporation de ce principe dans sa loi de renoncement à l’énergie nucléaire.

4.11 Droit d’accès à la justice en matière environnementale

L’accès à la justice, ou le droit pour une personne d’attaquer des décisions environnementales la concernant, dépend directement du développement des deux autres principes objet de la convention d’Aarhus, à savoir le degré d’information de cette personne et sa possibilité de participer aux processus pertinents de décision. L’exercice d’une telle action judiciaire devant les tribunaux est, en bref, une forme de participation. Ce droit fait l’objet de l’article 9 de la convention d’Aarhus.

Deux aspects peuvent être étudiés avec intérêt dans le cadre de l’application de ce principe, qui feront l’objet des développements suivants, favorisant les analyses environnementales sur les analyses nucléaires, dans la mesure où elles présentent peu de différences :

− La détermination de l’intérêt à agir,
− La détermination des tribunaux devant lesquels ce droit peut être exercé, selon qu’il s’agit d’un recours contre une procédure administrative ou d’un procès au civil.

4.11.1 Détermination de l’intérêt à agir

Le vrai centre d’intérêt lié à l’étude de ce principe est la détermination ou non d’une légitimation active des personnes et associations comme acteurs à part entière de la protection de l’environnement par le droit de faire des recours judiciaires. Bien que la convention d’Aarhus, qui a été signée par tous les pays consultés par le GT5, définisse simplement les
personnes privées légitimes à intenter une action devant les tribunaux judiciaires ou administratifs, ce concept rencontre dans sa mise en œuvre des difficultés importantes.

La notion de personnes légitimes à engager des poursuites est basée sur le concept plus englobant de participation du public à la prise de décisions environnementales, se référant aux trois droits encadrés par la convention d’Aarhus. En effet, l’article 2 de cette convention indique que « L’expression "public concerné" désigne le public qui est touché ou qui risque d’être touché par les décisions prises en matière d’environnement ou qui a un intérêt à faire valoir à l’égard du processus décisionnel ». La convention inclut dans ce groupe les organisations non gouvernementales « qui oeuvrent en faveur de la protection de l’environnement ». Il est par exemple possible de comprendre cette disposition comme nécessitant que les organisations concernées ait un objet spécifiquement tourné vers la protection de l’environnement ; cette interprétation pourrait avoir pour conséquence de ne pas admettre les recours formés par des organisations dont l’objet porterait sur la défense globale des droits de l’Homme ou au contraire du voisinage. Enfin, et plus important, la convention autorise les États à limiter l’accès à la justice de ces associations.

Par ailleurs, l’article 6, 5. de la convention d’Aarhus indique que « chaque Partie devrait, lorsqu’il y a lieu, encourager quiconque a l’intention de déposer une demande d’autorisation à identifier le public concerné, à l’informer de l’objet de la demande qu’il envisage de présenter et à engager la discussion avec lui à ce sujet avant de déposer sa demande ». En conséquence, les acteurs économiques eux mêmes – en l’espèce, les exploitants nucléaires - doivent contribuer à clarifier la notion de public concerné. Cependant, laisser à ces acteurs la possibilité de définir seuls cette notion serait contraire à l’esprit général de la convention, dont le but est précisément la création de mécanismes objectifs de détermination du public concerné.

L’article 6 de la convention d’Aarhus se réfère à la participation du public, et non à l’accès à la justice, objet de l’article 9. Ainsi, il est conseillé de définir clairement la notion de public concerné bien avant de penser à des procès, mais en ayant à l’esprit que cette définition constitue un indice sérieux de légitimation des personnes pouvant attaquer.

Sur la base des réponses reçues par le GT5 au questionnaire envoyé aux pays, il convient de formuler les observations suivantes :

- Le droit d’accès à la justice n’est jamais dénié au public concerné au sens strict, cette constatation constituant presque un axiome commun à tous les pays consultés. Cette notion de public concerné au sens strict revient à considérer les personnes ayant un intérêt économique direct, un intérêt particulier ou un intérêt suffisant, toutes ses formulations se recoupant. Une personne privée est donc clairement légitime à intenter une action judiciaire dès lors qu’elle habite dans le voisinage d’un projet donné, comme par exemple la construction d’installations de gestion de déchets radioactifs. Il est parfois nécessaire, dans le cadre de certaines procédures, de faire état de droits de propriété affectés par une activité.

- A côté d’un intérêt spécifique basé sur le voisinage ou la propriété, la légitimation d’intérêts diffus concernant les processus environnementaux pose de réelles difficultés. Ainsi, certains correspondants nationaux consultés indiquent qu’il n’est pas possible, dans leur pays, d’argumenter d’un intérêt général pour l’environnement ou d’une distorsion de concurrence due à la gestion de l’environnement. Un autre pays souligne que les frais afférents à un procès peuvent être mis à la charge du demandeur, sur la demande en est faite et si le demandeur est débouté, cette disposition étant vécue comme une barrière importante au droit d’accès à la justice en matière environnementale ; cette même réponse fait état d’une modification prochaine dans sa réglementation dans ce domaine.
La possibilité d’accéder à la justice est souvent accordée aux associations de protection de l’environnement dont l’objet est suffisamment précis (trois réponses en ce sens). Certains pays imposent des conditions supplémentaires, comme la délivrance d’un agrément national.

4.11.2 Choix du tribunal compétent

La convention d’Aarhus reconnaît, dans son article 9, le droit de recours soit devant l’administration pour des décisions administratives, soit devant les tribunaux compétents. Dans le premier cas, il est fait référence à la possibilité qu’à toute personne de s’opposer à des actes administratifs les concernant, tandis que le second cas renvoie au droit à un accès réel à la justice. Les questions posées par le GT5 aux pays consultés se sont focalisées sur ce second cas.

Un droit d’accès effectif à la justice et le droit à un procès équitable sont généralement reconnus par les Constitutions des différents pays consultés. Concernant le procès lui-même, les réponses soulignent la possibilité d’entamer des poursuites pour des atteintes à l’environnement devant des instances pénales ou encore la possibilité d’attaquer devant les tribunaux administratifs des actes ou omissions de l’administration. La voie judiciaire civile semble plus restreinte ; c’est dans ce domaine que les restrictions au droit d’accès à la justice envisagées précédemment sont rencontrées.

4.12 Principe de participation

Le principe de participation du public aux décisions relatives à l’environnement est au carrefour des droits de l’Homme et de l’environnement. Comparé aux approches précédentes dans lesquelles les droits des citoyens renvoient au droit à l’information, ce principe de participation va plus loin, d’une part en reconnaissant le droit de contribuer à la gestion des affaires publiques et, d’autre part, en fournissant des instruments supplémentaires permettant de mieux satisfaire le droit individuel à un environnement sain.

Des indications ci-dessus mentionnées, il convient de retirer :

- Que le droit de participer en matière environnementale est considéré comme une spécificité du principe général de participation,
- Que la participation en matière environnementale complète le dispositif juridique démocratique et s’inscrit dans un contexte de droit administratif,
- Et que ce principe rend le citoyen co-responsable de la protection de l’environnement.

Après une période de flou dans la définition et le champ d’action du principe de participation du public, l’entrée en vigueur de la convention d’Aarhus en 2001 en a apporté une compréhension plus spécifique et objective. La convention définit les conditions de mise en œuvre des mécanismes de participation et permet une participation très en amont des processus décisionnels. Il convient de noter l’effort particulier fourni pour intégrer le public quand les options ne sont pas encore arrêtées, résultant de l’obligation faite aux États signataires de « prendre les dispositions pratiques pour que le public participe à l’élaboration des plans et programmes relatifs à l’environnement dans un cadre transparent et équitable ». La convention d’Aarhus souligne à juste titre à cette occasion que l’exercice du droit de participation du public en matière d’environnement engendre le besoin d’améliorer l’éducation à l’environnement et de développer la conscience des problèmes environnementaux.

De par le passé, le GT5 a publié plusieurs études sur les aspects liés aux processus de participation du public pour la gestion des déchets radioactifs : les congrès d’Helsinki en 1994 puis du Cap en 2003 ont ainsi été l’occasion d’analyser les formes de participation liées aux
procédures d’implantation des stockages de déchets radioactifs et les potentielles incompatibilités entre les différents droits. Une fois encore, la question semble avant tout liée aux principes environnementaux et à son insertion dans la réglementation relative à la gestion des déchets radioactifs.

Ici, l’application du principe de participation du public a une portée plus importante. Depuis l’adoption de la convention d’Aarhus et son entrée en vigueur inspirant d’autres réglementations supranationales, comme la directive communautaire 2003/35/CE du 26 mai 2003, la participation du public est a minima requise dans les cas suivants :
- Dès qu’une décision doit être prise en matière d’environnement, avec la possibilité de soumettre toute observation et opinion jugées pertinentes par écrit ou lors d’une audition ou d’une enquête publique,
- Lors de l’élaboration de plans et programmes relatifs à l’environnement, dans un cadre transparent et équitable,
- Durant la phase d’élaboration de dispositions réglementaires et/ou d’instruments normatifs juridiquement contraignants d’application générale.

4.12.1 Droit de l’environnement

Tous les pays consultés ont inclus ce principe dans leurs réglementations, l’un d’entre eux ayant indiqué qu’il n’est pas spécifiquement différencié de la procédure administrative classique. Dans le cadre des réglementations environnementales, ce principe est inscrit dans la Constitution d’un pays, tandis qu’il figure dans le Code de l’environnement d’un autre. Dans les autres pays, ce principe est mentionné dans des lois ou décrets sectoriels spécifiques.

Les réponses reçues des pays consultés mettent en lumière les points suivants relatifs aux formes de participation :
- Tous les pays sont dotés de mécanismes d’études d’impact pour les projets et d’évaluation des incidences de certains programmes et plans sur l’environnement,
- Deux pays font état de mécanismes de débats ou d’enquêtes publics différents de ceux visés part la réglementation applicable aux impacts environnementaux,
- Trois pays font référence à des dispositions réglementant les accords,
- Enfin, deux pays indiquent des participations professionnelle et institutionnelle de nature consultative, apparentées à du conseil en environnement. Dans un cas, elles sont de portée générale, tandis que les objectifs mentionnés dans le second cas sont sectoriels (eau, parcs naturels, etc.).

Par ailleurs, il convient de noter le développement des dispositions réglementaires liées au principe de participation du public d’une part dans le droit applicable à l’usage des sols et à l’aménagement du territoire, et d’autre part dans le droit applicable à l’urbanisme et aux permis environnementaux délivrés à l’échelon municipal. Dans ce dernier cas, les pays mentionnent de possibles fortes interactions entre les citoyens et les autorités et communautés locales.

4.12.2 Droit applicable aux déchets radioactifs

Le principe de participation du public est intégré dans les réglementations applicables aux déchets radioactifs de tous les pays consultés. Les réponses montrent une claire corrélation entre le rang hiérarchique des dispositions adoptées et le degré de définition et de développement des programmes et stratégies de stockage des déchets, particulièrement dans le domaine des déchets HAVL et des combustibles usés.
Ainsi, un pays indique que ce principe est explicitement visé dans son Code de l’environnement pour tous les sujets relatifs aux laboratoires souterrains d’étude liés aux déchets HAVL. Un autre pays fait référence à ses procédures administratives et au droit inscrit dans la loi sur l’énergie nucléaire de s’opposer à des propositions relatives à de nouvelles installations nucléaires. Trois pays renvoient ouvertement aux dispositions encadrant les études d’impact comme mécanisme de participation, sans préjudices d’autres pratiques comme les enquêtes publiques. Tout ceci conforte l’enracinement des études d’impact, à maintes reprises perçues comme un outil intrinsèque du droit nucléaire.

Le questionnaire envoyé aux pays consultés s’interrogeait également sur d’éventuelles formes d’application du principe de participation spécifiques aux processus de décision relatifs à la gestion des déchets radioactifs. Le sujet est particulièrement pertinent au vu de la tendance internationale – tendance ayant conduit à des résultats encourageants – à pousser toujours plus loin l’implication du public dans ces processus.

Le GT5 est conscient que dans certains pays ayant réglementé le droit pour les populations concernées d’opposer leur veto à l’implantation d’installations de gestion des déchets, certaines initiatives ont abouti à l’approbation de stockages. Dans d’autres pays, ce même système a permis de réaliser des progrès importants concernant des programmes de sélection de sites.

Sur le plan national, un pays a consulté sa population pour donner une nouvelle orientation à sa politique nationale concernant l’énergie nucléaire et les systèmes de gestion des déchets induits.

Parmi les pays consultés, un cite le système de débat public, dont l’organisation et les modalités sont définies dans la réglementation environnementale. Un débat sera ainsi organisé à l’automne 2005 pour faire le point sur les recherches menées ces 15 dernières années en matière de gestion des déchets HAVL. Ce débat a pour objectifs de lever les interdits qui existent pour le public en matière de déchets HAVL et de contribuer à définir la suite du processus démocratique en vue d’une décision en la matière. Le même pays dispose d’un mécanisme réglementaire d’enquêtes publiques, dont le résultat négatif peut tacitement empêcher l’implantation d’installations nucléaires.

Un autre pays a intégré dans sa loi sur l’énergie nucléaire des dispositions spécifiquement dédiées à la participation du public dans les processus d’autorisation des stockages géologiques. Enfin, un dernier pays indique que l’actuel plan de gestion des déchets radioactifs rédigé par le Gouvernement insiste sur la nécessité de promouvoir la consultation du public, bien qu’aucune réglementation n’existe en ce sens.

5 CONCLUSION

- Dans la plupart des cas, le droit international de l’environnement et le droit international applicable aux déchets radioactifs sont régis par les mêmes grands principes.

- Le GT5 a identifié deux principes – principe de participation dans les processus décisionnels et droit d’accès à la justice – pour le développement desquels le droit international de l’environnement et le droit applicable aux déchets radioactifs n’ont pas suivi la même voie. La convention commune sur la sûreté de la gestion des combustibles usés et des déchets radioactifs de 1997 ne prévoit pas d’obligation générale de consultation du public, mais seulement une obligation de mettre à disposition du public de l’information. La convention ne prévoit pas non plus la possibilité pour un individu d’attaquer une décision d’implantation d’installations de
gestion de déchets radioactifs ou de combustibles usés.

- Le principe d’information du public, tel que présenté par la convention commune susvisée de 1997, est assez limité. Il lui manque également un réel mécanisme de mise en œuvre dans les dispositions de la convention.

- Les trois incompatibilités mises en lumière ci-dessus peuvent être considérées comme levées dans la mesure où les dispositions de la convention d’Aarhus sont directement applicables aux activités relatives aux installations nucléaires et à la gestion des déchets radioactifs (voir l’annexe 1 de la convention listant toutes les activités auxquelles elle est applicable).

- L’approche retenue du principe de prévention en droit nucléaire est plus complète qu’elle ne l’est en droit international de l’environnement. Bien que l’objectif recherché dans les deux cas soit orienté vers la prévention, le droit de l’environnement nécessite de prendre en compte ses possibilités réelles d’application, la chronologie exacte de mise en œuvre des différentes décisions et politiques, et enfin les besoins spécifiques des pays en voie de développement.

- La réglementation applicable aux déchets radioactifs est en ce domaine assez stricte. Elle conditionne en effet clairement les pratiques à adopter dès la mise en œuvre de mesures propres à éviter des dommages liés au démarrage d’activités. Un bel exemple en est le traitement par ces deux branches du droit du principe de proportionnalité : tandis que ce principe est clairement au centre des actions de développement durable, le droit nucléaire ne le prévoit pas du fait de la spécificité des risques radiologiques et de l’absolue priorité données à la sûreté. Ici, le droit international de l’environnement et le droit international applicable à la gestion des déchets radioactifs ne sont pas compatibles.

- Parmi les pays consultés et pour ce qui concerne le droit de l’environnement, certains principes sont presque toujours repris au niveau constitutionnel. C’est ainsi le cas du droit à un environnement sain, du principe général d’information et enfin du principe de coopération, aussi bien dans le domaine international que par les autorités nationales pour atteindre des objectifs environnementaux, particulièrement dans les structures fédérales.

- Les principes visés dans les dispositions constitutionnelles des États comme dans les réglementations environnementales générales constitue une seconde catégorie de textes. Ce cas vise le principe de développement durable et le principe pollueur-payeur.


- Le principe de proportionnalité n’est généralement pas mentionné dans les Constitutions des États, ni dans les textes legislators. Il est considéré comme applicable dans la seule mesure où il donne du sens ou précise d’autres obligations, étant un principe général de droit international.
Enfin, les principes objet de la convention d’Aarhus sont repris aussi bien au niveau constitutionnel que dans des textes législatifs, à des degrés différents de développement. Ils sont généralement énoncés dans les Constitutions comme des droits fondamentaux et sont plus spécifiquement détaillés dans les lois environnementales voire, dans certains cas et encore plus spécifiquement, en droit nucléaire.

Quant au droit nucléaire, les principes de coopération et de proportionnalité semblent n’être applicables que s’ils sont prévus par des réglementations nationales et/ou environnementales. Au contraire, d’autres principes sont explicitement formulés dans le droit nucléaire, voire même dans le droit applicable à la gestion des déchets radioactifs : droit à une environnement sain, développement durable, principes de prévention et d’étude d’impact, principe pollueur-payeur, limitation de la production de déchets, principes d’information et de participation du public aux processus décisionnels. Le principe d’accès à la justice, en ce qu’il détermine les personnes pouvant intenter des actions judiciaires, présente peu de différence entre ses applications nucléaires et environnementales.
6 ANNEXES

6.1 Concordances entre la convention commune de 1997 et les principes de droit international de l’environnement

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<tr>
<th>Principe</th>
<th>Origine</th>
<th>Articles concernés de la convention commune</th>
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<tr>
<td>Droit à un environnement sain</td>
<td>Stockholm, Rio</td>
<td>Préambule (xv), Article 4(iv), Article 7(i), Article 11 (iv), Article 14(i) Article 24(1)(iii)</td>
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<td>Article 1, Article 4, Article 7(iii), Article 11, Article 14(iv), Article 17(iii), Article 24(1)(iii) et 3</td>
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<td>Pollueur-payeur</td>
<td>Rio</td>
<td>Références indirectes uniquement</td>
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<td>Articles 6(1)(ii) et (iv), Article 8, Article 13(1)(ii) et (iv), Article 15</td>
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<td>Préambule (iv) Article 6(1)(iii), Article 13(1)(iii), Article 34</td>
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<td>Limitation de la production de déchets</td>
<td>Rio</td>
<td>Article 4(ii), Article 11(ii)</td>
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<td>Développement durable</td>
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<td>Article 1(ii), Article 4 (vi) et (vii), Article 11(vi) et (vii)</td>
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<td>Principe de participation</td>
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### Sommaire des réponses nationales concernant le droit de l'environnement

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<th>Royaume-Uni</th>
<th>France</th>
<th>Espagne</th>
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<th>Hongrie</th>
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<td>Au niveau constitutionnel et dans le Code de l'environnement</td>
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<td>Important dans le Code de l'environnement</td>
<td>Explicitemment dans le Code de l'environnement</td>
<td>Dans plusieurs lois environnementales</td>
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<td>Dans la législation concernant les déchets</td>
<td>Au niveau constitutionnel</td>
<td>Explicitemment dans le Code de l'environnement</td>
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<td>Explicitement dans des lois fédérales et régionales</td>
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<tr>
<td><strong>Information du public</strong></td>
<td>Dans deux types de lois sur la liberté générale d’information et spécifique concernant les informations sur l'environnement</td>
<td>Oui, par transposition de la directive communautaire</td>
<td>Dans le Code de l'environnement</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement</td>
<td>Oui, dans plusieurs lois</td>
<td>Explicitement dans de nombreuses lois régionales sur l’environnement</td>
<td></td>
</tr>
<tr>
<td><strong>Principe</strong></td>
<td><strong>Royaume-Uni</strong></td>
<td><strong>France</strong></td>
<td><strong>Espagne</strong></td>
<td><strong>Suisse</strong></td>
<td><strong>Slovénie</strong></td>
<td><strong>Hongrie</strong></td>
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</tr>
<tr>
<td><strong>Coopération</strong></td>
<td>De façon générique</td>
<td>Dans le contexte international mais pas dans les lois sur l'environnement</td>
<td>Coopération interrégionale dans la Constitution. Oui dans le contexte international</td>
<td>Explicitement pour la coopération entre les agents économiques et l'État</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement</td>
<td>Exigences de coopération et partage de compétences réglementaires entre l'État fédéral et les gouvernements locaux</td>
<td>Au niveau international et interne (interrégional)</td>
</tr>
<tr>
<td><strong>Proporcionnalité</strong></td>
<td>Non</td>
<td>Seulement mention à propos des études d'impact</td>
<td>Oui, avec le principe de coopération</td>
<td>Au niveau constitutionnel</td>
<td>Non</td>
<td>Non</td>
<td>Non, sauf en lien avec d'autres principes</td>
<td></td>
</tr>
<tr>
<td><strong>Limitation de la production de déchets</strong></td>
<td>Oui, dans les principes et stratégies, et dans les réglementations sur les emballages</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Dans la législation sur les déchets</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement</td>
<td>Oui, dans des lois spécifiques</td>
<td>Explicitement dans des lois régionales</td>
</tr>
<tr>
<td><strong>Développement durable</strong></td>
<td>Dans les lois de planification urbaine et les études d'impact</td>
<td>Pas explicitement</td>
<td>Au niveau constitutionnel et dans le Code de l'environnement</td>
<td>Dans le Code de l'environnement</td>
<td>Dans plusieurs lois sur l'environnement</td>
<td>Dans plusieurs lois sur l'environnement</td>
<td>Dans des lois fédérales et régionales</td>
<td></td>
</tr>
<tr>
<td><strong>Précaution</strong></td>
<td>Idem que pour le principe de prévention</td>
<td>Au niveau constitutionnel et dans le Code de l'environnement</td>
<td>Via les traités de l'UE. Sinon, explicitement dans les seules lois portant sur les produits alimentaires</td>
<td>Pas explicitement, mais interprétation proche du principe de prévention</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement</td>
<td>Pas explicitement. Exigences concernant la recherche, la surveillance et la définition de démarches adaptées en cas d'éventuelles situations dangereuses.</td>
<td>Explicitement dans les législations environnementales régionales</td>
</tr>
<tr>
<td>Principe</td>
<td>Royaume-Uni</td>
<td>France</td>
<td>Espagne</td>
<td>Suisse</td>
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</tr>
<tr>
<td><strong>Accès à la justice</strong></td>
<td>Dans tous les cas en droit pénal ou dans les lois étatiques, l'Accès à la justice est garanti par la Constitution.</td>
<td>Dans tous les cas en droit pénal ou en droit étatique, l'Accès à la justice est garanti par la Constitution.</td>
<td>Le Code de l'environnement accorde une légitimation aux associations agréées. Plus généralement, l'Accès à la justice est garanti par les lois étatiques.</td>
<td>Droit général d'accès à la justice garanti par la Constitution.</td>
<td>Expliciterement dans le Code de l'environnement</td>
<td>Oui, pour ceux qui sont directement concernés.</td>
<td>Oui, pour les associations à but lucratif.</td>
<td>Oui, s'il y a un intérêt suffisant à agir.</td>
</tr>
<tr>
<td><strong>Participation</strong></td>
<td>Dans plusieurs lois sur l'environnement</td>
<td>Dans plusieurs lois sur l'environnement</td>
<td>Dans des lois sectorielles spécifiques et dans une loi étatique générale</td>
<td>Pas de spécificités environnementales par rapport aux procédures administratives de droit commun</td>
<td>Expliciterement dans le Code de l'environnement</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement dans plusieurs lois sur l'environnement et dans une loi étatique générale</td>
<td>Oui, idem que pour l'information du public</td>
</tr>
</tbody>
</table>
### 6.3 Sommaire des réponses nationales concernant le droit nucléaire et le droit applicable à la gestion des déchets radioactifs

<table>
<thead>
<tr>
<th>Principes</th>
<th>Royaume-Uni</th>
<th>France</th>
<th>Espagne</th>
<th>Suisse</th>
<th>Slovénie</th>
<th>Hongrie</th>
<th>USA</th>
<th>Belgique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prévention</td>
<td>Oui, dans la loi nucléaire, en relation avec le droit à un environnement sain.</td>
<td>Pas explicitement, si ce n’est indirectement par le biais des études d’impact.</td>
<td>Pas explicitement, si ce n’est indirectement par le biais des études d’impact.</td>
<td>Explicitement, étant un principe gouvernant l’usage de l’énergie d’origine nucléaire.</td>
<td>Explicitement, étant un principe gouvernant l’usage de l’énergie d’origine nucléaire.</td>
<td>–</td>
<td>Explicitement, étant un principe gouvernant l’usage de l’énergie d’origine nucléaire.</td>
<td>Pas en tant tel, mais implicite dans d’autres lois. Également dans le décret d’organisation de l’ONDRAF.</td>
</tr>
</tbody>
</table>

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
<table>
<thead>
<tr>
<th>Principes</th>
<th>Royaume-Uni</th>
<th>France</th>
<th>Espagne</th>
<th>Suisse</th>
<th>Slovénie</th>
<th>Hongrie</th>
<th>USA</th>
<th>Belgique</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coopération</strong></td>
<td>Oui, de façon générique.</td>
<td>Pas explicitement</td>
<td>Pas explicitement</td>
<td>Pas explicitement, mais application obligatoire par la loi (coopération entre les agents économiques et l’État).</td>
<td>Pas explicitement</td>
<td>-</td>
<td>Pas explicitement Mais existence de dispositions concernant la coopération et la surveillance entre États.</td>
<td>Explicitement, pour ce qui concerne la responsabilité interrégionale relative aux déchets radioactifs.</td>
</tr>
<tr>
<td>Principes</td>
<td>Royaume-Uni</td>
<td>France</td>
<td>Espagne</td>
<td>Suisse</td>
<td>Slovénie</td>
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</tr>
<tr>
<td>Accès à la justice</td>
<td>Les dispositions législatives environnementales sont généralement applicables.</td>
<td>Les dispositions législatives environnementales sont généralement applicables.</td>
<td>Les dispositions législatives environnementales sont généralement applicables.</td>
<td>Les dispositions législatives environnementales sont généralement applicables.</td>
<td>Oui. Dans le cadre de la réglementation sur les processus d’autorisation, accès aux tribunaux administratifs et judiciaires, pour les personnes privées concernées et les associations.</td>
<td>–</td>
<td>Oui, pour les personnes directement concernées ou identifiées dans la loi fixant les principes relatifs aux déchets nucléaires.</td>
<td>Les dispositions législatives environnementales sont généralement applicables.</td>
</tr>
</tbody>
</table>
6.4 Questionnaire envoyé par le GT 5 aux correspondants nationaux.

AIDN – Groupe de travail 5  
Gestion des déchets radioactifs

Préparation du rapport sur la gestion des déchets radioactifs et la protection de l’environnement – AIDN Congrès de Slovénie 2005

GT 5 – Questionnaire national

Sujet : comment et dans quelle mesure les principes internationaux de droit de l’environnement sont-ils applicables à la gestion des déchets radioactifs ?

1. **Remarques préliminaires**

Le présent questionnaire a été élaboré par quelques membres du GT5 afin d’étudier la compatibilité des législations nationales avec les grands principes internationaux de droit de l’environnement, dans la mesure où ceux-ci sont applicables à la gestion des déchets radioactifs.

Ce questionnaire est fondé sur une analyse préalable de la situation internationale, qui a permis d’identifier 12 grands principes (vous trouverez en document joint le document intitulé « Droit international, principes, codes et recommandations. Comparaison entre la protection de l’environnement et la gestion des déchets radioactifs »).

Pour chacun de ces principes, il est demandé si celui-ci est explicitement repris dans la réglementation générale de l’environnement, puis dans la réglementation nucléaire / relative aux déchets radioactifs. Afin d’éviter les redites, les destinataires du présent questionnaire sont aimablement invités à ne répondre que sur la base de leurs droits nationaux (y compris, le cas échéant, de leurs jurisprudences), à l’exception de toute référence au droit communautaire (pour les pays membres de l’Union européenne) ou à des traités internationaux entrés en vigueur au plan national.

Cinq principes (développement durable, principe de précaution, principe de prévention, accès à la justice en matière environnementale, principe de participation) ont été identifiés comme pouvant poser problème dans leur compréhension ou leur application dans des textes réglementaires du fait de multiples facteurs : prise en compte très récente dans des textes à portée réglementaire, manque de recul sur leur utilisation, déficit de textes réglementaires les explicitant, etc. Tous ces cas peuvent être considérés comme controversés, au centre de débats prolifiques. Prenant en compte ce contexte, le présent questionnaire consacre des développements particuliers à ces principes, visant à déterminer si des jurisprudences nationales ou toute autre décision sont venues étayées les discussions susvisées.

2. **Questionnaire**

1. **DROIT A UN ENVIRONNEMENT SAIN**

   Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

   Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.
2. **PRINCIPE DE PREVENTION**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

3. **PRINCIPE POLLUEUR-PAYEUR**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

4. **PRINCIPE D’UNE ETUDE D’IMPACT**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

5. **PRINCIPE D’INFORMATION DU PUBLIC**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

6. **PRINCIPE DE COOPERATION**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

7. **PRINCIPE DE PORPORTIONNALITE**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

8. **LIMITATION DE LA PRODUCTION DES DECHETS**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

9. **DEVELOPPEMENT DURABLE**
Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Comment votre réglementation nationale développe-t-elle ce principe ? Ce principe a-t-il déjà été appliqué dans votre jurisprudence nationale (affaires environnementales et/ou nucléaires) ? Dans quelle mesure la réversibilité d'un stockage de déchets radioactifs est-elle considérée comme une des exigences imposées par le principe de développement durable ?

10. **PRINCIPE DE PRECAUTION**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Merci également de bien vouloir indiquer si des dispositions appliquent ce principe au processus d'autorisation de nouvelles installations de gestion de déchets radioactifs. Y a-t-il des cas de jurisprudence nationale dans lesquels :

- Un tribunal ou une cour a statué sur une affaire dans laquelle ce principe devait être appliqué ?
- Ce principe a été invoqué pour justifier le rejet d’une autorisation de créer un centre de stockage de déchets ?

11. **DROIT D’ACCES A LA JUSTICE EN MATIERE ENVIRONNEMENTALE**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

La réglementation prévoit-elle des conditions spécifiques pour avoir la capacité d’engager des poursuites contre une autorisation de créer une installation de gestion de déchets (exemple : intérêt économique direct, résidence dans le voisinage, conditions administratives particulières pour les associations, etc.) ? Existe-t-il une seule procédure à suivre pour poursuivre l’exploitant d’une telle installation ou les autorités compétentes (Common Law, droit public, droit pénal, etc.) ?

12. **PRINCIPE DE PARTICIPATION**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Existe-t-il des dispositions spécifiques encourageant ou prévoyant des procédures organisant la participation du public lors de tout processus d’autorisation lié à la gestion des déchets radioactifs, procédures distinctes de l’ouverture d’une période d’information du public et de la possibilité de demander des informations complémentaires et de faire des observations ?

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
ENTRY INTO FORCE OF THE ADDITIONAL PROTOCOL TO THE SAFEGUARDS AGREEMENTS

(Spanish perspective)

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NOTE: this paper updates the content of one published by the authors as “Entrada en vigor del Protocolo Adicional a los acuerdos de salvaguardias”, in the publications of the Spanish Nuclear Society (Revista de la Sociedad Nuclear Española) in April 2004.

1 INTRODUCTION

The development of the peaceful use of nuclear energy has always been linked to verification of the truthfulness of such peaceful application. Such checks must necessarily be undertaken by people or organisations possessing technical competence and a status of independence recognised by the international community. This is the case of the safeguards inspectors of the International Atomic Energy Agency (IAEA).

The history of safeguards dates back to the speech Atoms for Peace, given by the US President Eisenhower before the General Assembly of the United Nations on 8th December 1953. In his speech, Eisenhower underlined the serious threat of the incipient atomic weapons race and the advisability of achieving a collective commitment to the peaceful use of atomic energy. The speech anticipated the setting up of an international agency that would cooperate in the technological development of nuclear energy and at the same time safeguard a material that should not be used for the clandestine manufacturing of weapons. This agency, the IAEA, was created three years later within the framework of the United Nations and is today the leading actor in the application of safeguards measures in relation to nuclear materials and facilities.

Considered to be the most important measure in the fight against nuclear proliferation, the IAEA’s safeguards system has evolved since its beginnings in keeping with technological progress and changing international relations. Significantly, the situations of greatest political stress have led to the revision and improvement of the system. In this respect, the 1962 Cuba crisis unleashed a reaction in favour of the control of nuclear weapons, which would lead to the drawing up, in 1968, of the Treaty on the Non-Proliferation of Nuclear Weapons (TNP).
This Treaty is today the cornerstone of the international legal system as regards the non-proliferation of weapons.

In the early 1990’s, the IAEA inspectors detected clandestine nuclear weapons development programmes in Iraq and North Korea, countries that were parties to the NPT and that had international safeguards agreements in force. This discovery convulsed the international community and underlined the weaknesses of the safeguards system then in force. In response to these events, the IAEA initiated the most ambitious project undertaken to that time, which culminated in December 1998 with the publication of a generic model for an Additional Protocol\(^1\) that was to be added to the safeguards agreements previously subscribed by the States with the IAEA.

Since its publication, 89 States have signed or approved the Additional Protocol, and it has actually entered into force in 65 of them, still with significant absences such as those of the United States and the Russian Federation. Technical and administrative difficulties have delayed the application of the Protocol, despite the insistence of the international community and the IAEA itself on the importance of rapid application.

Its entry into force in the EU has been achieved on 30\(^{th}\) April 2004, the aim being for its provisions to form part of the acquis communautaire in view of the enlargement occurred in May 2004. The provisions of the Additional Protocol are to be implemented via a new safeguards Regulation, namely Regulation Nr. 302/2005, that has replaced Regulation Nr. 3227/1976.

\section{Relationship Between the Safeguards Agreements and the Additional Protocol}

Article 3 of the NPT obliges the States to subscribe a safeguards agreement with the IAEA "for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices".

The concept of safeguards was already known when the NPT was drawn up. Since the nineteen-fifties, the early commercial relations between countries exporting and importing nuclear material and technology had gone hand in hand with bilateral safeguards agreements or pacts. With time, the initial agreements, limited to specific projects and often undertaken by inspectors from the exporting country, gave way to more general inspections involving the mediation of international organisations. The NPT made the obligation to sign safeguards agreements with the IAEA a universal issue and extended such safeguards to all the activities performed by a State, whenever nuclear material, as defined by the IAEA\(^2\), was involved. Following the drawing up of the NPT, the IAEA published a generic safeguards agreement\(^3\) which has been adopted by almost all the States in preference over the previous agreements.

The NPT, drawn up in 1968, was unable to prevent the then nuclear weapon States from continuing with the production. As of the date of the Treaty, the United States, the USSR, United Kingdom, France and China were in that position. Today, these five countries have subscribed the NPT and, as the possessors of atomic weapons, enjoy different treatment within the system of safeguards. Along with them the IAEA has drawn up voluntary

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\(^1\) The Additional Protocol was published by the IAEA in December 1998 as document INFCIRC/540 (corrected) “Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards”.

\(^2\) In the corresponding agreements and in the periodically revised IAEA Safeguards Glossary the IAEA accurately defines each of the elements to which its inspection refers.

\(^3\) We refer to document INFCIRC/153/Corr., the model known as “comprehensive safeguards”, published by the IAEA in June 1972. Previously, safeguards had been implemented, either without IAEA attendance or on the basis of models INFCIRC/26 and INFCIRC/66/Rev.2, of 1965, corrected successively in 1966 and 1968.
commitment agreements that have been specifically designed in each case and do not coincide with the generic model agreement.

Like many international agreements of the period, the NPT is open to signing by States but not by regional organisations. Nevertheless, regional organisations may participate in the agreements referred to in article 3 of the NPT within the limits of their respective realms of competence. This circumstance has characterised relations between the IAEA and the European Atomic Energy Community.

The European Atomic Energy Community, also known as the Euratom Community, was set up in 1957 by the same founders as the European Economic Community and the now defunct European Coal and Steel Community. The three Communities were created with an integrating economic and political purpose, this being accentuated by the merging of their institutions in 1965 and, especially significantly, since the linking of their constitutional Treaties in the European Union Treaty, done in Maastricht in 1992.

Chapter VII of the Treaty constituting the Euratom Community (the Euratom Treaty) establishes a safeguards system for nuclear materials, which are defined in its article 197. This system obliges the member States to develop and maintain a detailed account of nuclear materials and prohibits the deviation of any such materials from the purposes declared. The European Commission is responsible for supervising and verifying compliance with the obligations of the Treaty.

The safeguards system established within Euratom shares the same philosophy as the IAEA system. Although the IAEA was set up one year before the Euratom Community, the latter was the first to begin to implement inspections at Community level within its member States. There is, however, a remarkable difference between the Euratom and IAEA safeguards systems, inasmuch as the Euratom Treaty does not prevent its members from using nuclear materials for military applications – its prohibition refers to this being accomplished in a concealed manner, deviating materials from one use to another. This provision was the result of France’s interest in developing nuclear weapons when the Treaty was drawn up. Today, two EU member States, France and United Kingdom, are possessors of nuclear weapons.

When the Community member States wished to subscribe safeguards agreements with the IAEA, consideration was given to the advisability of taking maximum advantage of the mechanisms already in place at Community level. In this respect, the European Commission and member States negotiated a special agreement with the IAEA, which although based on the IAEA’s generic model, granted the Euratom inspectors a major role in the application of safeguards measures. This is known as the “Verification Agreement”, which is completed with the Euratom Regulation 3227/76 and jointly with it constitutes the legal basis for classical safeguards in the Community.

3 OBLIGATIONS OF THE ADDITIONAL PROTOCOL

Until the beginning of the 1990’s, the system based on the NPT and the comprehensive safeguards of the IAEA operated regularly, which does not mean that there were no cases of proliferation between States not participating in it. However, the events that occurred in Iraq and in North Korea cast doubt on the effectiveness of the system.

The IAEA perceived the need to strengthen the system and promoted the preparation of the Additional Protocol, which constitutes an extension to, but especially a revision of, the provisions of the previous model. It is established that in the event of any contradiction between the earlier provisions and those of the Protocol, the latter shall prevail.

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4 This agreement model was published by the IAEA on 14th September 1973 as INFCIRC/193, subscribed by the then Community members, with the exception of France and United Kingdom.
Comparison with the provisions of the previous safeguards shows that in the Additional Protocol there is a substantial increase in the information that the States are required to provide. As a result, the Protocol bestows upon the IAEA inspectors far-reaching rights as regards access to the places in which the activities to be reported on are carried out. In certain cases interpretation of the provisions of the Protocol is a complex matter.

The information to be submitted to the IAEA is no longer restricted to the accountancy and location of nuclear materials. The Protocol subjects to supervision those activities that do not entail the handling of nuclear material but that might eventually go hand in hand with the development of a clandestine programme of proliferation. In summary, the Protocol requires the following:

- Information on buildings existing at the sites, including their use and contents.
- Description and location of R&D activities relating to the nuclear fuel cycle when these have been financed, specifically authorised or controlled by the State or performed on its behalf. Only in the opposite case will it be sufficient to report on R&D activities specifically relating to the enrichment, reprocessing or processing of intermediate or high level wastes containing plutonium, highly enriched uranium or uranium 233.
- Description of the magnitude of manufacturing operations for materials and equipment relating to the nuclear fuel cycle and specified by the Protocol.
- Notification of exports of specified nuclear fuel cycle-related or dual-purpose equipment, inside or outside the EU. In addition, the IAEA may request confirmation of imports.
- Information on basic materials that have not yet reached suitable a composition and purity adequate for the manufacturing of fuel or its isotopic enrichment.
- Information on the location and subsequent processing of radioactive wastes containing plutonium, highly enriched uranium or uranium 233 and with respect to which the application of safeguards has ceased.
- Information on the location, operational status and production capacity of uranium mines and thorium concentration plants.
- Information regarding the quantities and location of nuclear materials exempt from the application of safeguards by virtue of the application of certain provisions of the safeguards agreement in force.
- Plans relating to the development of the nuclear cycle over a period of ten years, when such plans have been approved by the State authorities.
- Information on activities that the IAEA considers may be functionally related to the activities of a site and on the persons performing such activities.
- Information on certain activities that the IAEA considers to be of interest as regards the safeguards implemented at sites in which nuclear material is handled.

Furthermore, the State undertakes to provide whatever additional information might be required by the Agency in relation to any of the aforementioned areas, whenever there is any doubt or inconsistencies are detected in declarations.

In addition, the Protocol confers upon the IAEA inspectors rights to access all those places in which activities required to be communicated to the IAEA are carried out. This type of access is known as *complementary access*, in order to distinguish it from the safeguards inspections included in the comprehensive safeguards agreements.

The Protocol contemplates different treatment for locations defined in its article 18 b as *sites* from that applied to other locations subject to the Protocol but not classified as sites.

The definition of a site, as contemplated in the Additional Protocol, is very ample and occasionally complex to determine. In principle, sites are those locations at which there is a
nuclear facility (nuclear power plants, research reactors, waste disposal facilities, etc.), even following their definitive shutdown and removal of nuclear material, as long as such installations have not been dismantled to such an extent that their essential components have been removed or made unusable, including checking where appropriate by the IAEA. Also generally considered as sites are those places at which nuclear material is customarily handled, unless certain exemption criteria established by the IAEA are met.

The IAEA will notify the State of its intention to access such places with a minimum 24 hours notice, and the State shall be required to provide such access. Only 2 hours notice will be required when the IAEA inspectors, during the course of a routine safeguards inspection – those contemplated in the comprehensive safeguards agreement – decide to invoke rights of complementary access to a site. In this case, the IAEA may apply even shorter periods of notice if it considers that a longer period might jeopardise the objectives sought through such access.

At locations that are not treated as sites by the Protocol, access rights are reduced. There are certain places to which the State is not obliged to provide access, although it does undertake to make all necessary efforts to do so or, at least, to propose alternative measures satisfactory to the Agency. Furthermore, in such cases the Protocol does not establish any maximum period of time for such access to be provided, this being something that is to be agreed on between the State and the Agency.

The Protocol clearly establishes the measures that may be taken by the IAEA inspectors during their complementary access visits to each location. These measures must be identified in the notification of such complementary access and range from simple visual inspection to the application of containment and sealing measures.

In the case of sites, the State may reach agreements with the IAEA regarding the identification of locations therein for the performance of special controls. These special controls seek to defend the interests of the licensee of the site, inasmuch as no information that may be sensitive from the point of view of its physical security or protection is disseminated and an aim of the controls is to protect important industrial or commercial data. However, the application of these measures may not prevent the Agency from performing a credible check on the absence of nuclear materials and of non-declared activities.

4 NATIONAL AND COMMUNITY IMPLICATIONS

The non nuclear weapon member States of the EU have jointly signed an Additional Protocol, which is thus integrated into the acquis communautaire. This Additional Protocol is understood to be superimposed upon and to complete the previous Verification Agreement, referred to above, which incorporated the IAEA’s comprehensive safeguards in the territory of the Community.

When the member States drew up the aforementioned Verification Agreement, they completed their regulatory system with a Regulation, the Euratom Regulation on safeguards 3227/76. This has also been referred to above. At present, the States are involved in completing a new agreement with the IAEA – the Additional Protocol – as a result of which Euratom Regulation 302/2005 has been published.

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5 For application in the EU, these exemption criteria appear in articles 36 and 37 of the corresponding Verification Agreement.
6 The version of the Additional Protocol applicable to the EU non-weapon States was published in the Official Journal of the European Communities on 13th March 1999, under the reference L 67/44
According to the Euratom Treaty, the European Commission is the sole competent authority for the application of safeguards measures at all locations within the EU territory in which nuclear materials are handled in any way, with the understanding that activities having military purposes are excluded. This is without prejudice to a State’s establishing measures against nuclear proliferation within its own framework of competence.

The aforementioned Euratom Regulation regulates in detail the mission of the Euratom inspectors and, in general, of the Commission as the guardian of Community Law. By its very nature, this standard has a direct effect on individuals, without the need for it to be transposed by the member States.

The special assignment of realms of competence between the IAEA, the Commission and the Member States, as regards compliance with the responsibilities deriving from the Verification Agreement, has become more complex in application of the Additional Protocol, and this has significantly complicated the drawing up of the new Euratom Regulation.

In the system established by the new Verification Agreement, the Commission continues to be the competent authority for everything relating exclusively to nuclear materials (mining, wastes, exempted material, etc.). The responsibility is shared by the Commission and the State in the case of aspects exceeding the simple handling of nuclear materials at the facilities (for example the establishment of site boundaries or the resolution of doubts and inconsistencies). Finally, the States continue to be exclusively responsible for all areas in which nuclear material is not involved (for example, R&D activities or imports and exports). As regards complementary access, the inspectors of the Commission may accompany IAEA inspectors accessing locations housing nuclear materials, while the representatives of the State have the right to be present in any access requested by the IAEA.

It is interesting to note that the Community version of the Additional Protocol includes an Annex III that does not exist in other versions. This Annex III establishes a set of provisions that are specifically applicable within the EU, in which two aspects are especially significant. The first is an extension of the obligation to declare intra-Community transfers as exports or imports of nuclear equipment and materials. The second is recognition of the right of the member States to confer upon the European Commission certain functions that, according to the provisions of the Additional Protocol, are the exclusive responsibility of the States. In this respect it is understood that what is commissioned is practical performance and not the ultimate responsibility to comply with the Protocol, which in all cases will be to the State. Such delegation must be accepted by the Commission and communicated to the IAEA and the other Community member States.

5 PRACTICAL IMPLEMENTATION OF THE OBLIGATIONS OF THE PROTOCOL IN SPAIN

The Spanish Government has approved Royal Decree 1206/2003, of 19th September, for application of the commitments undertaken by the Spanish State under the Additional Protocol to the safeguards Agreement deriving from the Treaty on the non-proliferation of nuclear weapons. This Royal Decree establishes the obligations of the affected parties with respect to the Administration in aspects for which responsibility is exclusively to the State or is shared with the European Commission. Those obligations of the Additional Protocol that are the sole responsibility of the Commission are outside the scope of application of the said Royal Decree.

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8 This exclusion is derived from articles 77 a and 84 III of the Euratom Treaty.
9 The intra-Community movement of goods is not considered to constitute exports or imports within the general Community Law. However, the said Annex III establishes the commitment to also inform the IAEA of such movements.
As has been pointed out above, the Additional Protocol recognises the right of the States to delegate the performance of certain functions to the European Commission. In view of the fact that the latter possesses adequate human and material resources for the performance of such functions, Spain and eight other EU member States have informed of their intention to undertake such delegation. In this respect, the First Final Provision of the aforementioned Royal Decree empowers the Ministry of Economy to introduce into its provisions the changes required for such delegation to be implemented. This has been done through the issuing of a Ministerial Order in July 2004.¹⁰

The interested member States have negotiated bilateral agreements with the European Commission for the exact determination of their respective delegations. Spain has delegated to the European Commission all functions regarding the supply of information to the IAEA, except those referring to R&D activities relating to the nuclear fuel cycle – activities that are often carried out at research centres and universities and for which the State has preferred to retain its competence – and the export and import of equipment and materials, some of which may be beyond the scope of the nuclear industry.

Madrid, 21 March 2005

¹⁰ This Ministerial Order has been published as OM 2637/2004 of 21st July 2004, relating to the application of the compromises of Spain in the Additional Protocol (Boletín Oficial del Estado, 4th August 2004).
THE G8 GLOBAL PARTNERSHIP –
A SURVEY OF THE GERMAN ACTIVITIES AND THEIR LEGAL FRAMEWORK

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1 INTRODUCTION

The terrible terrorist attacks in London and Egypt have stressed two experiences which have already been made before: Terrorism is a global problem which does not stop at any national boundaries and international terrorists are prepared to use any means to cause terror and inflict appalling casualties on innocent people.

2 GERMAN PROJECTS WITHIN THE G8 GLOBAL PARTNERSHIP

On the basis of these perceptions and under the impression of the September 11th incidents, the G8 Leaders initiated at the summit meeting in Kananaskis in June 2002 the so-called “G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction”. One of the aims of this partnership was and still is to deny terrorists access to weapons of mass destructions and to materials needed to construct them. The G8 partners have agreed in Kananaskis to support cooperation projects in the Russian Federation which are dealing with disarmament, non-proliferation, the abatement of terrorism and the increase of nuclear safety. Germany has envisaged making available an amount of up to 1.5 billion US dollars over a period of 10 years for the implementation of projects within the Global Partnership. At the G8 Evian Summit in June 2003, the Partners have adopted an action plan and confirmed the afore mentioned aims.

In Germany three main projects have been started to implement the G8 Global Partnership: Support for a chemical weapons destruction plant in Kambarka and for the chemical weapons destruction facility in Gorny, support for the dismantlement of nuclear submarines by building a long-term interim storage facility and modernising the physical protection of nuclear material.

2.1 Dismantling of nuclear submarines in Russia

The core element of the German-Russian project “Dismantling of nuclear submarines in Russia” is the erection of a long-term interim storage facility for 120 nuclear submarine reactor compartments near Murmansk in north western Russia and the preparation of the reactor compartments for interim storage. Legal basis of this project is an agreement between the German Ministry of Economics and Labour and the former Russian Federation’s Ministry
for Atomic Energy which was signed in 2003. The agreement is on the support for the elimination of the nuclear weapons which the Russian Federation has pledged to reduce through the dismantlement of decommissioned nuclear submarines [1].

2.2 Destruction of chemical weapons

Within the Global Partnership, Germany supported the financing and the erection of facilities to destroy chemical weapons located at Gorny and Kambarka. An Intergovernmental Agreement of 1992 between the Russian Federation and the Federal Republic of Germany concerning the assistance to the Russian Federation with respect to the agreed reduction of the nuclear and chemical weapons and a Ministerial Agreement signed in 1993 are the legal basis for German-Russian programmes in the field of the destruction of chemical weapons [2].

2.3 Modernising the physical protection of nuclear material

The focal point of this article shall be the third project that Germany and the Russian Federation execute jointly within the G8 Global Partnership. It is titled “Modernising the physical protection of nuclear material”.

Aim of this project is the improvement of the physical protection of nuclear facilities in Russia, for example by installation of technical equipment such as detection instruments, night vision devices, fences or access barriers. Germany has agreed to provide assistance within the Global Partnership for these tasks in the form of project funds amounting to 170 million € by the end of 2009.

At a governmental level, the German Federal Foreign Office is in charge of the management of the project. The Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) is responsible for the technical and scientific execution and implementation of the project. In the frame of the G8 programme GRS is acting on behalf of the German Foreign Office.

GRS and the Federal Foreign Office have divided the project into subprojects, each concentrating on nuclear facilities in different parts of Russia:

- The Kurchatov and Bochvar Institutes in Moscow, where nuclear research is one of the main activities and nuclear material and high active radioactive waste are stored.
- The Mayak Production Association, which is located in the closed nuclear city Osyorsk. The physical protection systems of reactors in operation already have been updated and further measures are planned for the future.
- The Siberian Chemical Combine, located in a further closed city named Seversk, where several subprojects are envisaged to improve the protection of reactors, storages for nuclear material and the high-level waste disposals.

These are the summarised facts which lead to the actual theme of this lecture: the legal framework of the project “Physical protection of nuclear material”.

3 THE LEGAL BASIS OF THE PROJECT

The legal basis of the project can be categorised in conventions, contracts and agreements on the level of the international law (3.1) on the one hand and national contracts (3.2) on the other hand.
3.1 International Law

3.1.1 Statement by G8 Leaders: The G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction

The Statement by G8 Leaders of Kananaskis from 2002 is the starting point of the G8 Global Partnership and the fundamental document for all subsequent contracts and agreements. A subject matter of the Kananaskis statement is the stipulation of six main principles to prevent terrorists from gaining access to weapons or materials of mass destruction. One of these six principles comprises the development and maintenance of appropriate measures to account for and secure nuclear, chemical, radiological and biological weapons and related equipment. States lacking sufficient resources to account for and secure these items shall be supported. To accelerate the implementation of relevant projects a further principle is that existing multilateral treaties and agreements who aim at the prevention of proliferation or illicit acquisition of nuclear material shall be strengthened.

In addition to these principles, the Kananaskis statement contains guidelines set out in the framework conditions, which are the basis for the negotiations concerning agreements for new projects. These guidelines are:

- Mutually agreed effective monitoring, auditing and transparency measures and procedures will be required in order to ensure that cooperative activities meet agreed objectives (including irreversibility as necessary), to confirm work performance, to account for the funds expended and to provide for adequate access for donor representatives to work sites;
- The projects will be implemented in an environmentally sound manner and will maintain the highest appropriate level of safety;
- Clearly defined milestones will be developed for each project, including the option of suspending or terminating a project if the milestones are not met;
- The material, equipment, technology, services and expertise provided will be solely for peaceful purposes and, unless otherwise agreed, will be used only for the purposes of implementing the projects and will not be transferred. Adequate measures of physical protection will also be applied to prevent theft or sabotage;
- All governments will take necessary steps to ensure that the support provided will be considered free technical assistance and will be exempt from taxes, duties, levies and other charges;
- Procurement of good and services will be conducted in accordance with open international practices to the extent possible, consistent with national security requirements;
- All governments will take necessary steps to ensure that adequate liability protections from claims related to the cooperation will be provided for donor countries and their personnel and contractors;
- Appropriate privileges and immunities will be provided for government donor representatives working on cooperation projects;
- Measures will be put in place to ensure effective protection of sensitive information and intellectual property.

3.1.2 International conventions

An international convention with regard to the project is the “Convention on the Physical Protection of Nuclear Material” [3] which both the Russian Federation and the Federal Republic of Germany have ratified. The Convention in force applies to nuclear
material used for peaceful purposes while in international nuclear transport. The question of nuclear material in domestic use and storage is stipulated (only) in additional provisions. An amendment of the Convention is envisaged with the aim, inter alia, to expand its scope to cover the physical protection of peaceful nuclear facilities against sabotage [4].

In the area of nuclear liability, the situation is different: Germany is Party to the “Convention on Third Party Liability in the Field of Nuclear Energy of 29th July 1960, as amended by the Additional Protocol of 28th January 1964 and by the Protocol of 16th November 1982 (“Paris Convention”), and the Russian Federation ratified the “Convention on Civil Liability for Nuclear Damage of 21 May 1963” (“Vienna Convention”) in 2005. At present, only Germany has ratified the “Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention of 21 September 1988” (“Joint Protocol”), which aims at “…establishing a link between the Vienna Convention and the Paris Convention by mutually extending the benefit of the special regime of civil liability for nuclear damage set forth under each Convention…”.

Since the aforementioned international conventions only cover some aspects of the project respectively do not provide for a joint liability regime, a complex legal frame had to be drafted for the project “Physical protection of nuclear material” to ensure compliance with the Kananaskis guidelines.

3.1.3 Intergovernmental agreements

By the exchange of verbal notes in 2003 two bilateral intergovernmental agreements between the Russian and the German government have been made applicable [5]. They have been proved as appropriate instruments for the execution of projects with the Russian Federation in the past.

The first one is the intergovernmental agreement between the German and the Russian government on assistance for the Russian Federation in eliminating the nuclear and chemical weapons from 1992 [6]. This agreement constitutes a legal frame for interministerial agreements which shall be concluded between the responsible Federal Ministries with detailed rules for the execution of the projects. Therefore the intergovernmental agreement on assistance comprises basic rules concerning audits for the use of the technical assistance, and concerning administrative, customs and tax issues.

Since the Russian Federation had not signed respectively ratified in 2002 either the Vienna nor the Paris Convention a special legal regime on nuclear liability, the intergovernmental agreement between the German and the Russian government on nuclear liability in the context with deliveries from the Federal Republic of Germany for nuclear installations in the Russian Federation from 1998, [7] has been made applicable. It comprises, - in so far beyond the provisions of the agreement on assistance - a clause to release the German Party and German Suppliers from indemnifications in connection with third Party claims for nuclear damage arising from a nuclear incident, occurring within the territory of the Russian Federation and a liability waiver clause [8]. It is to mention that the agreement remains in force until the Russian Federation ratifies the Vienna Convention and the Joint Protocol, or joins some other international nuclear liability regime.

3.1.4 Interministerial agreements

As stated before, the “governmental agreement on assistance” provides a legal frame for interministerial agreements, which shall contain detailed rules for the execution of concrete projects. An interministerial agreement which applies within the G8 Global Partnership, is “The interministerial agreement between the German Federal Foreign Office and the Russian
Ministry for Atomic Energy on the cooperation to warrant the security in the process of eliminating nuclear weapons from 1992” [9].

Unlike the fore mentioned intergovernmental agreement on assistance, it comprises detailed provisions concerning, for example, dates, the goods to be supplied and inspection procedures. Especially with the aim to detail inspection and access procedures, the minutes of a meeting between several Russian and German Ministries and Offices and the GRS from the year 2002 has been made applicable for the project.

All of the fore mentioned agreements were concluded in the context with the execution of other projects and before the adoption of the “G8 Global Partnership” programme. To become an international binding obligation also for the project “Physical protection of nuclear material”, the exchange of verbal notes in 2003 was necessary. Verbal notes are declarations of intent; similar to offer and acceptance in civil law. Their exchange constitutes an international bilateral agreement between the Russian Federation and the Federal Republic of Germany. Beyond this connecting character, the verbal notes specify the different subprojects and the funds available.

3.2 National Law

Beneath the level of these international agreements a multitude of national contracts exists.

The German Foreign Office and the GRS have concluded a framework agreement in the year 2003. Similar to the intergovernmental agreement on assistance it provides basic rules for further, detailed contracts which have to be concluded for each subproject. Within the single subproject contracts the funds available, the tasks and measures to fulfil and the Russian facility are stipulated, for example. This construction warrants that each subproject can be executed and managed on the basis of uniform rules – a contribution to reach legal certainty for all parties concerned.

Furthermore the GRS and their Russian Partners have concluded special project contracts under the framework agreement. These contracts aim, among other things, at the implementation of the guidelines adopted in Kananaskis. They deal with, for example, customs and tax exemptions as well as the definition of project structures and milestones. The main task of GRS, namely the peer review of the goods and equipment implemented by the Russian Partners, is precised with a view to the special needs of each Russian facility.

4 CONCLUSIONS AND OUTLOOK

The previous survey has shown that a complex legal frame is necessary to implement the guidelines adopted at the Kananaskis summit in 2002. In spite of the fact that it is an ambitious task to draft the necessary agreements and contracts and to develop the project structure, the German project “Physical protection of nuclear material” complies with the guidelines adopted at the Kananaskis summit in 2002. This is the experience made during the first three years of the project.

Nevertheless, there might be things which can be harmonised in the future. The situation concerning nuclear liability has generally improved since the Russian Federation has ratified the Vienna Convention this year. Referring to projects with Germany concerning Russian nuclear facilities, bilateral liability agreements are still necessary since Germany has not joined the Vienna, but the Paris Convention, and Russia has not joined the Joint Protocol to these Conventions yet. Therefore it is planned, that the framework agreement on a multilateral nuclear environmental programme in the Russian Federation (MNEPR agreement) shall be applicable for the project “Physical protection of nuclear material” [10],
since this agreement reflects the state of the art in the field of nuclear liability and solves special problems regarding the implementation of the Kananaskis guidelines.

REFERENCES


ABSTRACT

This paper discusses certain significant changes in U.S. laws and regulations in the post-September 11 era regarding the export and import of nuclear and other radioactive materials, as well as related equipment. These changes demonstrate the U.S. Government’s growing vigilance concerning the movement and end-use of such materials and equipment in light of the intensified threat of their diversion to terrorist activities.

1 INTRODUCTION

In the aftermath of the tragic events of September 11, 2001 in New York and Washington, many steps were taken in the United States to make it more difficult for terrorists to divert to their destructive schemes the equipment and materials present in the everyday stream of American commerce. It was not surprising, given longstanding concerns that terrorists would obtain access to nuclear and other radioactive materials, either for the manufacture of crude nuclear weapons or for radiological dispersion devices (often referred to as “RDDs” or “dirty bombs”), that a great deal of attention fell on the civilian nuclear industry as a possible target for terrorist operations, as well as a potential source of materials for terrorist use.

Much has been done by the U.S. Nuclear Regulatory Commission (“NRC”), for example, to require U.S. nuclear power utilities to “harden” their facilities against possible terrorist attacks. These steps range from more rigorous training, testing, and staffing requirements for the power reactor guard forces to security improvements in physical structures, additional analyses concerning containments’ ability to withstand airplane crashes, and even the closure of the once-popular visitor centers at many nuclear power plants. In addition, the NRC and other regulatory agencies have devoted increased attention to the circumstances under which nuclear materials are transported within the United States. Likewise, beyond U.S. boundaries, the Bush Administration has manifested a renewed focus on efforts to secure existing stocks of nuclear materials and to prevent the creation of additional fissile materials beyond near-term needs. Recent examples of these
efforts include a U.S.-led program to shut down the three plutonium production reactors at Seversk and Zheleznogorsk in the Russian Federation (replacing their electricity with other sources of power) and the bi-lateral program for the use of Russian and U.S. surplus military plutonium in MOX fuel for nuclear power plants.

These activities have been the focus of much attention in the popular press. Much less public attention has been paid, however, to equally important efforts by the NRC in the licensing and other oversight of imports and exports of nuclear and other radioactive materials during the last four years to reduce the likelihood that commerce in such materials crossing U.S. national borders could be diverted by terrorists to destructive purposes. This paper will focus on that subject, and particularly on the recent NRC implementation of International Atomic Energy Agency (“IAEA”) guidelines to prevent such diversions, as well as new Congressional grants of authority to the NRC to further that objective.

2 DISCUSSION

Immediately after the September 11 attacks, academics and policymakers throughout the United States advanced a wide spectrum of ideas for curtailing the proliferation of nuclear materials and keeping them out of the hands of terrorists. For example, Lawrence Scheinman,1 a professor of international policy in the Center for Nonproliferation Studies at the Monterey Institute of International Studies, identified three areas in which improvements could better thwart terrorist access to weapons of mass destruction (“WMD”) or WMD materials while simultaneously furthering traditional nonproliferation goals. Prof. Scheinman recommended (1) strengthening the verification and control of nuclear materials inventories through more comprehensive and universal safeguards agreements, (2) enhancing and making more universal agreements on the physical protection of nuclear material; and (3) fortifying export control regimes and increasing export transparency. As we shall see, the United States has taken steps to address some of the pre-2001 regulatory gaps in each of these three areas.

2.1 NRC Regulations Governing the Export and Import of Radioactive Materials

Materials used in the nuclear fuel cycle, largely source material and special nuclear material, have been subject to rigorous export and import controls by the United States for decades, due principally to concern over their proliferation potential if diverted from their intended end-uses. Other radioactive materials, however, particularly highly radioactive byproduct materials used medically, commercially, and industrially in radioactive sources, have been subject to much less regulatory attention. September 11 provided the reasons to revisit, and ultimately alter, that less stringent approach. In the wake of September 11, the NRC undertook a comprehensive review of nuclear and radioactive material security requirements, focusing particularly on high-risk radioactive byproduct material that could be used in creating RDDs. The NRC’s review found responses to many regulatory shortcomings on this subject in multilateral activities already being conducted by the IAEA regarding nuclear and radioactive material security, the roots of which can be traced back to the International Conference on the Safety of Radiation Sources and Security of Radioactive Materials held in Dijon, France in 1998. Following that conference, the IAEA initiated

1 During the Clinton Administration, Prof. Scheinman served as the Assistant Director for Non-Proliferation and Regional Arms Control of the U.S. Arms Control and Disarmament Agency. He had previously served in other U.S. Government agencies and spent two years as Special Assistant to IAEA Director General Hans Blix.
discussions among technical and legal experts, who eventually agreed that any international undertaking in the areas of the safety and security of radiation sources should be in the form of a code of conduct.[iv] The September 11 attacks lent a new sense of urgency to these efforts. Following the International Conference on Security of Radioactive Sources in Vienna in March 2003, the IAEA Board of Governors and then the General Conference approved the text of the Code of Conduct on the Safety and Security of Radioactive Sources (“Code of Conduct”) in September 2003. One year later, the IAEA General Conference endorsed the IAEA Board’s approval of the supplemental Guidance on the Import and Export of Radioactive Sources (IAEA Guidance), and noted the intention of more than 30 countries to work towards effective import and export controls over such sources by December 31, 2005. On July 1, 2005, with the adoption of new regulations by the NRC, the United States became the first state to put in place legally enforceable export controls for radioactive sources based on the Code of Conduct and IAEA Guidance.[v]

Although the Code of Conduct and the supporting IAEA Guidance are not legally binding on IAEA Member States, the NRC established the new rule (an amendment to several sections of Part 110 of the NRC’s regulations) to update its export/import regulations and codify, in the main, the provisions of the Code of Conduct and the IAEA Guidance. In particular, the NRC adopted much of Paragraphs 23 through 29 of the Code of Conduct, as well as the supporting IAEA Guidance, concerning the development and multilateral harmonization of policies and laws on exports and imports of Category 1 and 2 radioactive sources, to ensure that these sources are exported only to authorized users in countries with adequate regulatory controls, and not diverted for inappropriate use.

The new NRC rule went beyond the Code of Conduct and the IAEA Guidance by extending coverage to the export and import of bulk radioactive material—material which raises security concerns similar to, if not greater than, those for material in sealed sources. The NRC rule also departed from the Code of Conduct and Guidance in that it addressed the import of plutonium but not its export, the latter being covered in separate, pre-existing NRC rules (10 C.F.R. §§110.21, 110.42). Finally, the new NRC rule did not cover imports or exports of radium-226, because exports of that naturally-occurring radioactive material were, as of July 1, still controlled by the U.S. Commerce Department rather than the NRC.2 In order to allow time for exporters and importers to apply for and obtain licenses newly required under the rule, the NRC deferred the effective date of that rule by six months, until December 28, 2005.

Under NRC rules in effect prior to 2005, radioactive sources could be imported into the United States and exported to all but a few designated restricted or embargoed destinations under a general license,3 requiring only reporting to the agency but no prior agency approval. The new NRC rule, however, requires specific licenses for high-risk radioactive materials when exported or imported in amounts exceeding clearly defined threshold limits (i.e., those listed in the new Appendix P of 10 C.F.R. Part 110). In addition to requiring a specific export and import license for such quantities, the new rule mandates advance shipment notification procedures (such notices to be treated as sensitive unclassified

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2 This anomaly was corrected by §651(e) of the Energy Policy Act of 2005 (enacted into law on August 8, 2005), which added radium-226 and certain other irradiated and naturally-occurring radioactive materials to the definition of “byproduct material” in the Atomic Energy Act.

3 A general license is a paperless authorization that is effective without the filing of an application with the NRC or the issuance of licensing documents. A specific license is "a paper document" issued by the NRC only after the application (NRC Form 7 or letter) submitted has gone through an interagency review process and favorable reviews are issued. Under 10 C.F.R. §110.20, a person may rely upon an NRC general license as authority to export or import equipment or material if that equipment or material is covered under §§110.21 through 110.30.
information), verification of the recipient facility’s licensing status, and NRC review of the adequacy of the receiving country’s controls on radioactive sources:

(a) The export of high-risk radioactive material requires prior notification to the NRC and the importing country’s comparable authority, while the import of such material requires similar notice to the NRC;

(b) The importing country must, absent specifically defined “exceptional circumstances,” have the technical and administrative capability and the resources and regulatory structure to manage the radioactive material in a safe and secure manner;

c) The NRC will license exports of the subject radioactive sources and materials only if it can satisfy itself that the importing country has authorized the recipient to receive and possess them, and, in the case of Category 1 quantities, where the NRC has received the importing country’s consent to the shipment; and

(d) If the potential recipient lacks the necessary authorization to receive and possess the radioactive or source material, or a receiving country lacks the technical and administrative capability, resources, or regulatory structure to manage them, the export may still be authorized by the NRC if it finds the “exceptional circumstances” described in paragraph 15 of the IAEA Guidance, but only with the consent of the government of the importing country (for both Category 1 and Category 2 quantities).

The principal criterion for NRC approval of exports of the materials and quantities listed in the new Appendix P is the statutorily-mandated determination that the export is not inimical to the common defense and security of the United States. In making the inimicality determination, the NRC will assess whether the four requirements described above have been met. It will also assess reports concerning the foreign recipient’s prior use and/or diversion of radioactive materials and whether such recipient has been denied previous export or import licenses for such materials, as well as the “catch-all” consideration of the risk of diversion or malicious acts involving the materials proposed for export. In evaluating each license application, the NRC will be able to exercise discretion on a case-by-case basis. For example, the NRC may, on the one hand, issue a license covering multiple shipments and/or a period of years (not to exceed the duration of the recipient’s authorization from its home government to possess the subject material), or, on the other hand, strictly limit the size or number of exports to new recipients or countries with limited experience in their regulatory infrastructure.

2.2 Exports to Terrorist-Supporting Countries Prohibited

The U.S. Government’s intensified efforts to reduce nuclear proliferation and terrorist access have encompassed exports to countries sponsoring international terrorism. In May 2005, the NRC finalized a regulation that moved Syria from the list of restricted destinations\(^4\) for exports of nuclear equipment and material in 10 C.F.R. §110.29 to the list of embargoed destinations in 10 C.F.R §110.28.\(^5\) Prior to this regulation, it was possible under a general license to export to Syria certain equipment and materials of very low WMD significance. The new rule, however, precluded the use of a general license for any material or equipment exports to Syria subject to the NRC’s jurisdiction.\(^5\)

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\(^4\) “Restricted destinations” refers to states that are not parties to the NPT or are otherwise subject to restrictions for reasons recommended by the executive branch. 10 C.F.R. §110.2. “Embargoed destinations” means states to which no nuclear material or equipment can be exported under an NRC general license because there is a U.S. trade embargo in effect. Id.

\(^5\) This regulation bans the export to Syria without a specific NRC license of nuclear or other radioactive material in the quantities covered under §§§110.21-110.25, including (1) special nuclear material (e.g., plutonium, uranium enriched in the isotope 235); (2) source material (e.g., thorium, un-enriched uranium, or combinations of the two); (3) by-product material (i.e., radioactive material (except special nuclear material)
The NRC’s rule regarding exports to Syria was itself overtaken a few months later with the enactment of §632 of the Energy Policy Act of 2005. That provision barred the NRC and the U.S. Departments of Energy and Commerce from licensing or otherwise authorizing the export (or other direct or indirect transfer or retransfer) of any of the materials, equipment, or technology under their respective nuclear export control jurisdictions to any state the government of which has been named by the U.S. Secretary of State as sponsoring terrorist activities. Countries currently on the State Department’s list of terrorist-supporting states include Cuba, Iran, Libya, North Korea, Syria, and Sudan. Excluded from this prohibition are exports or other transfers of items for safeguards and certain closely related purposes. In addition, the provision contains a Presidential waiver mechanism, allowing the President some (but not a great deal of) flexibility to reward improved conduct by the subject countries or to respond to serious radiological hazards in such countries.

2.3 Other Relevant Provisions in the Energy Policy Act of 2005

The importance of preventing nuclear proliferation and terrorist access to radioactive materials also remains paramount in current legislative actions. In addition to those provisions noted above, the new Energy Policy Act contains three other provisions relevant to the topic of this paper. Section 651(d) of that statute adds a new §170H to the Atomic Energy Act intended to provide all necessary authority for the U.S. Government to comply with the Code of Conduct. This new section covers both Category 1 and 2 sources, as defined in the Code of Conduct, but also other materials that the NRC, by regulation, determines pose a similar threat. It requires that the NRC promptly issue regulations prohibiting the export of a radiation source unless the recipient is authorized to receive and possess the source under the laws of its country, the recipient country has the “appropriate technical and administrative capability, resources and regulatory structure to ensure that the radiation source will be managed in a safe and secure manner,” and appropriate prior notifications have been received.6 It also establishes new criteria for NRC approval of the import, sale, or other transfer of ownership of radiation sources and provides for the creation of a mandatory tracking system for radiation sources in the U.S.7

Section 656 of the Energy Policy Act adds a new §170I to the Atomic Energy Act which requires the NRC to create a system assuring that all nuclear or other radiological materials transferred into or out of the U.S. are accompanied by a manifest describing those materials. Persons receiving or physically accompanying the transfer of such materials will be required to undergo a security background check. Unless exempted by the NRC, this new manifest and background check system will apply to all special nuclear, source, and byproduct material entering or leaving the U.S., as well as spent fuel and radioactive waste.

Not all post-September 11 changes to U.S. law and regulations governing the international movement of radioactive materials have moved in the direction of greater

6 It seems likely that the regulations issued by the NRC on July 1, 2005, discussed above, will in most respects meet the requirements set forth in the new statute. Unlike the NRC regulations and the Code of Conduct, however, the new §170H does not expressly provide for licensing approvals in “exceptional circumstances.”

7 Again, the NRC has to some extent anticipated this action by the Congress. A few days before the new statute was signed into law, the NRC published a proposed rule to create a National Source Tracking System, in which licensees for sealed sources would be required to report their manufacture, transfer, receipt and disposal thereof. 70 Red. Reg. 43646 (July 28, 2005).
stringency, however. For example, §630 of the new Energy Policy Act somewhat relaxes the rules governing the export of highly enriched uranium ("HEU") for use in non-U.S. reactors for medical isotope production. The pre-existing law\(^8\) barred the export of highly enriched uranium ("HEU") to foreign reactors unless the owners thereof undertook to commit to use low-enriched uranium ("LEU"), which cannot be used in nuclear weapons. The new §630 relaxes those restrictions for the production of medical isotopes in reactors in five countries (Canada, Belgium, France, Germany, and The Netherlands), provided that certain additional conditions are met. Among those conditions are assurances from the government of the recipient country that the HEU exported will be used only to produce medical isotopes and that the reactor used to irradiate the HEU is converting, or is subject to an agreement to convert, to alternative fuel. The NRC is required to review the adequacy of physical protection obligations for HEU and is directed to impose additional requirements as necessary. The relaxation in HEU export licensing requirements authorized by §630 would end if the Secretary of Energy certified that reactors not using HEU were able reliably to meet U.S. medical isotope needs without a cost increase of more than 10%. Section 630 was the subject of a vigorous debate in the Congress, indeed being stricken from the legislation by the Senate in late June, only to be reinserted by the bicameral conference committee before enactment. Among the arguments made against the provision were that it was not necessary, would undercut U.S. leadership on nuclear nonproliferation, and would be unenforceable because HEU, once it entered the EU, would be beyond U.S. power to prevent movement to EU countries other than the listed recipients.

### 2.4 NRC General License for Import of Major Nuclear Reactor Components

One other post-September 11 regulatory amendment is also worthy of note, again because it goes against the general trend toward greater stringency of controls. As such, it reflects a realistic approach, distinguishing between items that might be useful to terrorists and those that would not. In 2003, the NRC amended its regulations to provide a general license to import major nuclear reactor components for end-use at NRC-licensed reactors.\(^9\) Prior to the amendment, the import of major components for nuclear reactors, including nuclear reactor vessel closure heads (which are not currently produced in the U.S.),\(^9\) required a specific import license.\(^10\) The NRC reexamined the need for a specific import license in light of the anticipated requests from U.S. nuclear utilities for imports of reactor vessel closure heads and other major components. After consulting with the Department of State

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\(^8\) Under the so-called Schumer Amendment to the Atomic Energy Act, the NRC could “issue a license for the export of highly enriched uranium to be used as a fuel or target in a nuclear research or test reactor only if,” in addition to any other requirement of that Act, the NRC determined that:

1. there is no alternative nuclear reactor fuel or target enriched in the isotope U-235 to a lesser percent than the proposed export that can be used in the reactor;
2. the proposed recipient of the HEU has provided assurances that, whenever an alternative nuclear reactor fuel or target can be used in that reactor, it will use that alternative in lieu of HEU; and
3. the United States Government is actively developing an alternative nuclear reactor fuel or target that can be used in that reactor.


\(^9\) Vessel closure heads constitute a significant part of the reactor pressure vessel and are therefore categorized as “major components” of a nuclear reactor, along with three other significant reactor components. 10 C.F.R. §110.2; 10 C.F.R. 110, Appendix A.

\(^10\) See 10 C.F.R. §§110.5 and 110.20(a)(2).
and determining that the new regulation would not be inimical to U.S. security nor dangerous to public health and safety, the NRC concluded that major nuclear reactor components should be permitted to be imported into the U.S. under general license, provided that legally binding arrangements exist establishing that the component is for end-use at a reactor that is licensed under either Part 50 or Part 52 of the NRC’s regulations.\(^ {11}\)

2.5 Executive Order Blocking Property of Weapons of Mass Destruction Proliferators

On June 28, 2005, President Bush signed Executive Order 13382, *Blocking Property of Weapons of Mass Destruction Proliferators and Their Supporters.*\(^ {10}\) This order “blocks” (i.e., freezes) the property and interests in property in the U.S. or subject to U.S. jurisdiction of (1) any organization/person listed in the Annex to the order;\(^ {12}\) (2) any foreign person determined by the Secretary of State and other relevant federal agencies to have engaged or attempted to engage in activities that materially contribute to the proliferation of weapons of mass destruction or their means of delivery; (3) any person determined to have provided or attempted to provide financial, material, technological or other support for any activity or transaction that contributes to the proliferation of WMDs or to any person whose property and interests in property are blocked pursuant to this order; and (4) any person determined to be owned or controlled by, or acting on behalf of, any person whose property and interests in property are blocked pursuant to this Order.

Executive Orders 12938 and 13094, issued in 1994 and 1998, respectively, had established controls on the export of certain products that could aid in the development, production, stockpiling, delivery or use of WMDs, and placed sanctions on foreign countries or persons involved in the proliferation of WMDs. On September 23, 2001, President Bush issued Executive Order 13224, which blocked property and interests in property of any person within U.S. jurisdiction who is determined by the Secretary of State to have committed, or to pose a significant risk of committing, acts of terrorism that threaten the security of U.S. nationals or the national security, foreign policy, or economy of the United States. Executive Order 13382 allows the U.S. Government to cast a significantly wider net in the process of addressing the WMD proliferation threat. Section 1(b) prohibits any transaction or dealing by any person under U.S. jurisdiction in property or interests in property blocked pursuant to this Order, including but not limited to (1) the making of any contribution or provision of funds, goods, or services by, to, or for the benefit of, any person whose property and interests in property are blocked pursuant to the Order, and (2) the receipt of any contribution or provision of funds, goods, or services from any such person. Under Executive Order 13224, violations were limited to any person found to have supported the organizations and persons listed in the Order’s Annex; now, violations can be found for any person who has provided funds, goods, or services to someone who has attempted to engage in an activity that can be deemed to “pose a risk” of materially contributing to the proliferation of WMDs. Furthermore, although Section 10 of Executive Order 13224 had limited the seizing of assets without prior notice to organizations and persons listed in that Order’s Annex, Section 5 of Executive Order 13382 permits the U.S. Government to seize

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\(^ {11}\) 10 C.F.R. Part 50 covers licensing of domestic production and utilization facilities; 10 C.F.R. Part 52 covers the issuance of early site permits, standard design certifications, and combined constructing and operating licenses for nuclear power facilities subject to Section 103 or 104b of the Atomic Energy Act of 1954, as amended.

\(^ {12}\) This Annex includes organizations that are known to be directly involved in the proliferation of weapons of mass destruction.
without prior notice any property and interests in property that are blocked pursuant to Section 1 of that Order.

3 CONCLUSION

The United States has taken, and is continuing to take, a number of steps to make it more difficult for terrorists and their supporters to gain access to radioactive materials and associated equipment. Some of these measures are informed by or in compliance with IAEA initiatives, while others are unilateral in character. Yet, as events in Madrid and London have made ever more obvious, terrorist violence is a worldwide problem and can be addressed effectively, if at all, only by cooperative efforts by all the supplier countries. This is particularly the case with respect to materials and equipment in the flow of international nuclear commerce, where the supplier countries have already demonstrated the capacity to exercise a degree of collective restraint to deter proliferation of nuclear weapons. That same restraint must, in their common self-interest, come to characterize as well their trade in hitherto less rigorously regulated materials and other goods which can be used to create radiological weapons of smaller physical destructive power, lest RDDs and dirty bombs become the terrorists’ weapons of choice in the second half of this decade.

REFERENCES


LE TRANSPORT MARITIME INTERNATIONAL DE MATIERES RADIOACTIVES

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RESUME


Bien qu’abondante, diversifiée et régulièrement modifiée, cette réglementation comporte certaines faiblesses mises en lumière par plusieurs accidents ou incidents sans conséquence majeure.

Dans ce contexte d’incertitude, il serait utile que l’AIEA et l’OMI se réunissent pour élaborer un texte normalisator unique sur le transport maritime international de matières nucléaires. Rappelons qu’elles ont réussi à se concerter pour aboutir au Code INF. Néanmoins, les deux organismes continuent de posséder des conceptions divergentes sur la sûreté du transport : l’AIEA la fonde sur le conditionnement, tandis que l’OMI semble privilégier avant tout le navire. En fait, pour aboutir à une normalisation efficace, le transport maritime de matières nucléaires doit être envisagé dans ses deux aspects : le navire et le conditionnement. Et il paraîtrait normal que l’AIEA prenne le pilotage de cette normalisation en raison des matières mêmes.

SUMMARY

A vast number of international norms rule nuclear material maritime transportation. They are unequally integrated into communitarian and national legislations. These different norms are a matter for several international organisms: the International Atomic Energy Agency (IAEA) and the International Maritime Organization (IMO). In 1961, the IAEA published the Regulations for the safe transport of radioactive material. According to the IMO, a ship which carries nuclear wastes must respect the following texts: the International Maritime Dangerous Goods Code (IMDG Code, adopted for the first time in 1965), the 1960 International Convention for the Safety Of Life At Sea (SOLAS Convention), the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL Convention) and the International Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks on Board Ships (INF Code, adopted in 1993). Whilst abundant, diversified and regularly modified, these regulations have some weaknesses shown by several accidents or incidents without any serious consequence.

In parallel, international conventions established a nuclear liability regime. Adopted under the aegis of the OECD, the 1960 Paris Convention laid the principles of international civil liability for nuclear damage, mostly by the channeling of liability to the installation operator. The IAEA took up that system in its 1963 Vienna Convention. Other conventions and protocols made easier the improvement of the victims’ compensation. The 1988 Joint Protocol links the first two conventions to avoid any enforcement conflict. However, the efficiency of these conventional texts remains restricted by some countries’ non-adhesion, among which big nuclear producers. Moreover, the regulations applies to a limited number of states, products and circumstances. Thus in 1998, the parties to the Paris Convention undertook its revision so as to expand its geographical frame, increase the compensation amounts and widen the notion of nuclear damage. In spite of all the efforts made to improve the existing conventions, there are still some gaps.

In so uncertain a context, the IAEA and the IMO should meet to draft only one text about nuclear material international maritime transportation. They already managed to cooperate to come to the INF Code. Nevertheless, these two organisms still have different conceptions about transportation safety: for the IAEA, it relies on packaging, while the OMI wants it to depend on the ship. Actually, to achieve an efficient normalization, nuclear material maritime transportation must be contemplated under both sides: ship and packaging. And the IAEA would normally be in charge of this normalization, because of the nature of the material itself.

En dépit d’une sûreté bien réelle par rapport à d’autres formes d’énergie, le nucléaire civil suscite toujours une forme d’inquiétude irraisonnée. Cette crainte se trouvent sans doute accentuée lorsque des matières radioactives se déplacent. En témoignent parfois les manifestations écologiques dans les ports au moment de l’acheminement de combustibles prêts à être utilisés ou devant faire l’objet d’un retraitement, dès lors que des associations
activistes écologiques apprennent, souvent par des voies plus ou moins détournées, la date et le circuit le plus probable du transport. Un accident qui surviendrait lors d’un transport de matières radioactives pourrait naturellement aboutir à des retentissements médiatiques rapides, dès lors que l’accident ferait l’objet de communiqués de presse manquant de transparence.

En raison des spécificités du transport par navire, soumis aux aléas de la mer, il faut admettre qu’il apparaît indispensable de mettre en œuvre des moyens spécifiques et d’accorder une vigilance particulière en cas d’utilisation de ce moyen de transport. Il ressort que le transport maritime de matières radioactives fait peser des risques importants pour ceux qui se chargent du transport maritime en termes de coûts induits et de notoriété et peut malheureusement aboutir à des conséquences graves sur les hommes et l’environnement maritime en cas d’incidents ou d’accidents. Pour ces raisons, l’ensemble des règles et procédures applicables doit être impérativement respecté.

D’un point de vue terminologique, il y a lieu d’observer qu’il existe deux expressions différentes : les substances nucléaires et les matières radioactives, qui ne se recoupent pas complètement, puisque les substances nucléaires ne correspondent pas exclusivement à des matières radioactives.

Dans ce contexte, l’accent sera mis sur le respect d’une sûreté optimale de tous transports maritimes de matières radioactives dans le cadre d’une organisation spécifique (partie 1). Lorsque, malgré toutes les précautions prises, des dommages surviennent au cours d’un tel transport, les responsabilités seront déterminées au regard des dispositions internes et internationales existantes (partie 2).

**PARTIE 1 – L’ORGANISATION DE LA SURETE DES TRANSPORTS MARITIMES DE MATIERES NUCLEAIRES**

Le transport maritime de matières nucléaires est encadré par une abondance de normes internationales, communautaires et nationales (I). Toutefois, cette réglementation, qui manque manifestement d’une homogénéité globale, comporte certaines faiblesses (II), qui n’ont fort heureusement pas donné lieu, à ce jour, à des accidents nucléaires possédant de grands retentissements.

I- La hiérarchie des normes applicables au transport maritime de matières nucléaires

En matière de transport maritime de matières radioactives, des normes internationales, communautaires et internes coexistent. L’efficacité apparente des normes internationales (A), a entraîné leur intégration, d’une manière plus ou moins poussée, dans les dispositifs réglementaires communautaires et nationaux (B).

A) La prépondérance des normes internationales

1. Les recommandations de l’AIEA relatives au transport de matières radioactives

En 1961, l’AIEA a publié un ensemble de textes appelé Règlement sur le transport de matières radioactives (Regulations for the safe transport of radioactive material), ainsi que toute une série de documents visant à en faciliter l’application. Cette réglementation a été élaborée en s’appuyant sur des expertises réalisées par les Etats membres et par des organismes internationaux. Le Règlement, révisé régulièrement depuis sa promulgation, s’applique aux Etats qui y adhèrent, quel que soit le mode de transport utilisé.

Les recommandations portent essentiellement sur le conditionnement des matières nucléaires pendant leur transport, qui doit agir comme un bouclier, afin de protéger les personnes et l’environnement. Il faut garantir la protection des matières transportées, le contrôle du niveau de radiation externe, réduire les éventuels dommages et éviter d’éventuelles réactions en chaîne. Précisons que les matières radioactives sont classées en cinq catégories, clairement définies, qui déterminent le type de conditionnement à utiliser pour le transport.

2. Les normes et conventions publiées par l’OMI

Selon l’OMI, un navire transportant des matières nucléaires doit être conforme aux exigences de quatre textes cumulativement applicables :
- le Code maritime international des matières dangereuses (International Maritime Dangerous Goods Code, dit Code IMDG ),
- la Convention MARPOL (Convention internationale pour la prévention de la pollution par les navires),
- la Convention internationale pour la sauvegarde de la vie en mer (International Convention for the Safety Of Life At Sea dite Convention SOLAS )

Dans un souci de clarification, il convient de présenter rapidement les conventions SOLAS et MARPOL et les normes édictées par le Code IMDG, qui concernent toutes les matières dangereuses, puis les normes spécifiques au transport de déchets nucléaires contenues dans le Code INF.

a) Les dispositions de la Convention SOLAS

Il s’agit de la première Convention à voir le jour pour réglementant le transport maritime de matières dangereuses. En 1960, une nouvelle version a mis en place une classification des matières dangereuses, permettant de la sorte une grande avancée dans le domaine. Selon cette classification, toujours en vigueur actuellement, les matières radioactives appartiennent à la septième des neuf classes de produits dangereux définies par l’OMI.

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1 Sa version actuelle, TS-R-1, est entrée en vigueur en janvier 2003.
2 Publié en 1965.
4 Adoptée en 1914 avant la création de l’OMI.
5 Adopté en 1993.
La Convention, dont la version actuelle date de 1974, établit en détail des règles relatives à la preuve de la conformité des navires à la Convention, à leur stabilité, aux instruments de navigation, aux installations mécaniques et électriques, à la protection contre les incendies et aux équipements de sauvetage. Le chapitre VII de la Convention SOLAS, intitulé « Transport de matières dangereuses », renvoie au Code IMDG pour le transport des matières dangereuses et au Code INF pour le transport des déchets nucléaires.

b) Les dispositions de la Convention MARPOL


La Convention MARPOL comporte des dispositions touchant la construction, l’inspection, l’équipement, la tenue des dossiers et les procédures portuaires. Leur respect est assuré par l’Etat dont le bateau bat pavillon et, à ce titre, il doit assumer la responsabilité de l’inspection et de la certification du navire.

Les violations commises sur le territoire d'un Etat partie sont sanctionnées, soit par la législation de cet Etat, soit par celle de l'Etat du pavillon. Les Etats parties peuvent donc sanctionner tout navire étranger circulant dans les eaux placées sous leur juridiction.

c) Les dispositions du Code IMDG

Ce code, qui a pour objet de faciliter l’application du chapitre VII de la Convention SOLAS, sert de guide au transport maritime de matières dangereuses en reprenant les neuf classes de produits dangereux de la Convention, complétées de dispositions plus détaillées et plus adaptées au transport par bateau. Un amendement à la Convention SOLAS adopté en mai 2002 a rendu le Code IMDG obligatoire à compter du 1er janvier 2004, à l’exception de quelques dispositions qui demeurent de simples recommandations. Cette différenciation traduit, dans une certaine mesure, les hésitations à édicter des règles obligatoires, qui nécessitent des aménagements spécifiques pour les respecter. Normalement, on peut imaginer que les simples recommandations deviendront, dans un avenir plus ou moins proche, des règles obligatoires.


Les dispositions de ce Code s’appliquent à tous les Etats contractants de la Convention SOLAS et sont régulièrement mises à jour par l’OMI en fonction de l’évolution des matières dangereuses et des techniques liées au transport maritime au sens large.
d) Les dispositions du Code INF

Ce Code constitue l’aboutissement de nombreuses discussions au sein de l’OMI autour de considérations spécifiques, comme la sûreté des équipages, la protection contre les incendies ou encore le besoin de systèmes de refroidissement des containers. L’existence de navires spécialement conçus pour le transport de matières radioactives est rapidement apparue comme primordiale, surtout que la question n’avait jamais été abordée auparavant par l’AIEA, sans doute parce que le monde maritime n’entre pas dans ses premières préoccupations. En raison d’approches différentes en raison de dispositions antérieures édictées par l’AIEA, l’OMI et l’AIEA ont été contraintes de mener de longues négociations, afin de parvenir à concilier leurs approches et leurs règles respectives.

Finalement, trois classes de navires autorisés à transporter des matières radioactives ont été définies, en fonction de la quantité de radioactivité que chaque catégorie de navire peut contenir. Le Code, qui reprend des normes de l’AIEA, s’applique de manière impérative depuis 1999.

B) L’intégration des normes internationales aux systèmes juridiques communautaire et national

Ces normes internationales en matière de transport de matières nucléaires ont été intégrées, plus ou moins largement, dans les réglementations communautaires et nationales, afin de garantir et de renforcer leur application.

1. Les travaux et dispositions européens

Au niveau communautaire, depuis 1982, un groupe de travail est chargé des questions relatives au transport des matières radioactives. Ce groupe permet le contact entre les Etats Membres, la Commission et l’AIEA et réalise des études sur le transport de matières radioactives au sein de l’Union européenne. L’application dans la Communauté européenne du Règlement de l’AIEA a nécessité quelques ajustements, notamment quant à la libre-circulation de certains types de produits. La Communauté a émis des dispositions propres ; la plus importante d’entre elles est la Directive 93/75/CE du Conseil du 13 septembre 1993 relative aux conditions minimales exigées pour les navires à destination des ports maritimes de la Communauté, ou en sortant, et transportant des marchandises dangereuses ou polluantes. La portée de ces dispositions dépend de leur prise en compte ou non dans les droits nationaux des Etats Membres.

2. La législation française

En droit interne français, les textes de base à prendre en considération sont notamment la loi n° 83-581 du 5 juillet 1983 sur la sauvegarde de la vie humaine en mer, l’habitabilité à bord des navires et la prévention de la pollution, son décret d’application n° 84-810 du 30 août 1984 et l’arrêté du 2 juillet 1997 relatif à la sécurité des navires transposant la directive 93/75/CE modifiée. Ces textes sont harmonisés selon les prescriptions du Code IMDG auquel ils se réfèrent. En témoigne l’article 411-1.02 du Règlement relatif à la Sécurité des Navires (RSN) qui prévoit que « les règles applicables pour le transport des

6 JO L 247 du 5 octobre 1993.
marchandises dangereuses sont celles contenues dans le Code maritime international des marchandises dangereuses ».

II- Les faiblesses de la réglementation

Préalablement, il convient de distinguer l’incident nucléaire de l’accident nucléaire. L’AIEA prévoit que l’incident nucléaire survient dans des conditions normales de transport et peut par exemple être le fait d’incidents légers de manutention ou d’entreposage, de chocs à faible vitesse ou de conditions météorologiques défavorables. L’accident nucléaire survient, quant à lui, à l’occasion d’un accident de transport.

Certains incidents ou accidents survenus ces dernières années ont mis en lumière des lacunes dans la réglementation relative à la sécurité du transport de matières radioactives (A). Un autre problème réside dans la difficulté inhérente à la réglementation d’un domaine aussi sensible (B). Il convient tout d’abord de distinguer « l’incident nucléaire » de « l’accident

A) Des lacunes mises en lumière par la pratique

Des accidents ou incidents intervenus durant le transport de matières radioactives prouvent, d’une manière démonstrative, les insuffisances de la réglementation.

1. Exemples d’accidents nucléaires

Le 25 août 1984, le cargo Mont Louis est éperonné et coulé par un ferry au large d’Ostende. Le Mont Louis transportait trente containers remplis d’hexafluorure d’uranium faiblement enrichi, soit 236 tonnes d’uranium au total. Tous ont été récupérés. Parmi les trente containers, un seul a fui en raison d’une valve endommagée, mais cette fuite aurait été sans conséquence notable sur l’environnement.

En 1997, le navire MS C Carla, navire porte-conteneurs, se brise en deux au large des Açores sous l’effet d’une violente tempête. Un des conteneurs transporte trois irradiateurs biologiques équipés de leurs sources radioactives. Ces cellules radioactives sont conçues pour résister à la pression régissant à 200 mètres de profondeur. En descendant vers le fond situé à plus de 3 000 mètres à l’endroit de l’accident, elles ont donc implosé. Les conséquences sur le milieu environnant demeurent incertaines à cette profondeur difficile à examiner d’une manière permanente.

On peut admettre qu’aucune contamination notable a été observée à l’occasion de ces deux accidents et qu’il est parfois difficile de faire la différenciation entre un incident et un accident en matière de transport maritime de matières radioactives.

2. Les déficiences des normes en vigueur

De fait, les accidents relatés ont permis de mettre en lumière certaines déficiences des normes applicables au moment de l’accident et ayant été respectées. En effet, ils ne s’expliquent pas par une violation des standards de sécurité, mais plutôt par une insuffisance de ceux-ci, comme par exemple, l’absence dans le Code INF de recommandations relatives à la réalisation d’études d’impact en cas de naufrage et au suivi des navires.

Le Mont Louis se trouvait en haute mer lors de l’accident et, au moment des faits, les conventions n’imposaient aucune obligation de signalement des produits transportés en dehors de la mer territoriale. De plus, les marchandises n’étaient pas suffisamment arrimées. Les normes d’arrimage étaient prévues pour des conditions courantes d’utilisation et, par conséquent, inadaptées aux situations accidentelles.
Quant à l’accident du Carla, il a démontré que les conteneurs utilisés pour les transports de matériaux nucléaires ne sont pas conçus pour résister aux conditions d’accidents en mer. En l’espèce, les conteneurs n’ont pas résisté au naufrage.

B) Des difficultés inhérentes à la réglementation

La réglementation du transport maritime de matières radioactives, sujet très sensible, implique des efforts considérables, principalement en termes d’harmonisation et de mises à jour.

1. Le besoin d’harmonisation

Le domaine des marchandises dangereuses est marqué par une prolifération de réglementations conventionnelles dont les sources sont multiples : conventions, protocoles, amendements… Les personnes devant appliquer la réglementation n’arrivent pas à se retrouver dans un ensemble si disparate. De plus, ces multiples normes ne fournissent pas un cadre juridique international complet et unifié, alors même que le transport nucléaire implique des mouvements transfrontaliers qui, en cas d’accident, pourraient conduire à l’application cumulatives de plusieurs sources de droit. Par ailleurs, de nombreux Etats n’ont pas ratifié les conventions concernées.

2. La nécessité de mises à jour

Il est impératif que les normes définies afin d’assurer la sûreté des transports maritimes de matières nucléaires soient régulièrement mises à jour, améliorées et adaptées aux nouveaux produits. Or, il s’avère que certaines procédures, mises en place notamment dans le but de faire valider de nouveaux emballages, prévoient des délais extrêmement longs qui découragent l’industrie du transport nucléaire. De la présentation d’un nouveau mode de conditionnement à sa mise sur le marché, il peut de fait s’écouler plus de 6 ans.

La forte concurrence qui règne dans le domaine de l’énergie électrique oblige les producteurs et les transporteurs de matières nucléaires à minimiser leurs coûts. Les coûts de transport de matières nucléaires ne cessent cependant d’augmenter, en raison du risque de ce type d’activité. Les événements du 11 septembre ont eu globalement un impact négatif objectif, ayant entraîné une augmentation considérable des coûts des assurances et accentué la réticence des assureurs à couvrir certains risques.

Le contexte politique qui entoure les transports de matières nucléaires pèse de plus en plus sur les transporteurs et les personnels des ports, mais également sur les institutions chargées de développer et de faire appliquer les réglementations concernant ces transports. Il est important que ces pressions politiques n’entraînent pas un ralentissement des efforts de sécurisation des transports fournis ces dernières années.

Malgré toutes les précautions prises en vue de minimiser les risques, l’organisation de la sûreté des transports maritimes de matières radioactives présente quelques failles ; certaines sont dues au domaine lui-même. Un accident n’est donc pas inévitable et il convient alors de s’interroger sur la mise en jeu des responsabilités si des dommages adviennent lors d’un transport maritime de matières radioactives.

PARTIE 2 – LA MISE EN JEU DES RESPONSABILITES EN CAS DE DOMMAGES NUCLEAIRES

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
Les normes édictées par l’AIEA et l’OMI en matière de transport de matières nucléaires possèdent pour objectif d’éviter au maximum l’occurrence de dommages liés au transport maritime de matières radioactives. En cas de survenance d’incidents ou accidents occasionnant ou causant des dommages, les responsabilités doivent être recherchées aisément et clairement déterminées. Des conventions internationales ont entrepris de mettre en place un système, se voulant le plus homogène possible, de mise en jeu de responsabilité objective (I). Toutefois, en dépit de leurs ambitions, la portée de ces conventions se trouve limitée en raison de dispositions prises au niveau européen et national et au motif de leurs propres insuffisances (II), même s’il n’existe pas de contradictions flagrantes entre elles.

I- Le régime de responsabilité objective des conventions internationales


A) La Convention de Paris et ses modifications

La Convention de Paris a pour but d’offrir une réparation aux victimes de dommages nucléaires, tout en garantissant que la charge de la responsabilité n’entrave pas la croissance de l’énergie nucléaire. Elle prévoit donc un système d’indemnisation des victimes renforcée par la Convention de Bruxelles.

1. La Convention de Paris du 29 juillet 1960

La Convention de Paris du 29 juillet 1960, adoptée dans le cadre de l’Organisation de Coopération et de Développement Économiques (OCDE) et entrée en vigueur le 1er avril 1968, regroupe aujourd’hui 15 États contractants. Elle fixe les grands principes de responsabilité dans le domaine nucléaire.

Son champ d’application est limité aux accidents nucléaires et aux dommages survenus sur le territoire des parties contractantes à la Convention.

Elle prévoit que le caractère exceptionnel de l’accident nucléaire justifie la mise en place d’un régime de responsabilité objective. Les victimes n’ont donc pas à prouver la faute ou bien la négligence de l’exploitant nucléaire, mais doivent exclusivement établir le lien de causalité entre l’accident nucléaire et le dommage subi. De la sorte, la charge de la preuve s’en trouve fortement allégée.

En matière de transport, la responsabilité est canalisée sur l’exploitant de l’installation nucléaire en provenance ou à destination de laquelle les matières radioactives sont transportées. L’article 4 de la Convention prévoit deux cas distincts. Lorsque l’accident

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7 Ces conventions ont été amendées par deux protocoles, signés le 28 janvier 1964 et le 16 novembre 1982.
8 Allemagne, Belgique, Danemark, Espagne, Finlande, France, Grèce, Italie, Norvège, Pays-Bas, Portugal, Royaume-Uni, Slovénie (seul pays non-membre de l’OCDE ayant ratifié la Convention), Suède et Turquie.
9 L’article 1 de la Convention définit l’accident nucléaire, de manière large, comme « tout fait ou succession de faits de même origine ayant causé des dommages, dès lors que ce fait ou ces faits ou certains dommages causés proviennent ou résultent des propriétés radioactives, toxiques, explosives ou autres propriétés dangereuses de combustibles nucléaires, des déchets radioactifs entreposés ou des rayonnements ionisants ».
10 Article 2.
provient du transport de substances nucléaires en provenance d’une installation nucléaire, l’exploitant de l’installation nucléaire est responsable à condition qu’aucune autre personne n’ait encore pris en charge les substances nucléaires\textsuperscript{11}. Lorsqu’au contraire l’accident provient du transport de substances nucléaires à destination d’une installation nucléaire, l’exploitant est tenu responsable dès lors qu’il a pris en charge les matières nucléaires. Une telle canalisation des actions sur la personne de l’exploitant vise à simplifier les demandes en réparation des victimes.

La responsabilité objective et exclusive de l’exploitant est néanmoins limitée sous plusieurs angles. Tout d’abord, l’exploitant de l’installation nucléaire peut être exonéré de sa responsabilité lorsque l’accident nucléaire est « dû directement à des actes de conflit armé, d’hostilités, de guerre civile, d’insurrection, ou sauf disposition contraire de la législation de la partie contractante sur le territoire de laquelle est située son installation nucléaire, à des cataclysmes naturels de caractère exceptionnel\textsuperscript{12} ». Cette exonération s’entend d’une manière plus restrictive que la notion de cas fortuit ou de force majeure. Et le montant de la responsabilité nucléaire est limité\textsuperscript{13} à 15 millions de DTS\textsuperscript{14}. Pareille limitation justifie l’obligation pour l’exploitant de souscrire une assurance ou une garantie financière conforme aux prescriptions de l’autorité compétente\textsuperscript{15}. Enfin, la responsabilité est limitée dans le temps\textsuperscript{16} au moyen d’un délai de prescription de 10 ans. Les Etats peuvent cependant établir un délai supérieur. Par exemple, dans de nombreux Etats parties, ce délai a été fixé à 20 ou 30 ans, avec une prise en charge de l’indemnisation par l’Etat lui-même au-delà du délai de 10 ans.

Toujours dans un souci d’efficacité du processus d’indemnisation des victimes, la Convention institue une compétence juridictionnelle. L’article 13 prévoit que, dans le cas d’un transport de matières radioactives, « les tribunaux de la partie contractante sur le territoire de laquelle est située l’installation nucléaire dont l’exploitant est responsable sont seuls compétents ».

L’article 4 permet que les législations nationales aménagent les conditions selon lesquelles un transporteur qui apporte la preuve de garanties financières identiques se substitue à l’exploitant de l’installation nucléaire.

2. Les modifications apportées par la Convention complémentaire de Bruxelles de 1963

La Convention de Bruxelles du 31 janvier 1963, ratifiée par 12 Etats\textsuperscript{17} et entrée en vigueur le 4 décembre 1974, renforce le système d’indemnisation des victimes de dommages nucléaires prévu par la Convention de Paris, en relevant le montant des indemnités qui leur sont allouées et en assurant une indemnisation supplémentaire garantie par des fonds publics.

Elle instaure un système de réparation des dommages nucléaires en trois tranches. La première tranche pèse sur l’exploitant de l’installation nucléaire à concurrence d’au moins 5

\textsuperscript{11} L’article 4 décrit les situations dans lesquelles il faut considérer que l’exploitant de l’installation de provenance des matières radioactives n’est plus responsable.

\textsuperscript{12} Article 9 de la Convention.

\textsuperscript{13} Article 7.

\textsuperscript{14} Droit de tirage spécial : il s’agit d’une unité de compte définie par le Fonds Monétaire International en fonction d’un panier de monnaies. 1 DTS = 1,188 euro.

\textsuperscript{15} Article 10.

\textsuperscript{16} Article 8.

\textsuperscript{17} Allemagne, Belgique, Danemark, Espagne, Finlande, France, Italie, Norvège, Pays-Bas, Royaume-Uni, Slovénie et Suède.
Si cette somme est insuffisante, l’État où se trouve l’installation nucléaire s’engage à payer la réparation des dommages à hauteur de la différence. Cette prise en charge est limitée à 175 millions de DTS, diminution faite du montant de la première tranche. Lorsque les dommages dépassent 175 millions de DTS, la troisième tranche implique l’actionnement d’un système de solidarité internationale entre les parties à la Convention de Bruxelles, pour un maximum de 125 millions de DTS.

Les législations nationales peuvent cependant déroger à ces montants, ce qui est le cas pour la plupart d’entre elles.

Par ailleurs, la Convention de Bruxelles élargit le champ d’application de la Convention de Paris en précisant que celle-ci s’applique également « en haute-mer ou au-dessus, à bord d’un navire ou d’un aéronef immatriculé sur le territoire d’une partie contractante, ou en haute-mer ou au-dessus, par un ressortissant d’une partie contractante à condition, s’il s’agit de dommages à un navire ou à un aéronef, que celui-ci soit immatriculé sur le territoire d’une partie contractante ».

B) Les autres conventions et protocoles


1. La Convention de Vienne du 21 mai 1963 et le Protocole d’amendement du 12 septembre 1997


Dans son contenu initial de 1963, elle reprend les principes développés par la Convention de Paris et ne diffère que sur quelques détails. Il convient notamment de souligner qu’elle reste muette concernant les jugements qui ne sont exécutoires que provisoirement, semblant ainsi les inclure dans son champ d’application, alors que la Convention de Paris les exclut expressément de son champ d’application. De plus, le montant le plus faible de l’indemnisation à la charge de l’exploitant est inférieur à celui prévu par la Convention de Paris (5 millions de USD).

En 1986, la catastrophe de Tchernobyl a mis en exergue la nécessité de moderniser la Convention, ce qu’a permis le Protocole d’amendement du 12 septembre 1997.

Ce Protocole conserve le régime de responsabilité civile instaurée par la Convention de Vienne, mais étend le champ d’application géographique de la Convention en la rendant applicable « aux dommages nucléaires quel que soit le lieu où ils sont subis ». Cette

18 Le montant est fixé par la législation de la partie contractante sur le territoire de laquelle est située l’installation nucléaire de l’exploitant responsable.
19 Article 2 de la Convention.
21 Article 3, paragraphe 1 du Protocole.
affirmation est nuancée puisque l’Etat où se trouve l’installation nucléaire peut, par sa législation interne, exclure l'application de la Convention pour « les dommages subis sur le territoire d'un Etat non contractant ou dans toute zone maritime établie par un Etat non contractant conformément au droit international de la mer22 ». Ces exclusions sont toutefois limitées aux Etats non contractants, qui possèdent une installation nucléaire sur leur territoire ou dans toute zone maritime et n’accordent pas d'avantages réciproques équivalents23.

Il élargit également la définition du dommage nucléaire, qui inclut désormais les dommages causés à l’environnement et les coûts de certaines mesures préventives pour réduire au minimum ces dommages.

Ces deux premiers amendements élargissent automatiquement le cercle des victimes, qui seront plus nombreux à se partager le montant des indemnisations. En toute logique, le Protocole modifie donc les conditions de mise en oeuvre de la responsabilité, en changeant les données contraignantes. D’abord, part, il augmente le délai d’extinction des actions en réparation de dommages aux personnes, qui passe de 10 à 30 ans. Les symptômes résultant d’une contamination radioactive peuvent en effet se manifester très longtemps après une exposition. Ensuite, il rehausse le montant de responsabilité de l’exploitant, fixé par la législation de l’Etat partie à condition qu’elle respecte certaines exigences. La responsabilité de l’exploitant est soit supérieure à 300 millions de DTS, soit comprise entre 150 et 300 millions de DTS. Dans ce dernier cas, l’Etat doit garantir par des fonds publics la différence entre la limite supérieure de responsabilité de l’exploitant et 300 millions de DTS. Les Etats confrontés à des difficultés financières peuvent bénéficier d’une période de transition de 15 ans pendant laquelle la limite de responsabilité est portée à 100 millions de DTS.

Quant aux règles de compétence juridictionnelle, le Protocole oblige chaque partie contractante à prendre « les dispositions nécessaires pour qu’un seul de ses tribunaux soit compétent pour un accident nucléaire déterminé24 ». 

2. La Convention de Bruxelles du 17 décembre 1971 et le Protocole commun du 21 septembre 1988

En collaboration avec l’AIEA, l’OMI a organisé en 1971 une conférence à Bruxelles qui a abouti à une convention, adoptée le 17 décembre de la même année25. Son objectif est de résoudre les conflits entre certaines conventions maritimes rendant responsable le propriétaire du navire en cas de dommages nucléaires résultant d’un accident de transport de matières radioactives, et d’autres conventions comme celles de Paris ou de Vienne qui imputent la responsabilité aux exploitants des installations nucléaires d’où provenaient ces matières ou auxquelles elles étaient destinées.

La Convention de Bruxelles du 17 décembre 1971 prévoit ainsi qu’une personne responsable de dommages provoqués par un accident nucléaire est exonérée de sa responsabilité si l’exploitant de l’installation nucléaire est responsable de ces dommages en vertu des Conventions de Paris ou de Vienne, ou bien encore selon une loi nationale dont les dispositions sont aussi favorables aux victimes que ces deux conventions26.

Il est également apparu nécessaire d’établir un lien entre les Conventions de Paris et de Vienne, ceci afin d’éviter les conflits d’application qui pouvaient naître entre ces deux conventions. A cet effet, le Protocole commun du 21 septembre 1988 , entré en vigueur le 27

22 Paragraphe 2 du même article.  
23 Paragraphe 3.  
24 Article 12 du Protocole.  
26 Article 1 de la Convention.  

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
avril 1992 et regroupant vingt-quatre États adhérents, est issu des constatations relatives aux conséquences de l’accident de Tchernobyl, et notamment au fait qu’un accident nucléaire peut causer des dommages à des milliers de kilomètres du lieu où il survient. En cas d’accident nucléaire sur le territoire d’un État partie à une des deux conventions, il prévoit que la convention applicable à cet État s’appliquera par extension aux dommages subis dans les États parties à l’autre Convention.

**II- Les limites du système de mise en jeu des responsabilités**

L’efficacité des conventions est mise en cause par le fait que des dispositions nationales ou régionales y dérogent sur quelques points (A). Certaines dispositions des conventions s’avèrent inadaptées aux réalités d’un accident nucléaire et nécessiteraient des améliorations (B).

A) Les particularités nationales et communautaires

Le régime de responsabilité objective des conventions internationales a été transposé avec quelques différences en droit français. Au niveau communautaire, la responsabilité en cas de dommages nucléaires n’est régie par aucune législation.

1. La législation française

La France est partie à la Convention de Paris de 1960 et à la Convention complémentaire de Bruxelles de 1963. Elle a signé, mais non ratifié, le Protocole commun. En vertu de ces textes, elle a élaboré une législation régissant la responsabilité civile en cas de dommages nucléaires dans une loi du 30 octobre 1968. La loi a été modifiée par celle du 16 juin 1990 qui prend en compte les modifications apportées aux Conventions par le Protocole de 1982. Elle apporte également quelques modifications par rapport aux dispositions de la Convention de Paris. Par exemple, elle accentue notamment la responsabilité de l’exploitant nucléaire en restreignant les cas de substitution du transporteur.

L’assureur ou tout autre garant financier ne peut suspendre l’assurance ou la garantie financière sans un préavis minimum de deux mois donné par écrit au Ministre chargé de l’Énergie atomique. La victime d’un dommage peut d’ailleurs agir directement contre l’assureur de l’exploitant responsable ou contre toute personne ayant accordé sa garantie financière.

Le montant maximum de la responsabilité de l’exploitant en cas de transport de substances nucléaires est fixé à un peu moins de 23 millions d’euros pour un même accident nucléaire.

Enfin, l’article 9-3 dispose que « pour un transport international non couvert par la convention de Paris, le transporteur doit justifier de l’existence d’une garantie financière par la production d’un certificat émanant de l’assureur ou de toute autre personne ayant fourni la garantie financière équivalente et énonçant le nom de l’assureur ou du garant, son adresse ainsi que le montant, le type et la durée de la garantie. Ce certificat doit aussi désigner les substances nucléaires et l’itinéraire couverts par la garantie ».

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28 Article 7.
29 Article 14.
30 Article 9.
Il convient également de noter l’existence d’une instruction du Premier Ministre du 7 septembre 1989 relative à l’action des pouvoirs publics en cas d’accident survenant lors d’un transport maritime de matières radioactives.

2. L’absence de législation communautaire

L’Union Européenne ne dispose pas de législation sur la responsabilité civile nucléaire. Cette situation s’explique principalement par une situation disparate des Etats membres du point de vue de la ratification des différentes conventions.


B) Les insuffisances des conventions et les améliorations nécessaires

Les conventions présentent des lacunes ou des insuffisances que des différents travaux s’efforcent de pallier.

1. Les lacunes ou les insuffisances des conventions

L’étude des conventions internationales de responsabilité civile nucléaire montre qu’il existe des cas dans lesquels le droit nucléaire international s’efface devant le droit maritime des États concernés, notamment lorsque ces États n’ont pas adhéré à l’une des conventions en matière de responsabilité nucléaire. Tel est le cas des États-Unis, du Canada, du Japon et de la Suisse qui ne sont pas parties aux dites conventions, mais possèdent des régimes de responsabilité internes en cas d’accidents nucléaires. La Russie demeure encore un des seuls pays importants pour le domaine nucléaire qui ne dispose pas de véritable législation nationale en la matière, mais en mars 2005, elle a ratifié la Convention de Vienne. Cette ratification devrait normalement aboutir, à un horizon difficile à prédire, à une loi et une réglementation nucléaires en Russie.

S’il a réussi des avancées certaines, le Protocole d’amendement de la Convention de Vienne laisse toujours au droit national le soin de régler certains aspects. En dépit d’importants efforts pour unifier ce droit, des points concernant la réparation des dommages demeurent régis par le droit de l’État où se trouve l’installation ou par le droit du tribunal compétent. Un régime de responsabilité nucléaire perd en efficacité si ces questions se trouvent réglementées de manière différente par la législation nationale des parties contractantes.

Le Protocole commun de 1988 a tenté de créer une passerelle entre les Conventions de Paris et de Vienne. L’objectif recherché par un régime conventionnel à vocation mondiale n’a malheureusement pas été atteint : sur les quarante-huit États ayant ratifié au moins une des deux conventions, seule environ une moitié est partie au Protocole commun.
Il est par ailleurs possible que les dommages causés lors d’un transport maritime de matières radioactives ne soient couverts par aucune convention. Ainsi, dans le cas du naufrage du Carla cité auparavant, la nature médicale des matières transportées excluait automatiquement l’application de la Convention de Paris.

Les limitations du champ d’application des conventions constituent un défaut sans doute provisoire, alors que l’absence de prise en compte des dommages indirects résultant d’un accident nucléaire correspond à une volonté manifeste des États.

### 2. Les tentatives pour combler ces lacunes

En 1998, les parties à la Convention de Paris ont entrepris de réviser le texte de la Convention, afin d’étendre son champ d’application géographique, augmenter les montants d’indemnisation et élargir la notion de dommage nucléaire. Les négociations ont abouti à une proposition de protocole, approuvé par les parties contractantes et l’OCDE en 2002.

Le texte actuel de la Convention de Paris ne permet aux victimes d’être indemnisées que dans le cas où l’accident nucléaire et le dommage se produisent sur le territoire d’un État Membre. Le premier amendement propose de permettre aux victimes d’être indemnisées quel que soit le lieu du dommage, même si ces victimes n’ont pas la nationalité d’un État membre et à condition qu’elles possèdent la nationalité d’un État membre de la Convention de Vienne et du Protocole commun, ou d’un État qui ne possède aucune installation nucléaire sur son territoire, ou encore d’un État ayant adopté une législation équivalente aux dispositions de la Convention de Paris.

Le second amendement notable concerne le montant de l’indemnisation. Le montant minimal de responsabilité passerait de 5 millions de DTS à 700 millions d’euros. Concernant plus particulièrement les transports de matières radioactives, le montant serait porté de 5 millions de DTS minimum à 80 millions d’euros. Les sommes sont changées en euros afin de pallier les fluctuations du DTS.

Le troisième amendement important a pour objet d’élargir la définition du dommage nucléaire. En sus des dommages causés aux personnes et aux biens, les mesures de prévention des dommages, le coût de la réparation des dommages causés à l’environnement et les pertes dues à ces dommages seraient également indemnisées.

Le 8 mars 2004, le Conseil européen a adopté une décision autorisant les États membres parties contractantes à la Convention de Paris à ratifier, « dans l’intérêt de la Communauté européenne », le Protocole portant modification de la convention, ou à y adhérer, ceci avant 2007. L’autorisation de la Communauté s’avérait indispensable puisque l’article 13 du traité de Convention de Paris prévoit la compétence exclusive de l’État partie sur le territoire duquel l’accident nucléaire est survenu, affectant ainsi les règles de compétence judiciaire établies par le règlement dit « Bruxelles I ».

L’adoption de ces amendements reste conditionnée à leur ratification par les deux tiers des membres de la Convention de Paris et par l’intégralité des membres de la Convention supplémentaire de Bruxelles. En outre, l’adhésion de la Communauté au Protocole n’a pas été prévue puisque la Convention de Paris n’est pas ouverte à la participation des organisations régionales. En dépit des efforts entrepris pour améliorer les conventions existantes, des limites subsistent toujours pour une durée indéterminée.

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Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
Le transport maritime de matières nucléaires se trouve souvent pris en étau entre deux droits : le droit maritime et le droit nucléaire, l’un ignore parfois l’autre d’une manière plus ou moins volontaire. A cette difficulté, il faut aussi ajouter le particularisme du transport maritime par rapport aux autres modes de transport. Des conventions, notamment celle de Bruxelles en 1971, ont donc tenté de donner la primauté aux règles du droit nucléaire par rapport à celles du droit maritime.

Pour garantir de manière optimale la réparation des victimes de dommages nucléaires, la création d’un régime de responsabilité interne des États a parfois été envisagée. Durant les phases de négociations du Protocole d’amendement à la Convention de Vienne, ce point a été vivement débattu. Le régime de responsabilité civile initial a finalement été conservé. En revanche, une indemnisation, garantie par des fonds publics, a été instaurée.

Tant que les conventions permettront aux parties contractantes de déroger dans leur législation interne aux dispositions qu’elles prévoient, leur portée demeurera nécessairement affaiblie. Cependant, si elles n’offraient pas cette possibilité, il est certain qu’un nombre réduit d’États ratifierait les conventions.

La prévention des risques et le respect des normes constitue une importance capitale pour les entreprises impliquées dans le transport maritime de matières radioactives, d’autant plus que le régime de responsabilité actuel n’est pas unifié.

L’emballage joue un rôle prépondérant dans la sûreté du transport de matières radioactives. Il faut donc qu’il réponde aux exigences du Règlement de l’AIEA auquel renvoie le Code IMDG.

Un conditionnement en conformité avec les normes n’écarte pas absolument tout danger. La mer peut être un environnement hostile, dans lequel les risques de naufrage et de collision existent de façon concrète. Les navires transportant des matières nucléaires devraient absolument être conformes, sans possibilité de dérogation, aux Conventions SOLAS et MARPOL, ainsi qu’au Code INF.

Dans ce contexte d’incertitude, il serait utile que l’AIEA et l’OMI se réunissent pour élaborer avec efficacité un texte normalisateur unique sur le transport maritime international de matières nucléaires. Rappelons qu’elles ont réussi à se concerter suffisamment pour parvenir au Code INF. Néanmoins, les deux organismes continuent de posséder des conceptions divergentes sur la sûreté du transport : l’AIEA la fonde sur le conditionnement tandis que l’OMI semble privilégier le navire. En fait, pour aboutir à une normalisation efficace, le transport maritime de matières nucléaires doit englobé nécessairement ses deux aspects : le bateau et le conditionnement.

Un référentiel commun transformant les bonnes pratiques en procédures à appliquer devient une nécessité, même si cela ne semble pas ressentir comme tel aujourd’hui. Il faut espérer que l’AIEA et l’OMI soient disposées à retravailler ensemble de manière concrète et efficace.

Les procédures d’expertise des colis agréés pourraient également être revues, de manière à apporter la preuve que les exigences de la réglementation sont pleinement remplies pour les approbations d’expédition.

Plus généralement, les pratiques existantes concernant l’inspection et les divers protocoles devraient être formalisées par écrit, de manière à fournir des modèles aux acteurs du transport maritime de matières nucléaires.

Et il serait normal et naturel que l’AIEA milite pour prendre le pilotage de cette normalisation, en raison des matières mêmes, même si l’OMI ne paraît pas prête à accepter un tel pilotage en défendant la logique d’un partenariat égalitaire, et ce, devant beaucoup d’États faisant preuve d’indifférence. La mer et le nucléaire devraient finir par réussir à se concilier dans l’intérêt de notre environnement, dans une logique de développement durable, sans attendre un accident conduisant à repenser les régimes conventionnels. L’OMI pourrait tenter
de son côté à tendre la main à l’AIEA, même si le transport international des matières radioactives demeure encore une préoccupation étrangère aux États maritimes, qui donnent un sens à l’ensemble des activités et des esquisses du futur de l’Organisation, qui défend avec beaucoup de volonté ou d’ambition un bien commun à l’humanité toute entière.
NUCLEAR TRADE. AN APPROACH ON THE ARGENTINE SITUATION

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1 THE ARGENTINE NUCLEAR TRADE REGIME.

The Argentine Nuclear Trade Regime has had, from the very beginning, the same restrictions that arose from the forerunner countries: these mean, emission of authorisations by the National Commission of Atomic Energy (Comisión Nacional de Energía Atómica – CNEA), nowadays the Nuclear Regulatory Authority (Autoridad Regulatoria Nuclear – ARN), that, in virtue of the successive progress within the ambit of the use and disposition of the materials and the growing aspirations of safety and security, have determined the conformation of a productive sector of great diversity. In the nuclear cycle it is not produced without being interested in the use or posterior consequences of what was used and its applications, the producer, the regulator and the consumer make a kind of permanent tutelary society of the products, uses and consequences of the use of nuclear elements.

The first normative milestone was the decree law 22498-56 that contains the attributions of CNEA, founded in 1950, that says “… it can act in a public and private way in a scientific, technical, industrial, commercial, administrative and financial context …”

The unity of functions in the same authority enabled the possibility of making emphasis in the material achievements or the achievements of the creation of a nuclear market, that is to say, a capacity of the production in agreement with a demand that inducted the creation of the existence of that capacity and an eventual usage of the international demand of nuclear material (i.e. cobalt-60 sources)

The inspiring source of this management and atomic development model is recognised in the American Act No 703, 1954; the English Act 273 Elizabeth 2, 1954, chapter 32; the Mexican Act, 1955; the Canadian Act No 10, 1946, the south African Act No 35, 1948; the Colombian decree 2638, 1945; and the French bylaw No 45-2653, 1945; all these Acts refer to the creation of the respective Atomic Energy Commissions. The source of the trade attributions for the management in the private sector finds antecedents in the laws of creation of other autarchic organisations or state owned companies of the country that tend to develop specific sectors: YPF, Aerolíneas Argentinas, Fabricaciones Militares. The requirement of the speciality in nuclear technical matters of the members of the directory was taken from the English law, 1954.[1]

At that moment, this fact gave place to juridical debates as regards the constitutionality of, for example, the virtual state monopoly at national level in the uranium deposit exploitation. In general, still under the system that establishes the provincial property of
minerals, it could not achieve to impose a thesis that affects the monopoly of exploitation of the Atomic Energy Commission of the nuclear minerals. That is why it is possible to deduce that public and juridical opinion of the country considered as appropriate or at least understandable and justifiable the restrictions that concern the nuclear trade.

The creation of new business opportunities in the nuclear sector enabled the development of human and material resources that, searching for benefit sustained in education and experience, expanded the agents that took part of the nuclear market in possession of a trade policy as a *leitmotiv* of it existence and growth.

This situation was clearly seen at the end of 1970 and at the beginning of the 1980.[2]

2 TYPES OF CONTRACTS ON NUCLEAR COMMERCE. URANIUM MINING. NUCLEAR POWER. RADIOISOTOPES. HUMAN RESOURCES.

Generally speaking, in the Republic of Argentina, the nuclear commerce is related to cobalt, in the shape of radioisotope of cobalt-60 for industrial and medical purposes and to uranium used as nuclear fuel, after certain chemical transformations.

2.1 COBALT-60 AND OTHER RADIOISOTOPES.[3]

CNEA has early explored in the industrial production of cobalt-60 as regards other countries that have CANDU reactors. Due to its design, this type of reactor is good for radioisotopes production, generating a subsidiary product to the power energy production.

Argentina has a CANDU reactor at the Central Nuclear Embalse (CNE) and it is one of the few world-wide producers. Previously, its sale was developed by the CNEA with some explorations in the sealed sources export.

During the years 1994 and 1995 the CNEA made an international bidding for the privatisation of the cobalt-60 production activities in virtue of a decree of the Argentine Executive Power that authorised the creation of a company and also the incorporation of private capital to that company. The lack of self-sustainability of commercial and productive operation and the impossibility of creating a proper outline of investments did not enable the fulfilment of that initiative.

In 1996, due to the lack of certainty as regards the process of privatisation and the lack of the right programmes in the long and the mid term, the activity offered a very discouraging scenery.

This situation changed radically during the beginning of this century, and from 2003 onwards, Dioxitek S.A., which is a company that belongs 99% to CNEA, took over the cobalt-60 sealed sources production,

The CNEA continues directly manufacturing open sources of molybdenum, iodine, technetium and other elements.

The production of the CNEA, which is the row material that Dioxitek S.A. uses to manufacture sealed sources, is based on the irradiation carried out at Central Nuclear Embalse that has a CANDU reactor. The irradiation is of about 3,000,000 curies per year, (3MCi), which represents about the 5% of the world-wide production.

Both for medical and industrial purposes sources, the supply includes a clause that stipulates that the seller must took over the source whose decay makes it lose usefulness.

2.2 Industrial sources of COBALT-60

World-wide sources suppliers are basically MDS Nordion and REVISS Services, who provide the biggest part of the 200 irradiation plants of the world. Mayak, in Russia, also provides sources but only for the use in some countries or within the scheme of REVISS
commercialisation and under the English trade PURIDEC. This market is characterised by a great barrier of input created by the existent suppliers, based on being also providers of irradiation plants and by the presumptuousness created in its customers of great quality, confidence and post-sale assistance. This is a very important aspect taking into account that the sources are sold with a 20 years guarantee.

However, the market presents a good growing expectation. In particular, Latin America can be the field of action for argentine sources since it has customers and comparative advantages. This is favoured by the coming of international regulations of sanitary control of foods that, in some cases, make the irradiation indispensable for export.

The CNEA had exported sources to some countries of Latin America, Indonesia and France, but until 1999 it had not achieved a programme with sustained demand in the mid term.

The main priorities were to achieve the required product quality and the corresponding confidence and volume of production, sustained in a technical scheme compatible to a business scheme that should be created.

In 1999, the CNEA celebrated important contracts of industrial sources production that assure a reasonable demand in the mid term. The transference of production to Dioxitek S.A. has remarkably improved the technical and commercial situation as regards this aspect.

2.3 Medical sources of COBALT-60.

Traditionally, the CNEA has produced medical sources almost exclusively to the local market and this is due to the fact that they manufactured with slugs instead of with pellets, as the majority of the customers world-wide demands.

From the cobalt extraction obtained by the Central Nuclear Embalse (CNE) in May of 2002, safe pellets were obtained. This fact enabled the possibility of making decisions about the best technical and economic solution to supply the market.

Also in this aspect, the intervention of Dioxitek S.A. in 2003 as a manufacturer resulted positive.

There is a demand of medical sources and, even if other suppliers such as Theratronics (nowadays absorbed by Nordion) and Neutron Products of USA have an important participation in the market, it is possible to achieve a place within it, as long as an efficient service is offered.

Another important fact has been the consolidation of a strategy together with the company INVAP S.A. This company is linked to the CNEA and it has it base in the city of Bariloche (located at the south of Argentina). INVAP is the only one that manufactures cobaltotherapy equipment in the region.

2.4 URANIUM DIOXIDE

The CNEA was in charge of the production of uranium dioxide that form the fuel for the nuclear plants of the country, but nowadays Dioxitek S.A. is the one in charge of this production. This company exploits, since 1997, the uranium dioxide production plant that was created in 1982.

In the already mentioned factory, uranium dioxide (UO2) and slightly enriched uranium are elaborated.

During many years the raw material was extracted from local mines but, from 1997, the uranium concentrate has begun to be imported.
2.5 URANIUM MINING

The Mining Code that, in accordance with constitutional norms, has been dictated by the Argentine National Congress, returned to its current writing to the regime of mining concession of the nuclear minerals, abandoning the statism the law had before the reform of 1995.

In effect, through Act passed in 1995, the Appendix Code was derogated. This Code had been incorporated with a norm in 1956 and together with the organic statute of the CNEA (also in 1956) they constituted a legal regime for nuclear and mineral elements. This Appendix Code is different from the one used for other substances. This regime assigned to the CNEA a relevant role in the execution and regulations of the prospection, exploration and exploitation of nuclear minerals.

The new dispositions are currently contained in the Title 11 of the Mining Code. Thanks to these dispositions, nuclear minerals were declared grantable and comparable to the rest of the fist category minerals. However, as regards security and commercialisation, its exploitation is in accordance with special condition, that is different from the rest of the minerals.

The CNEA must give the provinces technical, mining and risk prevention advising as regards nuclear exploitation and exploration activities developed in each province.

The uranium and the thorium are declared nuclear minerals (in fact, they are chemical elements). The plutonium was erased from the list since this element cannot be found in nature.

Those who exploit mines that contain nuclear minerals are obliged to submit before mining authority a plan of restoration of the natural place affected by mining waste and also to neutralise, conserve or preserve tailings or liquid or solid tails and other products that contain radioactive or acid elements, complying with the applicable norms according to the in force legislation and if not those that correspond to the mining authority or the commission designated for that purpose.

The CNEA and the mining authority require that the owners of the mines that contain nuclear minerals should provide in a sworn statement the information related to the production and reserve of such minerals and its concentrates, otherwise they will be finned.

The Argentine State by means of the CNEA, has the first option to purchase under price conditions and the habitual modalities of the market, the nuclear minerals, the concentrates and its by-products that are produced in the country, complying with the regulations of the Argentine Executive Power.

The export of nuclear minerals, concentrates and by-products will require the previous approbation as regards each contract that the CNEA signs. The domestic supply and the control over the final destiny of the mineral or the material that will be exported should be guaranteed.

The National Atomic Energy Commission will be able to carry out prospection, exploration and exploitation of nuclear minerals in accordance with the general norms of the Mining Code.

3 DEVELOPMENT OF FACTORIES OF NUCLEAR SUPPLIES. SYSTEM OF SUPPLIES.

For a quarter of century, the CNEA has formed companies, and it is still linked to them, which are in charge of a wide variety of activities:

The company **COMBUSTIBLES NUCLEARES ARGENTINOS S.A. (CONUAR)** was created by a decree of the Argentine Executive Power in 1981. It is a joint-stock company and
the 33.33% of its capital share belongs to the CNEA and the 66.67% belongs to a private company. CONUAR is located in the Centro Atómico Ezeiza, province of Buenos Aires. The objective of this company is to produce, by means of the technology provided by the CNEA, fuel elements to supply nucleoelectric plants and Argentine research reactors, keeping technological levels and competitive costs in comparison to other countries.

The company Fábrica de Aleaciones Especiales S.A. (FAE) was created by a decree of the Argentine Executive Power in 1986. It is a joint-stock company and the 32% of its capital share belongs to CNEA and the 68% belongs to CONUAR. This company is located in the Centro Atómico Ezeiza, Province of Buenos Aires. The objective of FAE is to produce, by means of the technology provided by the CNEA, clads and semifinished of zircaloy-4 in order to manufacture fuel elements for power reactors and the production of stainless steel tubes and special steels of high quality keeping technological levels and competitive costs in comparison to other countries.

The company INVAP S.E. was created by a decree of the Government of the province of Río Negro, Argentina, in 1976. It is a company of technology. The company’s capital shares belongs 100% to the above mentioned province. The CNEA is linked to the company by an agreement with the province of Río Negro.

It is mainly dedicated to the development and construction of research reactors, nuclear installations of any kind and plants related to nuclear issues and it is also dedicated to the development of medical and scientific systems of application.

The company Empresa Neuquina de Servicios de Ingeniería S.E. (ENSI) was built in 1989, between the Government of the province of Neuquén, Argentina, and the CNEA. It is a society owned by the province of Neuquén State. The 51% of the capital share of this company belongs to the above mentioned State and the 49% belongs to the CNEA. The head office is located in Arroyito, province of Neuquén, Argentina.

The main objective of ENSI is to operate chemical plants in pilot and industrial scale and to elaborate and commercialise chemical products. The secondary objectives are the investigation in relation with the technological development; the basic and detailed engineering design. As a result of a contract signed with the CNEA, it is now in charge of the industrial operation of the Planta Industrial de Agua Pesada (PIAP), located in Arroyito, province of Neuquén. This industrial plant has an annual production capacity of 200 tons of reactor grade heavy water (99.89% purity). With this annual production it provides the nuclear plants operated by the company NASA.

DIOXITEK S.A. was created by a decree of the Argentine Executive Power in 1996. This company is a joint-stock company and the 99% of its share capital belongs to the CNEA and the 1% to the Government of the province of Mendoza. The head office is located in the city of Buenos Aires and its original objective was to provide uranium dioxide, natural or enriched, for the manufacturing of fuel elements destined to nucleoelectric plants and research reactors. The uranium processing plant of DIOXITEK is located in the city of Córdoba, province of Córdoba, Argentina. It has an annual capacity of production of 150 tons of uranium dioxide. In September, 2002 the CNEA and DIOXITEK, signed a contract by which DIOXITEK assumed complete responsibility over the production and commercialisation of bulk cobalt-60 and also in sealed sources.

4 NUCLEAR POWER

The Republic of Argentina has nuclear power plants that produce power energy since 1974, namely:
ATUCHA I.- In 1964 the CNEA started the factibility study for the first Argentine, and also Latin American, nuclear plant generating electric energy: Atucha I. this plant uses natural and slightly enriched uranium as fuel, heavy water as moderator and coolant and it has an gross electric power of 357 MW.

EMBALSE.- The Central Nuclear Embalse –the second in operation in Argentina- is located in Embalse, province of Córdoba, Argentina. It uses natural uranium and heavy water and it has a gross electric power of 648 MW. It was first operated in 1983.

ATUCHA II.- It is still under construction and it will be the third Argentine nuclear plant. This plant will have a net electric power of 692 MW and it will account for the 5% of the total power installed in the country.

5 NUCLEAR PLANTS OPERATORS – POLICE POWER OF THE ACTIVITY

Originally, the CNEA was in charge of the activity related to the nuclear plants, however, by a decree of 1994 there had been a division of tasks.

Nowadays, Nucleoelectrica Argentina S.A. (NASA) is in charge of the exploitation of the central plants. NASA is a joint-stock company that belongs to Argentine State. The control and the surveillance of the nuclear activity belong to the Nuclear Regulatory Authority (ARN), which is a state entity. The research and waste management as well as some productive activities and the intervention in the uranium mining belong to the CNEA, which nowadays depends on the Argentine Secretary of Energy.

6 HUMAN RESOURCES

The different entities related to the manufacturing and the commercialisation of nuclear products use human resources trained and educated in Argentina.

There are different institutes related to the CNEA that teach both argentine and foreign professionals in areas related to nuclear activities, namely:

INSTITUTO BALSEIRO. It is located in the Centro Atómico Bariloche, province of Río Negro, Argentina. Since it was founded, in 1955, it has taught and trained a great amount of professionals in physics and nuclear engineering, confirming the advantages of the adopted teaching system: the direct contact of students and professors dedicated to research and development.

INSTITUTO DE TECNOLOGÍA PROF. JORGE A. SABATO. It was founded by an agreement between the Universidad Nacional de General San Martín and the CNEA in 1993. It is dedicated to the teaching of human resources in grade, postgrade and university students. The speciality of this institute is the study of materials, having a specialisation in non-destructive tests. It is located in the Centro Atómico Constituyentes, province of Buenos Aires, Argentina.

INSTITUTO DE ESTUDIOS NUCLEARES (IDEN). It is located in the Centro Atómico Ezeiza, province of Buenos Aires, Argentina. It is the most recent human resources institute of the CNEA. It was founded in 1996. This institute specialises in nuclear fuels, radiochemistry, nuclear medicine, nuclear reactors and radioactive waste, among others.
7  WAY S OF INTERVENTION OF THE STATE ON NUCLEAR COMMERCE.

It is important to point out that a kind of planned micro economy can be appreciated within the nuclear sector. In this micro economy the demand does not appear frequently as a unique element scarcely and relatively inharmonious: this means that, even demand with all its variations acts co-ordinately due to the necessity of practice authorisations that the Nuclear Regulatory Authority must carry out.

In this point it is worth to point out the essential instruction that the regulators show off when it comes to intervene in monopoly sectors: to make companies work as if there were under competitive market. The political guidelines in the nuclear field constitutes a reason for the important state intervention. The international agreements\[4\] result a necessary programme of intervention. However, from a legal point of view, it is not enough necessary so as to obtain a rational functioning of the nuclear market.

In Argentina, the commercial or corporate form of the institutions that carry out nuclear activities or produce nuclear materials has been changing.

It is remarkable that in the articles of Association, be partially government- owned, or not, the following clauses are quite common the following clauses: a) special references to the objectives linked to the fulfilment of the Nuclear Plan; b) The privilege or preference to keep and subscribe the majority of the shares, being forbidden to decide a decrease of the CNEA share in the corporation; c) Right of Option and Preference to buy shares; d) Deciding or casting vote in case of parity as voting f) Unanimous Approval to join new partners; e) The clause that states a quote of the dividends to provide financial support for research activities; f) A national preference in the choice of new partners; g) special proceedings to approve some contracts considered strategic; h) Directors chosen by the government with Additional powers to vote or decide on some issues.; h) the ownership right on the facilities that are operated by the corporations..

It has been underlined that the Executive Power dictated a veto to the exclusive national supply of uranium established in the National Act of Nuclear Activity (ley 24.840 art.40), what can be considered as a measure to deregulate nuclear trade policy.

8  COMPARATIVE POLICIES ON OTHER FIELDS OR PRODUCTS IN ARGENTINA. STATE´S RIGHT OF TRANSFORMATION APPLICABLE TO PURCHASES AND SALES OF NUCLEAR MATERIALS.

As a general principle, it may be said that there is freedom of trade in Argentina, guaranteed by the Constitution, and stated in the National Codes passed as a consequence.

Since the middles of the XIX century, the buying and selling was considered in the Civil And Commercial Codes, according to its nature, stating a no limitation principle. For example, as it is stated in the section 1327 of the Civil Code, things may be sold provided that they may be object of the contracts and not forbidden its selling.

Even this general principle, the complexity of the economy made several barriers to appear, among which are the so called “Juntas reguladoras” (committee, Boards, Commissions) to regulate the trade. The argentine government, following an international trend, created, after a couple of years of the burst of the economical crisis in 1929, a number of the entities before mentioned: Banco Central, Junta Reguladora de la Carne, Fondo Nacional del Tabaco , etc.

These agencies encompassed a wide range of activities, but can be divided between those founded to regulate the main productions of the country (steak) and grains (principally wheat) and those less important from a national point of view but meaningful
for some provinces: e.g. the Commission of the sugar or the one to regulate the trade of the national infusion: the yerba mate.

The organisations were led by boards of officers and producers, with powers to regulate the trade of each product, to limit the production, to fix prices, to administrate funds and advice the Government in the areas of their competence, apart from having functions as offices of statistics, information and promotion of the involved products.

The Juntas, founded by conservatives administrations in the thirties, deepened their importance during the peronists administrations since 1946 up to 1955; and even though they kept influence beyond that time in several ways, at the end of the XX century, a new doctrine of economy - alien to the intervention of the state – determined their dismantling.

9 NUCLEAR MATERIALS

It was not necessary to create a special joint, however, the nuclear materials trade has deserved several regulations both for internal and external transference.

From the very beginning, the issues related to safety required the creation of a strict policy of the radioactive elements transactions. That control is currently carried out by the Nuclear Regulatory Authority (ARN).

Argentine nuclear trade operators do not consider that, in the country, there are limiting practices, dumping, or support prices; even though, previously, ARN intervenes in all imports and exports.

Both in the uranium by-products and in cobalt by-products are safeguards. There is always a clause that implies which material will be used with peaceful intentions as regards uranium selling.

9.1 A PROPOSAL OF LEGE FERENDA.

As a sort of conclusion and contribution, it would be useful a rule that cope with the conflictive characteristics that take place exclusively in the nuclear trade field, not disregarding the upper goals of protecting the environment and improving safety and security.

This would result in a binding decision of the competent authority – CNEA – acting as an arbitrator, whose intervention would only be contemplated before the danger of an inadequate management of the assets under competitive conditions, and as ultima ratio, after being used up the ordinaries ways of participation of the State to obtain a reasonable outcome.

As follows, there is a draft of decree that gathers the main considerations and goals of a rule of the above mentioned features:

Whereas, it is necessary to facilitate investments and ensure, by creating the conditions for the growth of nuclear industries, the establishment and conservation of the facilities apt to the development and safety use of nuclear installations in the frame of respect to the environment as it has been deemed a priority from the beginning of the nuclear enterprises.

Whereas, it is appropriated to ensure to the nuclear operators a regular, reliable and equitable supply of nuclear materials.

Whereas, it is essential to this, to promote the best use of the available resources of the nation and take advantage of the improvements in the nuclear field throughout the world by means of an active exchange.
The President of the Nation decree.

1º.- The supply of ores, source materials and nuclear materials should be ensured in connection with the following guidelines:
   a) Trends and remarkable characteristics of the world market in the long and short term.
   b) High standards of excellence in the quality of materials and national preference for domestic production only at equal conditions.
   c) Equal access and non discrimination for the operators of the nuclear installations.
      Respect of the principle of share the sacrifice in case of losses.

2º. The CNEA shall comply with the objectives of the section 1º by means of:
   a.- Recommendations to operators, suppliers, users, and to other authorities.
   b.- Granting general rules concerning commercial stocks, terms and other features of the contracts related to nuclear materials.
   c.- Decide to build up emergency stocks and fix prices just in case of a permanent or disagreement of the agents.

3º All the users and operators should inform to the CNEA about the contracts, purchases and sells of materials, exchanges, loans, prices, places of storage, uses, etc.

4º All the transactions carried out by nuclear operators, users and suppliers shall have a charge on them to provide financial support to the CNEA activities.

The opinions expressed in this report are the opinions of the authors and in no way whatsoever such opinions may be attributed to the institution which the authors represent nor to his country of origin. The legal quotes from Acts, Decrees and Regulations in general translated for this report are free versions of the authors.

THE AMENDMENT OF THE PHYSICAL PROTECTION CONVENTION

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1. INTRODUCTION

Good morning ladies and gentlemen. Before elaborating on the recent amendment of the Convention on the Physical Protection of Nuclear Material (the Convention), I will first look at the current scope of the Convention and the history of the efforts to strengthen it.

2. THE CONVENTION

The Convention was signed at Vienna and New York on 3 March 1980. It entered into force on 8 February 1987. As of 2 September 2005 there are 115 States parties and 45 Signatories to the Convention.

The present Convention is part of an international regime that includes basic guidelines for national physical protection systems developed by the IAEA. For example, there are the recommendations contained in IAEA document INFCIRC/225/Rev. 4(Corrected) entitled the Physical Protection of Nuclear Material and Nuclear Facilities. These detailed recommendations go into specifics about physical protection measures and what States need to do. There is also the Physical Protection Objectives and Fundamental Principles (the Fundamental Principles) (IAEA document GOV/2001/41).

In simple terms “physical protection” of nuclear material could be described as a set of administrative and technical measures, including physical barriers to “physically protect” such material.

The present Convention is the only international legally binding instrument by which States make specific undertakings for protecting nuclear material.

In this regard, one of the areas covered by the Convention refers to States’ commitments to protect nuclear material (e.g. Plutonium, $^{235}$U) during international transport (and during storage incidental to such transport). For this purpose, the Convention defines three categories of nuclear material (Annex I), based on which different levels of protection apply (Annex II). States commit themselves not to undertake, or authorize the undertaking of such international transport unless assurances are provided that nuclear material will be protected at the required levels. Nuclear material in transit from one part of States parties’ territory to another, when passing through international waters or airspace, should also be protected at prescribed levels.
To give you a practical example, if a State wishes to carry a consignment of nuclear material intended to go beyond its territory, the State is required to ensure that such material would be “physically protected”, at the levels described by the Convention, from the facility of the shipper in that particular State, until it arrives at a facility of the recipient in the State of ultimate destination.

The levels of protection refer to specific precautions including constant surveillance by escorts and close communication with appropriate “response forces” and they are ensured through making prior arrangements between sender and receiver.

It should be noted that the States’ undertakings that I have just described are limited to nuclear material during international transport.

A second area covered by the Convention refers to States’ undertakings to make the intentional commission of certain acts (e.g. theft or robbery of nuclear material, threat to use nuclear material to cause death and other ancillary offences like attempt and participation in such acts) punishable offences under their national law, establish jurisdiction over such offences and to detain alleged offenders for the purpose of prosecution or extradition.

It should be noted that these “crime related” provisions also apply to nuclear material used for peaceful purposes while in domestic use, storage and transport.

3. EFFORTS TO STRENGTHEN THE CONVENTION

For a number of years it was recognized that the present Convention was not adequate, since it did not cover major aspects of physical protection. Notably as I have mentioned, there was no commitment by States to protect nuclear material in domestic use, storage and transport. In addition, there was no commitment regarding the protection of nuclear material and nuclear facilities against sabotage.

Efforts to strengthen the Convention were initiated before 11 September 2001. In light of the recommendations in 1999 of an expert group, appointed by the Director General to conduct a review of the Agency’s programme that “consideration should be given to the possible revision of the Convention […] to address the issues of prevention of unauthorized possession of nuclear material and access to nuclear facilities”, the Director General convened in November 1999, an “Informal Open-Ended Expert Meeting to Discuss Whether there is a Need to Revise the Convention […]” (the Expert Meeting). To facilitate its work, the Expert Meeting charged a Working Group to examine all relevant issues for reaching a conclusion on the matter.

The name of the Expert Meeting reflects the fact that at that time not all States were convinced of this “need”. Therefore it was agreed that before embarking in any amendment process, the question as to “whether there was a need to revise the Convention” required answering.

The Working Group took approximately two years to submit its Final Report to the Expert Meeting (January 2001), in which it identified several recommendations intended “to promote further the effective implementation and improvement of physical protection worldwide”.

Following the submission of the Groups’ report, the Expert Meeting at its second meeting in May 2001, concluded that there was “a clear need to strengthen the international physical protection regime”. In recommending that a “well-defined amendment” be prepared by a group of legal and technical experts, the Expert Meeting indicated the subjects that should be covered, including:

- the extension of scope to cover, also domestic use, transport and storage of nuclear materials;
- the extension of scope to cover nuclear material and facilities from sabotage; and
the incorporation of the Physical Protection Objectives and Fundamental Principles.
At the same time the Expert Meeting also indicated that the following subjects should clearly not be covered:

- a requirement to submit reports to the international community on the implementation of physical protection;
- a peer review mechanism;
- a mandatory application of INFCIRC/225, e.g. through direct reference or through “due consideration”;
- a mandatory international oversight of physical protection measures; and
- nuclear material and nuclear facilities for military use.

By preparing a “well-defined amendment” before the formal amendment process, States parties aimed at limiting as much as possible the introduction of “undesirable” subjects at the Amendment Conference.

3.1. Open-ended Group of Legal and Technical Experts to prepare a draft amendment of the Convention (the Group)

On 6 September 2001, only days before the tragic events of 9/11, the Director General, in response to the recommendation of the Expert Meeting, convened a Group of Experts to prepare a draft amendment aimed at strengthening the Convention.¹

After 9/11 the international community realized in a much more vivid manner that physical protection was an essential part of the whole concept of security.

The Group held six meetings in total and took two years and three months to conclude its work. At its final meeting, held on 14 March 2004, the Group adopted by consensus its Final Report, which set out possible amendments to be made to the Convention and submitted it to the Director General.

These amendments contained:

- the extension of scope to cover the physical protection of nuclear facilities, and a consequential amendment of the title.
- the reasons and object of the amendment.
- two definitions for “sabotage” and “nuclear facilities”.
- a new article setting out the purposes of the CPPNM.
- amendments to reflect the extension of scope, the importance of national responsibility and the exclusion of nuclear material and nuclear facilities for military use.
- a new article to cover domestic use, storage and transport and the protection of nuclear material and nuclear facilities from sabotage and also covers the Physical Protection Objectives and Fundamental Principles.
- a new paragraph to cover co-operation between States and also the IAEA in the case of a credible threat of sabotage of nuclear material or a nuclear facility, or in case of sabotage thereof.
- provisions on strengthening the protection of information received in confidence.
- new offences relating to sabotage, contributing to and organizing or directing the commission of an offence and nuclear smuggling.
- including a new article relating to transfer of nuclear technology for peaceful purposes to strengthen physical protection of nuclear material and nuclear facilities.

¹ The first meeting was held on 3 December 2001.
However, the text prepared by the Group also contained in brackets a number of clauses on which the Group was unable to reach agreement. Primarily, there were three issues:

- The first issue was one of the most debated and controversial. It concerned the explicit exclusion of activities of States’ military forces in the conduct of official duties. Some delegations were of the view that these activities should not be governed by the Convention, since they are governed by other rules of international law and that the exclusion is in effect only a choice of law provision. Other delegations did not want an explicit exclusion as this might leave gaps in the applicability of the CPPNM where such activities are not covered by other rules of international law. As noted later, it was decided at the Amendment Conference to include the exclusion provision.

- The second issue concerned the introduction into the text of the Fundamental Principles. There were two options contained in the Group’s Final Report. The first option that received extensive support, concerned a legal commitment to apply the Fundamental Principles, insofar as is reasonable and practicable. The second option, which received support from some delegations, introduced a legal commitment to be guided by the Fundamental Principles. As noted later, this issue was resolved at the Amendment Conference by choosing the first option.

- The third issue concerned whether to include or not, in the relevant offences, a reference to “substantial damage to the environment” and to death, injury or damage being caused by “exposure to radiation or release of radioactive substances”. At the Amendment Conference it was agreed to include “substantial damage to the environment” and “exposure to radiation or release of radioactive substances” in the relevant offences.

3.2 Amendments proposed by the Government of Austria and 24 co-sponsoring States

However, the Final Report of the Group was just another step towards a possible amendment. It is worth noting that as foreseen by Article 20 paragraph 1 of the Convention, to trigger the amendment process, a State party was required to propose amendments to the Convention. The proposed amendment then would need to be submitted to the Director General who shall circulate it immediately to all States parties. If a majority of States parties requested the Director General to convene a conference to consider the proposed amendments, then the Director General would be required to invite all States parties to attend such a conference to begin not sooner than thirty days after the invitations were issued².

Further consultations were held among a number of States parties on the aforementioned outstanding issues in order to select which of the options to include in the proposal to the Director General for circulation. As a result of this the Director General, at the request of the Government of Austria and 24 co-sponsoring States,³ circulated to all States Parties on 5 July 2004, proposed amendments to the Convention. At the same time, the

² Any amendment adopted at the conference by a two-thirds majority of all States parties shall be promptly circulated by the depositary to all States parties.

³ The Director General of the IAEA received on 1 June 2004 a letter from the Austrian Federal Minister of Foreign Affairs, proposing on behalf of the Government of Austria and of the Governments of Australia, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Finland, France, Greece, Hungary, Ireland, Italy, Japan, Lithuania, Luxembourg, Norway, Poland, Portugal, Sweden, Switzerland, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland and the United States of America.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
Director General requested confirmation as to whether he should as depositary, call for a conference to consider the proposed amendments.

On 19 January 2005, the majority of States parties (i.e. 55 at the time) requested the Director General to convene a Conference to consider the proposed amendments to the Convention. Accordingly, the Director General, on 3 February 2005, invited all States parties to participate in a Conference to consider proposed amendments to the Convention (the Amendment Conference).

4. THE AMENDMENT CONFERENCE

The Amendment Conference was held at the Agency’s Headquarters, Vienna, from 4 to 8 July 2005.

While there were still some open issues at the start of the Amendment Conference the proposed amendments to the Convention, 88 of the 112 States parties and EURATOM, adopted an Amendment to the Convention, on 8 July 2005 by consensus. Delegates of 81 States parties signed the Final Act of the Conference.

The Amendment provides for an expanded regime. It extends the scope of the Convention to also cover the physical protection of nuclear material in domestic use, storage and transport against, inter alia, theft, smuggling and sabotage and the protection of nuclear material and facilities against sabotage. It also provides for expanded cooperation between States regarding rapid measures to locate and recover stolen or smuggled nuclear material, to mitigate any radiological consequences of sabotage and to prevent and combat relevant offences.

In addition, the Amendment strengthens the previous Convention in the following three main areas:

i. The first area relates to the effective physical protection of nuclear material and of nuclear facilities.

It contains a new “core” undertaking by States to establish, implement and maintain a physical protection regime applicable to nuclear material and facilities under their jurisdiction, including:

- an appropriate legislative and regulatory framework for physical protection;
- a competent authority responsible for its implementation; and
- other administrative measures necessary for the physical protection of such material and facilities.

In implementing the relevant obligations under the Amendment, each State shall apply insofar as is reasonable and practicable a number of Fundamental Principles.

ii. The second area relates to the prevention and combating of offences relating to nuclear material and nuclear facilities worldwide.

It requires States to bring under their jurisdiction and make punishable under their national laws certain offences including theft, robbery, smuggling of nuclear material or sabotage of nuclear facilities, as well as acts related to directing and contributing to the commission of such offences.

As I previously mentioned, it is worth noting that a number of offences were extended to include “substantial damage to the environment.”

iii. The third area relates to facilitating co-operation among States.

In particular, new arrangements for co-operation, assistance and coordination amongst States in case of a credible threat of sabotage or sabotage thereof are foreseen.

The Amendment also contains new provisions in the following areas:

- States’ commitment not to regard the offences described by the Amendment as political offences for the purposes of extradition;
confirmation that nothing in the Amendment shall affect the transfer of nuclear technology for peaceful purposes to strengthen physical protection of nuclear material and facilities; and

a requirement for the Director General, as depositary of the Convention, to convene a conference to review, inter alia, the implementation of the Convention, as amended, after five years of entry into force of the Amendment.

As mentioned earlier, it is worth noting that at the Amendment Conference, following considerable discussions, States agreed to include a provision that explicitly exclude from the scope of the Convention “activities of armed forces during an armed conflict” and the “activities undertaken by military forces of a State in the exercise of their official duties, inasmuch as they are governed by other rules of international law”.

It should be noted that the same provision was the subject of considerable discussion during the negotiations of the International Convention for the Suppression of Acts of Nuclear Terrorism (the Nuclear Terrorism Convention). This Convention also excludes from its scope, the activities of State military forces in the conduct of official duties.

During the Amendment Conference, it was proposed by Paraguay to amend the Convention to apply to all “all radioactive material and associated facilities.” However the Conference, while noting the value of an international legally binding instrument on the safety and security of such material and facilities, agreed that the proposal went well beyond the scope of the Convention, which is confined to nuclear material and nuclear facilities.

Pursuant to the Amendment, the IAEA will assume certain functions in addition to those foreseen in the existing Convention. The IAEA will carry out these additional functions on request and they include, in addition to the Agency’s usual depositary functions:

- its participation in information exchange for recovering and protecting unlawfully taken nuclear material;
- facilitate coordination;
- cooperation and assistance in cases related to sabotage of nuclear material and facilities; and
- in providing guidance on the design, maintenance and improvement of national systems of physical protection.

5. ENTRY INTO FORCE OF THE AMENDMENT

The Amendment to the Convention will enter into force in accordance with paragraph 2 of Article 20 of the Convention, on the thirtieth day after the date on which two-thirds of the States parties deposit their instruments of ratification, acceptance or approval. So far only one State (Turkmenistan) has acceded to the Amendment to the Convention.

Thereafter, the Amendment shall enter into force for any other State Party on the day on which that State Party deposits its instrument of ratification, acceptance or approval of the amendment.

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4 During the discussions, one State (Mexico) proposed to replace the word “inasmuch” with the word “insofar”. In the broad exchange that took place, it was recognized that there was a substantive difference between both terms. Some delegations made it clear that the phrase “inasmuch” had at least two meanings in English, one of them is “to the extent that” and a second meaning is “because”. The State accepted the wording “inasmuch”, on the understanding that the text it considers acceptable is the text in Spanish. The same State also expressed a reservation on preambular paragraph 6 which is reflected in the summary records of the Conference.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
6. CONVENTIONS AGAINST TERRORISM

There were until recently 12 universal conventions and protocols against terrorism, including the Physical Protection Convention, which have been developed under the auspices of the UN and its specialized agencies.

Following the UN General Assembly’s adoption earlier this year in April, after seven years of negotiation, of the Nuclear Terrorism Convention, there are now 13.

When the Nuclear Terrorism Convention and the Amendment to the Convention enter into force, there will be, as one would expect, substantive and fundamental differences between these instruments. While the purpose of this presentation is not to make a thorough analysis of the Nuclear Terrorism Convention vis-a-vis the Amendment, you should note some of the distinguishing features of these instruments.

Some of the differences can in part be attributed to the inherent nature of each of these instruments. For example, while both instruments concern prevention relating to nuclear material and facilities and the combating and criminalizing of offences in this regard, the Amendment to the Convention also aims at maintaining worldwide effective physical protection and co-operation amongst States Parties to these ends. Under the Amendment to the Convention, States Parties are entirely responsible “for the establishment, implementation and maintenance of a physical protection regime.” In particular, “each State Party shall take the appropriate legislative, regulatory and administrative measures to establish, implement and maintain a physical protection regime applicable to nuclear material and nuclear facilities under the jurisdiction of the State Party […].” As previously noted, in implementing the relevant obligations required by the Convention, each State Party shall, apply insofar as is reasonable and practicable a number of Fundamental Principles.

Whereas, the Nuclear Terrorism Convention provides that “for purposes of preventing offences under th[e] Convention, States Parties shall make every effort to adopt appropriate measures to ensure the protection of radioactive material, taking into account relevant recommendations and functions of the International Atomic Energy Agency.” There is no mention of nuclear facilities.

Also, as mentioned above, while the Amendment to the Convention covers nuclear material and nuclear facilities (plutonium, U\(^{233}\), U\(^{235}\), etc.), the Nuclear Terrorism Convention also covers “radioactive material” (e.g. ionizing sources) and “devices” (any nuclear explosive device and radioactive material dispersal or radiation-emitting device). Further, unlike the Amendment to the Convention, the Nuclear Terrorism Convention applies to both radioactive material (including nuclear material) and nuclear facilities used for military purposes. Consequently offences concerning radioactive material would only fall under the scope of the Nuclear Terrorism Convention.

7. CONCLUSION

In conclusion, the Amendment to the Convention represents a culmination of work that had been progressing for a number of years. It is a major achievement -another milestone, along with the Nuclear Terrorism Convention - in international efforts to improve nuclear security and reduce the vulnerability of States parties, to nuclear terrorism.

On 19 and 29 September 2005, the Board of Governors and General Conference, in welcoming the Amendment of the Convention urged and encouraged all States parties to ratify it and, in the meantime, to act in accordance with its objects and purposes until such time as its entry into force, respectively.

I hope that States take heed of the Board and General Conference’s messages.

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ABSTRACT:

The author intends to analyze the continuation of the Brazilian Nuclear Energy History and the Brazilian Nuclear Program, face the newest events, such as the international political pressures, the International Atomic Energy Agency/IAEA position, the Brazilian Government and the Brazilian cleared up public position, face to the facts and the International Law.


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508.1
1 INTRODUCTION

The objective of this paper is giving continuity to the Nuclear Energy History in Brazil, already introduced to you, in the Nuclear Inter Ju ra’2001, Budapest, Hungary (published in the Proceedings/2001) – and to make some considerations, first, about the newest things on nuclear energy in Brazil. Secondly, about energy area in the world and in the Iberian-America, just because, everything is inserted in a worldwide context.

The Brazilian nuclear history is a very old history.

It began, exactly at the same time and in the same year (1934) in which the experiences with the radioactive material began to be developed by scientists, in Europe and in the USA, just like Enrico Fermi, the Cury’s, Einstein, Oppenheimer and others – all of them, friends and colleagues of Admiral Alvaro Alberto and Cesar Lattes, Brazilian scientists.

Since then, the Brazilian scientists have been involved in the research of nuclear minerium raw material, abundant in Brazil subsoil, as a way to give them a useful destination.

And, since then, Brazil has fought with very much persistence to develop its nuclear energetic history, adding, annually, new relevant facts - stimulanting or not, the Brazilian Nuclear Program.

It’s important to say, that, during all these years, Brazil’s intention to develop nuclear energy technology, by itself, has never had any confront connotation.

The will of Brazilian scientists was and has been, during all this time, for almost seventy years, always directed to develop an independent nuclear technology, as a way to get cheap nuclear energy and other peaceful uses of this kind of energy.

Everything in accordance to the international law principles, all they, secured, by the UNO and ASO statutes. So, let’s go to the first topic.

2 THE NEW FACTS ABOUT NUCLEAR ENERGY IN THE WORLD – THE INTERNATIONAL ENERGY AGENCY – THE INTERNATIONAL ATOMIC ENERGY AGENCY

As you all know, better than me, the new facts about energy area around the world are, in a general way, about the energy supply and specially, about the nuclear energy supply.

The USA International Energy Agency and the energy multinationals enterprises are in accordance about the need to increase the investments in the area, as a priority.

The International Atomic Energy Agency foresees that the nuclear energy generation must increase 250% until 2.030, in a total of 27% of all the energy generated in the whole world.

In spite of all the Green Party pressures, Germany has increased its nuclear energy production to generate electricity in the country.

Wisely, China’s Popular Republic plans to increase more than four times its nuclear energy capacity in the next ten years.

The Guangdong complex, 500 kilometers from Hong Kong, foresees six reactors construction because the generators that they have are no more sufficient to grant the demand.

In the USA – owner of the biggest nuclear power installed in the world, followed by France and Japan – in the best hypothesis, the perspectives to assure energy are uncertain and at its worst, they are problematic (1).

3.1 The International Energy Market and the Iberian-America

The stability of energy international trade market must not underestimate the Iberian America, because it has eight millions cubic meters of gas, oil and nuclear minerals. In this context, Brazil is an important partner.

The Iberian America gas and oil reserves are considered essential in the energy growing demand and in the economic uncertainties.

It is logical and legitimate that Iberian America (MERCOSUL: Argentine, mainly Brazil, Paraguay and Uruguay) and Andes Agreement (Venezuela, Colombia, Equator, Peru, Bolivia) create an economic and political pole to do business and defend their interests in the area, face all the economic and political poles around the world (European Economic Community, North American Free Trade Agreement and the Asian Countries Group).

The partnership between Brazil and Venezuela is considered by the energy market analysts, as strategic as the partnership between Brazil and Argentine.

Argentine, the first Iberian-America country to develop nuclear energy for peaceful purposes, maintains its potential, in the nuclear area, and it is the third major cobaltum 60 exporter in the whole world, behind Canada and Russia – exporting to Brazil, Bolivia, China, Cuba, Egypt, Great Britain, India, Síria and Uruguay (2).

Argentine produces, weekly, 120 millions of radiated flies, used against the diversified fruit plagues - exporting them, to the Spain, Valencia Region, Israel and Brazil (2).

INVAP, the Argentine state enterprise, located in Bariloche, is the leader in international nuclear exports, responsible for US$55 million from the US$65 million exported by Argentine(2).

In the South America Region, the main projects among the countries mentioned are in the energy and oil sectors.

These long term projects are strategically the most important for the Region.

Brazil is, presently, the unique force capable of doing business with Colombian and Venezuelan radical groups (3) - through its pragmatic Government - which is surprising everybody, in overcoming all the attempts of imposing ideologies, on the commercial and financial ideas.

The USA Treasure Secretary, personally, has been to Brazil, only to express his approval to the so much traditional Brazilian financial policy, due to the political crisis that the country is going through (10).

3.2 The news about the Brazilian nuclear energy area

It’s not a novelty, to say that uranium has a strategic position for Brazil. The country has the 6th position in the world, but must get the 3rd position because Brazil has only prospected one third of its territory (8). It is logical and predictable that Brazil intends to be an exporter of enriched uranium for peaceful purposes, in the next ten years.

Enriched uranium is the fuel of the Century (5). This is a very profitable kind of market and Brazil has all the conditions to attempt it. Brazil is one of the eight countries that have the uranium enrichment technology. The price of the exported nuclear fuel (US$4.200 per kilo) overcomes the soya beans exportation price (US$260 a tone) and the oil exportation price (US$56 per barrel). As Brazilian Constitution forbides the nuclear exportation, a Constitutional Amendment must be provided, which requires three fifths votes from both
houses (Congressmen and Senators) in two votation sessions, in each House. But, before, attempting the uranium international market, Brazil has to attempt its internal demand, that is, to enrich uranium raw material to supply the Brazilian nuclear power plants (12).

Argentine has sold heavy water - which contains uranium and other nuclear raw-materials – to Argel, Germany, Belgium, South Korea, Egypt, France, India, Romenia, Norway, Peru, Turkey and the USA (2).

The USA State Secretary, Condoleeza Rice, who visited Brazil, at the beginning of the year, recognized, Brazil, as "a potential region ready to become a worldwide potential...” (3).

So, the Brazilian population (more than 160 million of inhabitants, among, Brazilians, Italians: the biggest population of Italians out from Italy; Portugueses, Spaniards, Japanesees, Africans and others) hopes that the USA respects this recognition, without putting any obstacle to its development – due to historical interests that links both countries. They must have the same understanding that they have had about India, China and Iran (11) where the economic and commercial investments are the centerpiece of their relationship (4).

Developing good business in the energetic area with all the interested countries, do not imply in ideological connotation: business is business, ideologies apart (4). It’s already said: “Trade, like religion, should recognize no frontiers”(9).

Independently on retorics, in Brazil, the understanding is: if the businesses are about infrastructure and they are good for the country – Brazilian Congressmen vote in favor of them, independently, if they are originated from the Government Party or not (3).

3.3 The best opportunities of good business in the Brazilian nuclear energy area

Brazilian people are conscious that economic and financial public resources must have good administration and be well canalysed for their needs.

Because it is missing public resources, lots of good projects, as graduating and prepairing technicians are almost stopped. The Brazilian submarine reactors are, pratically, paralysed, too.

Actually, several Inquiry Parliamentary Committee Members (the so called CPI, in Brazil) are doing their best, aiming to manage better public resources.

In Brazil, the Brazilian Program foresees the construction, as quickly as possible, of two of the seven nuclear power plants planned.

The foresight it is to construct two nuclear power plants, both of them, at the same size of Angra 3 power plant (1.3 thousand MW); and, to construct four nuclear power plants with 300 MW each one, all them in the Brazilian Northeast Region.

Six Brazilian Ministries (Mines and Energy/EMM, Science and Technology/STM, Defense/DM, Planning/PM, Civil House/HCM, Navy/NM, – and the National Energetic Policy Cabinet are, all of them, in accordance to the country needs to have, in the minimum, seven more nuclear power plants, as a preventive way to be supplied of energy and do not stop the country’s development (1).

The Newest Brazilian Program is considered fundamental to provide the country with some stability to face other countries in international negotiations.

The construction of the foresight nuclear power plants justifies itself, because, in the past May, the Brazilian Government signed with China a controversial nuclear energy area cooperation agreement.

In that occasion, the Brazilian Science and Technology Minister offered the nuclear fuel – enrichment uranium - produced by the Brazilian technology, developed by Brazil Navy to supply Chinese nuclear power plants.

So, Brazil also has to have new nuclear power plants, as a way to become able, to carry out that compromise (1).
Everything about the New Brazilian Nuclear Program has been studied for a long time by the Brazilian Ministry technicians.

The Brazilian Government works with the possibility to have everything as it was planned until 2022.

The opinion of most conservative Brazilian Government members foresee as the maximum, the Angra 3 nuclear power plant conclusion (1.3 thousand MW); a nuclear power plant construction (100 MW) in the Brazilian Northeast Region; to maintain only the development of radium-pharmacies; and nuclear applications in the agriculture.

Some people in Brazil think that, even if the conservative opinion prevails about the Brazilian Nuclear Program, it will be not very bad for Brazil: the country will be almost a winner, because, Brazil would be able to construct millions of reactors necessary to become, in fact, the uranium enrichment through the national technology, as a way to cut the prices of the nuclear fuel (6). Nowadays, Brazil uranium raw material is enriched by a high price, in Europe.

With all respect to the well intentioned opinion of the conservatives (in the best hypothesis) and, with all respect to those that have absence of knowledge about the subject, that they use to express about (nuclear energy, New Brazilian Nuclear Program and so on) the understanding is that - it’s obvious, that it is not possible to accept that, anymore. In a world divided among countries that develop nuclear energy in a large scale and countries that don’t do the same, Brazil cannot be obliged to be among the last ones.

Sorry to them, but, the country efforts, that has worked very hard for more than sixty years to be among the first ones, has to be recognized.

Indeed, if some “conservative” opinions prevail, all the efforts that the Brazilian Government has developed lately - will be in vain.

The understanding in Brazil about energy area is that the Brazilian Government must always negotiate – but, never do concessions that may damage Brazil interests.

Nowadays the Brazilian objectives are: to supply electric energy, for the country Southeast Region; to construct the nuclear power plants planned in the Northeast Region, aiming to supply cheap energy to that Region; to enrich uranium, aiming, not only, to give useful destination to the Brazil enormous potential of nuclear raw material to move the Brazilian power plants, independent of the imported nuclear fuel; and the nuclear medicine aiming, the Brazilian technological independence.

In the area of radium-pharmacies and in the area of agriculture nuclear applications – Brazil intends to become an exporter of technology and products to be used in that kind of activity.

Also, with the Brazilian genuine technology it’s expected the construction of small reactors, 75% technologically independent if compared to the Brazilian-German Nuclear Program reactors.

Brazil is a continental country and needs a lot of nuclear energy.

In spite of hydroelectric energy priority, the hydroelectric capacity is exhausted in the country, just like in the USA (7).

The hydroelectric power plants are situated far away from the Brazilian big consumers’ centers. Because the evaporation phenomena, they cannot supply energy to the big consumers centers. To counter-balance the lack of energy, Brazil needs to improve the nuclear power plants programmed (7).

Brazil should already have several nuclear energy power plants working, as a way to complement the country energetic shortage, all them constructed as a kind of “on off” (turn on, turn off, to set in motion only, where they are necessary).

Such kind of power plants have to be necessarily State power plants – because, as they are stopped during most of the time, only the State supports this kind of cost.
But Brazil does not have, yet, capacity to construct nuclear power plants. To be successful in the nuclear area planning it will be necessary US$ 14 billion investments as a way to guarantee four nuclear power plants, with one thousand MW as total capacity (equivalent to a third part of Itaipu, one of the biggest or the biggest hydroelectric power plant in the world, constructed by the three South American countries: Brasil-Argentine-Paraguay).

As the country doesn’t have economic and financial conditions, to support those kinds of investments – it’s a good time for investors, nuclear energy companies and others, in the nuclear energy area around the world, to become partners of Brazilian Government, in this enormous and profitable task.

So, in Brazil the main objective, in the nuclear energy area or the main pragmatic idea, can only be: to buy from good suppliers, by the fairest and best prices.

4 THE INTERNATIONAL PRESSURES ON BRAZIL – THE UNITED NATIONS POSITION THROUGH THE INTERNATIONAL ATOMIC ENERGY AREA

4.1 The International pressures on Brazil

With the excuse of the Non-Proliferation weapons, there’s no doubt, on the moral and political ambiguities of the international nuclear community about its objective that is: monopolizing the nuclear trade and everything about this kind of trade - mainly nuclear raw material.

The questions are: how will China be able to oblige North Korea to give up on Korean nuclear program, if China does not reduce their nuclear stocks? How will the European Union be able to give an ultimatum to Iran, if it remains with its entire nuclear arsenal intact?

Besides, we have to bear in mind that there is not any kind of international solidarity around the world. What exists is a kind of a cannibalism inter-States.

Everybody observes that, unhappily, the panel that you see on TV, newspapers and so on is one country wishing to finish with other, and that’s only.

At the beginning of the year, everybody saw the Brazilian Government resisting, facing and not allowing the opening of the Brazilian genuine enrichment uranium technology, to the most aggressive nuclear trade competitors and to some very well-known industrial spies in the world.

4.2 The United Nations position through the International Atomic Energy Agency

The United Nations position in accordance to its Statutes is to do the link up among Nations: not to cause a break – a caos - among them.

Fortunately due to this way of thinking, the agents of the International Atomic Energy Agency justified the United Nations creation.

So, in spite of avoiding that International Atomic Energy Agency agents had known about the genuine Brazilian uranium enrichment technology – Brazilian Government has signed an agreement with the International Atomic Energy Agency in which the Agency has approved the Brazilian nuclear equipments.

The International Atomic Energy Agency approval put Brazil in the nuclear restricted countries group which dominates totally the fuel nuclear technical production, the so called P-5: USA, France, England, Russia, China and now - Brazil.

Recently, Brazil has received from the World Association of Nuclear Operators, the prize of Nuclear Excellence, in Berlin, Germany.
5 THE ANGRA 3 NUCLEAR POWER PLANT CONCLUSION

The only divergence among the Brazilian Government members is about the Angra 3 nuclear power plant conclusion. That’s because that nuclear power plant was supposed to be constructed in the Brazilian Nuclear Program, the former nuclear program which began in 1970, having Germany as its partner. That’s why, in Brazil, there’s a controversial idea about the Angra 3 nuclear power plant conclusion.

So, the Brazilian engineers, physicists, technicians, workers and others of the nuclear sector are mobilized to guarantee the Angra 3 conclusion – a project interrupted thirty years ago – in spite of the country having already bought and paid totally for equipments costing about US$750 million.

The nuclear sector is sure that it’s possible to generate cheap energy, more or less, at a cost of US$ 5.00 by MW/h – and that it is of no sense the Brazilian enterprise/NUCLEP (responsible by the nuclear power plants) having to spend about US$ 20 million/year, only to maintain the equipments, outside Brazil. They have the Ministry of Science and Technology in favor of them.

The Ministry of Mines and Energy (now, he is also the Ministry of Civil House) and the Ministry of Environment opinions are against it, because they think the price of the Angra 3 power plant conclusion is too expensive (1) – and they are completely right.

Brazilian people usually argue whether it is not time to ask for the German partner help, to solve this matter.

After all, they know well, that Brazilian has been a very good partner and they have done, very good business - in the nuclear area, during all these years.

Besides, it’s not fair to go on hoping that only Brazilian Government put more money than that he has already invested in the Brazil-Germany Nuclear Program, because it is not alone in this business: it has a commercial partner. Partners are partners: they must take profits and losses together, exactly like in any kind of private business.

Everybody in Brazil laughs at arguments, such as...“it’s fundamental for the technological knowledge transfer in the area, to construct Angra 3...”; ...”Angra 3 conclusion would stimulate new technicians graduation”...; and ...“in spite of all the nuclear equipments are bought and paid, Brazil is obliged to pay, monthly, a lot of money, for renting a deposit for those equipments, outside the country...”, and so on.

This is not the right forum to comment that, but, definitely, those are not serious arguments.

The right idea - about the nuclear equipments bought and totally paid by Brazil, but up to now, in the exporter territory is asking to the exporter to send them, immediately, directly to Brazil.

First of all, because, Brazil no longer needs to wait for a nuclear energy technological knowledge (“un passant” it’s good to mention that, despite technology was the main objectife that motivated Brazil to sign the famous contract, the technology was never transfered by his partner).

The Brazilian past experience was an example of how do not to do, because, it was a very expensive experience for the country.

The understanding is that if the Brazilian Government decides, or not, to construct Angra 3 with his German dear partners - it will be only a common commercial business decision.

The predominant and the main practical idea, in Brazil, can only be: to buy from good sellers, since the prices are good and fair.

And, never give up, handing over or slackening, in the nuclear energy area.
CONCLUSIONS

As Brazilian legitimate aspirations have never been excludents, the hope is that, all those that have interests in the international nuclear energy commercial and industrial area, accept and respect it. And as Brazil is recognized as an unequal partner in the nuclear energy area around the world, certainly, Brazil will be the preferential partner of all of them.

Concluding, I ask you to apologise if I didn’t correspond to all your expectatives. I thank you very much for your kind attention and for the opportunity to express myself, once again, in this so eminent forum.

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REPORT OF DISCUSSIONS FROM SESSION 5
INTERNATIONAL NUCLEAR TRADE

Chairman: Juhani A. Santaholma, Finland
Secretary: Renato Frelih, Slovenia

Session 5 was held on the October 12, 2005 with seven papers presented about International Nuclear Trade.

The morning session started with the words of Mr. Santaholma, Chairman of the Session 5, who introduced the way of paper presentations.

Next, Dr. Nuria Prieto Serrano introduced the entry into force of the Additional Protocol to the Safeguards Agreement. The paper is focusing more on safeguards and it intends to explain in a simple way the obligations of the Additional Protocol and its consequences in EU community Law and Spanish Law.

The second paper, presented by Marcus Fillbrandt, described The G8 Global Partnership – A Survey of the German Activities and their Legal Framework. The main conclusion of the paper is that the complex legal frame is necessary to implement the guidelines adopted at the Kananskis summit in 2002. The German project Physical Protection of Nuclear Material complies with the Guidelines adopted at the same summit.

Mr. Jay Kraemer explained in his paper – Post September 11 Responses in United States Regulatory Practice Affecting the Export and Import of radioactive materials and Related Equipment. 9/11 event changed US political landscape - Nuclear Export and Import controls are part of that process. On July 1, 2005, the US NRC adopted new regulations to implement Export and Import controls consistent with the Code of conduct on the safety and security of radioactive sources. Under section 632 of the Energy policy Act of 2005 (EPACT 2005) the U.S. Congress imposed a virtual embargo on the transfer of nuclear and other radiological materials Equipment and Technology to Terrorist supporting countries. The EPACT 2005 also includes new criteria for certain radiological material exports and imports and mandatory tracking system for such materials. Section 630 of the EPACT 2005 modestly loosened controls on new exports for medical isotope production.

The fourth paper of Didier Lamenthe, presented by Francoise de Cormis explained the Transport of Maritime International of Radioactive Materials. The paper explains the relations between IAEA and IMO (International Maritime Organization) regarding international norms which rule nuclear material maritime transportation. Both regulations that are abundant, diversified and regular modified, have some weaknesses shown by several accidents or incidents without serious consequences. Also in parallel international conventions established a nuclear liability regime. The paper suggests that both organizations IAEA and IMO should draft together one text about nuclear material international maritime transportation. To achieve an efficient normalization, nuclear material transportation must be contemplated under both sides: ship and packaging which should be guarded by IAEA.

The fifth paper was presented by Mariano R. Paez about Nuclear Trade and approach on the Argentine Situation. The paper presents the commercial situation in the nuclear field in
Argentina in the facilities available in the country. It explains also about the ways of intervention of the State on Nuclear Commerce as regulator and as a partner in Corporations and explains different proposes to fill possible gap in legislation.

The Chairman gave the floor to Steven McIntosh, who presented the paper written by Mr. Johann Rautenbach. The theme of the paper was the Revision of the Physical Protection Convention. The process to amend the Convention is like all negotiations a lengthy process. The 1987 Convention was very limited in scope-protection obligations, restricted only to material in international transport. The amended Convention extends the scope to cover material in domestic use, storage or transport and to cover sabotage of materials and of nuclear facilities. It also includes the Physical Protection Objectives and Fundamental Principles adopted by the Board of Governors in 2001. The Nuclear Terrorism Convention overlaps the amended CPPNM, but recognizes the competence of the IAEA in relation to physical protection.

The seventh paper was presented by Guilhermina Coimbra about The Brasilian Nuclear Program: The history goes on –International Pressions-The UNO Organizations and the AIEA Position. The presentation especially reflected the processes of enrichment of Uranium in Brasil and plans for building the new NPP Angra 3.

The Chairman opened the final point, Discussion on activities of WG3. Mrs. Francoise de Cormis, who was the president of this group, pointed out that it had been difficult to work because there had not been enough communication between the members of the WG. For future it is needed to define the strategy and direction of the WG. Some new ideas and new methods of work should be introduced with more active approach of the WG members.

The Chairman pointed out that the agenda of this WG is very wide, but the reason of its existence is real, because the WG is a bridge between conferences. New interested people should be invited to join this WG. Mr. Kraemer pointed out that in this section all the developments in this field should be followed and the topics presented in Brussels on the next INLA conference.

The closure of the session was made by the CHAIRMAN of the session who referred to high legal quality of the speakers and the comments and question of the public.

Ljubljana, March 2006

Renato Frelih
HOW AND TO WHAT EXTENT ARE THE PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW APPLICABLE TO RADIOACTIVE WASTE MANAGEMENT?

Working Group 5 - Radioactive waste management
President(s) : Gustaaf MATTHIJS (ONDRAF - Belgium) r
Mariano MOLINA (ENRESA – Spain)

1 INTRODUCTION

Environmental law is one of the most dynamic and innovative areas of Legal Science and Practice. The variety and novelty of the issues to be regulated is surely an important factor. However, for almost two decades its rate of development has been marked fundamentally by consideration of the environment as a global asset, beyond national interpretations and policies. As is recognised in the Declaration of Rio, the States are interdependent and shall ensure the integrity of the Earth, our home, in a spirit of global partnership.

The global nature afforded to the conservation, protection and restoration of the environment gives a relevant position to international legislative tasks. Instead of a police strategy, which would be destined inevitably to failure, International Environmental Law prefers to make use of the concept of partnership, cooperation between States, societies and populations organised around simple and harmonising principles of universal dimension. This is the spirit of certain international standards that are sometimes described as “Soft Law”, but that many of us perceive as being paradoxically mandatory.

Nuclear Law came about and was consolidated at international level before International Environmental Law, and long before the latter took on its global nature. It emerged from the feeling that prevention and control of radiation hazards required specific legal instruments. Its preventive function focused initially on people, the protection of health being its main objective. It later extended to include other major areas, such as safety of installations, protection of property and compensation for damages. Finally, environmental protection was more explicitly integrated. The legal regulation of radioactive waste management has developed in almost all countries as part of the process of growth of Nuclear Law. It shares the objectives and principles of such Law and may be considered being a subdivision of it. Given its scope, radioactive waste legislation has fully participated in interaction and convergence between Nuclear Law and Environmental Law. On the one hand,
radioactive waste management legislators were pioneers in developing methods for the
categorization and safe handling of such wastes, in order to differentiate the stages of
management, to conceive interdependent institutional schemes and to achieve secure systems
for advanced financing, as well as the right of future generations. In the opinion of many,
environmental jurists have been ground breakers in appreciating with pragmatism and
functionality the multidimensional nature of the legal object to be protected, paving the way
in the application and the generalization of concepts as innovative as the principle of
environmental impact assessment and precaution. At present there is a clear and objective
relationship between the two legislative areas, in as much as they share the same goal:
protection of the environment. However, the process has frequently developed by way of
separate actions. On the second hand, this has been so because of the highly specific nature
of nuclear risk and of the technologies for its prevention, and on the other as a result of the
multidimensional nature of the environment.

An additional consideration. The development of Environmental Law has frequently
benefited from the international context, from the first bilateral Treaties at the beginning of
the 20th century to the boom in the appearance of international initiatives in the nineteen
Environmental Law “is the product of an essentially legislative process involving the
interplay of international organizations, conference diplomacy, codification and development,
and international courts, and a relatively subtle interplay of treaties, non binding declarations
or resolutions, and customary law.”1. Curiously, a similar result has been obtained in the
legislation of radioactive wastes, but via a different process involving more exchanges among
scientific and technical experts and less diplomatic actions.

In this field, and barring the area dedicated to the control of fissile materials relating to
weapons, we have had to wait for the adoption of the Joint Convention on the safety of spent
fuel management and on the safety of radioactive waste management, in 1997, for the advent
of a harmonising legal instrument. Paradoxically, cooperation, the exchange of experiences
and efforts to bring about international standards on the safety and management of radioactive
wastes have been intense and coordinated among the different countries since the very
beginnings of the peaceful use of nuclear energy.

These reflections elicit a number of important questions for those of us who need to
share both legal interpretations:
• Are there significant differences, or even incompatibilities, between Environmental Law
and Nuclear Law in general?
• Aside from formal questions, do we consider nuclear Law as part of the environmental
law or as a different kind of law?
• Are there any precepts in Environmental Law that might not be applicable when regulated
under Nuclear Law?

2 PROCEDURAL ASPECTS

These issues led WG5 to consider the question as being of sufficient scope and current
interest for it to be selected as the central topic of its work.

During a first meeting in Paris, in June 2003, WG5 decided to undertake an analysis
allowing it to determine possible incompatibilities between International Environmental Law
and Nuclear Law. The starting point was to be an inventory of international texts on
Environmental Law. It was then considered that this work could be completed in a second

1 International Law and the Environment P. BIRNIE, A BOYLE, p.10 (Oxford University Press, 2002).
step using the most important European texts. It should be noted that, in this reasoning, the working group would have to pay attention to the following:

- To distinguish the texts from the interpretations made by the various actors,
- Not to adopt excessively ambitious objectives and to limit the investigation to 3 or 4 topics to be specified, i.e.: safety, security and sustainable development.

Following the usual WG5 working method, a questionnaire would then be sent to the various representatives registered by INLA in order to determine how the national laws take into account the provisions of international law. Lastly, the report of the working group would address whatever incompatibilities might have been raised and bring in suggestions aimed at putting an end to these situations.

In a second meeting in Brussels in June 2004, the Group decided to focus the on-going work on confronting principles inspiring Environmental Law and Nuclear Law. It was agreed, for continuation of the study, that the international regime relating to radioactive waste management should be compared with the principles of environmental law, as underlined in the international conventions. For this purpose a paper produced within the Group had synthesized these principles. The need for benchmarking of this international regime against the national laws, in a second phase, was once again stressed. As this study might be rather complicated to perform, for instance for the federal States, the analysis would have to focus on a few specific points. The steps finally adopted were as follows:

- Initially, the comparison would be made at international level between the environmental law and the nuclear law relating to radioactive waste management. The Joint convention signed in Vienna on September 5th, 1997 was chosen as the main text for analysis.
- Secondly, the analysis would focus on national approaches. A questionnaire would be prepared for the States, asking them to concentrate on 3 or 4 important national nuclear laws.

The third meeting in Paris (December 2004) definitively formulated the topic for the Congress as follows: “How and to what extent are the principles of international environmental law applicable to radioactive waste management law?” The group examined the document entitled "Preparation of the Report on Radioactive Waste Management and the Protection of the Environment", dated 15th November 2004, written by a selected sub-group. The comments sent were circulated in advance and taken into account. Concerning the questionnaire, the Group highlighted the importance of asking countries which principle were explicit\(^2\) in their national nuclear legislation. A set of four principles – Sustainable Development, Precautionary Principle, Public Participation and Right of Access to Justice – were chosen for specific consideration when filling in the questionnaire. This latter was sent early in March 2005.

\(^2\)A principle is considered to be “explicitly” provided for if a section or paragraph of a legal text enounces its content as defined in the questionnaire or in a very similar way, even without a direct reference to its name. For example, the precautionary principle would be explicitly provided for in two kinds of assertions:

1. In a section or paragraph containing the very name of the principle, such as art. 174.2 EC Treaty: Community policy on the environment (…) shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.

2. In a section or paragraph enouncing a general rule of conduct within the meaning of the principle, such as the Preamble of the UN Convention on Biological Diversity: where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.

On the contrary, a principle can be “implicitly” present in many kinds of legal measures. In this sense, members were not expected to provide the working group with a teleological interpretation on the principles that underlay their legislation. However, if they felt that a non-explicit treatment may be of interest for our questionnaire, their contribution would be very much appreciated.
At last, a reduced meeting in Paris (June 2005) was organized in order to adopt the final report. This aim was easily achieved thanks to the important work already made on the international side of the problem, and thanks to the ambitious analysis of the national answers received to the questionnaire sent in March. The reduced meeting worked on a draft report sent in advance and on the suggestions made by members of the working group. The final report was then adopted, before it is transmitted to the organization of the Congress.

3 COMPARISON BETWEEN INTERNATIONAL ENVIRONMENTAL LAW AND INTERNATIONAL NUCLEAR LAW

The present comparison is limited to an analysis of the situation at international level. Non-binding statements, or guides, are taken into account as well as treaties or other binding provisions because, at international level (i) environmental law is often made up of “soft law” and (ii) nuclear law comprises a large number of technical standards or guidelines which are in the form of recommendations or are expressed in general (non-binding) terms even in formal treaties. Such flexibility at international level does not mean that the rules and obligations agreed by Contracting Parties are not likely to be applied in a stringent way at national level.

For each Principle:
§(a) summarises the relevant provisions in environmental law;
§(b) refers to the corresponding provisions in the 1997 Joint Convention and in the 1995 IAEA “Principles of Radioactive Waste Management” which are the two texts of universal scope dealing specifically with radioactive waste management;
§(c) considers to what extent these texts are consistent with environmental law requirements.

Annex 6.1 summarizes the concordances between the Joint Convention and the International Environmental Principles chosen.

3.1 Right to a healthy environment

(a) The right to live in a healthy environment has developed within environmental law as an instrument to protect the natural resources necessary to maintain human health and life. It is linked to the recognition of fundamental values generally enshrined in declarations of rights and public freedoms.

Primary sources: the 1972 Stockholm Declaration (Principle 1); the 1992 Rio Declaration (Principle 1).

On this point, the 1972 Stockholm Declaration (Principle 1) speaks of “an environment of a quality that permits a life of dignity and well-being” and the 1992 Rio Declaration refers to the entitlement to “a healthy and productive life in harmony with nature”. This terminology is very general, along the same lines as other international statements on human rights.

(b) The Joint Convention (like most nuclear law instruments) refers to a high level of safety and to adequate protection of man and the environment against radiological hazards. Article 1 provides that the objectives of this Convention are "to achieve and maintain a high level of safety worldwide" and "to ensure that during all stages of spent fuel and radioactive waste management there are effective defenses against potential hazards so that individuals, society and the environment are protected from harmful effects of ionizing radiation". The reference in the Preamble to UN Chapter 22 of Agenda 21 (adopted at Rio 1992) "reaffirming the paramount importance of the safe and environmentally sound management of radioactive waste" is also particularly relevant. Articles 4(iv), 7(i), 11(iv), 14(i) and 24(1)(iii) refer to this right by explicitly mentioning the protection of the environment.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
(c) The whole purpose of waste management is to protect the environment and the rules of nuclear safety and radiation protection which are applicable to radioactive waste are necessarily more stringent than general statements on the obligation to maintain a healthy environment.

3.2 Prevention principle

(a) The prevention principle takes into account the fact that activities which damage the environment often go unnoticed, as the effects only appear a long time after such activities take place and at a point where their consequences may already be irremediable.

This principle requires that measures be taken as early as possible as soon it appears that a project will have an impact on the environment. It also favours measures directed at the origin of the damage, rather than measures which simply focus on the consequences of such harm. Furthermore, it is generally recognised that preventive measures are less expensive than reparatory measures, even if these measures are not mutually exclusive. Regulations on environmental impact studies required for major project planning and for the construction or modification of installations with an important effect on the environment are based in particular on this principle. It also means that the best available techniques must always be chosen. However, the “economically acceptable” cost of this technological choice is often required, in particular with regard to the proportionality principle.

Primary sources: In international law, this principle was recognised specifically in the 1972 Stockholm Declaration (Principle 21), the 1992 Rio Declaration (Principle 2) and in the Treaty establishing the European Community (Article 174).

Articulated in the same manner by Stockholm 1972 and Rio 1992, the prevention envisaged relates to transboundary harm only. The definition is general and must be supplemented by clarifications to be drawn from a number of treaties and from case law and doctrine.

(b) Prevention is the main objective of the Joint Convention. Comparison with international environmental law demonstrates the following:

- The scope of application of the Joint Convention is not limited to international impacts but also includes prevention of domestic damage;
- Prevention shall apply "at all stages" of radioactive waste management (Articles 1, 4 and 11), implying early action.
- The technologies used shall be "supported by experience, testing or analysis" (Article 7(iii) and Article 14(iv)); this seems equivalent to the concept of “best available techniques”.
- The limits of exposure to radiation shall take social and economic factors into account (Article 24(1)(iii) and (3)). (see also Principles 1, 2 and 3 of IAEA Principles of Radioactive Waste Management 1995)

(c) The rules on prevention are very similar in environmental and nuclear law but may be more comprehensive in the latter, according to the subject matter.

3.3 Polluter pays principle

(a) According to its original definition in the OECD Recommendation of 26 May 1972 (C 72.128) on Guiding Principles Concerning International Economic Aspects of Environmental Policies and the OECD Recommendation of 14 November 1974 on the Implementation of the Polluter Pays Principle (C 74.223), this principle is an economic policy instrument designed to allocate the cost of protecting the environment (to internalise this cost) in order to avoid distortion of trade. Subsequently, its scope and purpose have been
considerably broadened (OECD Recommendation of 1989\(^3\)) and it has been finally adopted as a principle of international environmental law (1992 Rio declaration, Principle 16, for example). The corresponding rule is now included in a number of international conventions dealing with protection of the environment. Although its provisions vary, the polluter should bear in general an extensive part of the environmental cost: taxes for public action or other preventive costs, remedial and restoration costs, as well as compensation for pollution or incidental damage to the environment. This evolution influences, therefore, the field of civil liability law. However, application of the polluter pays principle is subject to some restrictions, in particular the taking into account of economic factors.

(b) With respect to the legal regime of radioactive waste management, it is clear from the Joint Convention that the operator (licence-holder) bears the full cost of all waste management and decommissioning operations. This results from the prime responsibility of the operator (Article 21), the obligation to maintain adequate financial resources (Article 22(ii) and (iii)) and the very comprehensive definition of activities within radioactive waste management and decommissioning (Article 2(i)).

(c) We can conclude that the relevant provisions of nuclear law globally satisfy the economic integration element of the polluter pays principle.

The same conclusion applies with respect to the civil liability implications of the principle because under the revised Paris and Vienna Conventions the absolute liability of the operator is explicitly extended to nuclear damage caused to the environment from radioactive waste, including after its disposal.

3.4 Environmental impact assessment principle

(a) This principle provides that the necessary measures should be taken to assess the potential impact on the environment of projects that are liable to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, to allow for public participation in such procedures.


(b) This principle is confirmed by the Joint Convention in Articles 8 and 15, 6(1)(ii) and (iv) and 13(1)(ii) and (iv). It is also enshrined in the IAEA Principles 2 §311 and 9 §331. In the field of radioactive waste management, this principle allows us to pursue the more policy-orientated principles of prevention and precaution.

(c) Fully consistent.

3.5 Public information principle

(a) The public information principle is the corollary of the participation principle. It is also necessary for the application of the prevention and precautionary principles. In order to be in a position to effectively protect the environment, people require information on the current state of the environment and on projects which could represent a potential hazard. This principle has a privileged status in environmental matters.

Primary sources: In international law, access to information is enshrined in Principle 10 of the 1992 Rio Declaration. In European law, the new Directive 2003/4 of 28 January 2003 on Public Access to Environmental Information follows the provisions of the Aarhus

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\(^3\) Recommendation of the Council concerning the Application of the Polluter-Pays Principle to Accidental Pollution, C(89)88(Final), OECD 1989.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
Convention of 25 June 1998 which recognises the principle and provides for its implementation.

(b) The importance of informing the public is recognised by the Preamble (paragraph (iv)) of the Joint Convention. The Convention provides for the obligation to make available to the public information on the safety of radioactive waste management facilities (Article 6(1)(iii) and Article 13(1)(iii)) as well as summary reports of Joint Convention meetings (Article 34).

c) Access to information has always been a sensitive subject in the field of nuclear energy but it should be noted that the Joint Convention shows progress in this respect as compared to the Nuclear Safety Convention. In comparison with environmental law, the provisions in the Joint Convention may appear somewhat weak and an implementation mechanism is lacking. It should be pointed out also that nuclear activities are covered by the Aarhus Convention (and by the EC Directive 2003/4), at least indirectly, taking into account the terms of Article 2 of the Convention (Article 2(1)(b) of the Directive) which defines environmental information to include "factors, such as substances, energy, noise and radiation...".

3.6 Co-operation principle

(a) The principle of co-operation implies not only co-operation between different states, but also between the state and the economic sector, environmental protection associations, consumers, producers, etc. Implementing this principle often means consulting all stakeholders. It also leads to a tendency to prefer contractual solutions over regulations set by public authorities.

Primary sources: In international relations, this principle applies in particular to North-South relations. For instance, developed countries often have the duty to help developing countries in protecting the environment by providing them with their technical knowledge. The 1992 Rio Declaration recognised the principle of co-operation in Principles 7, 9 and 27.

This is rather a principle of general international law, not specific to environmental protection. In fact, Rio 1992 (Principle 9 and 27) promote international cooperation on sustainable development (not on environmental protection per se).

(b) International co-operation is at the root of nuclear law, in particular of the rules on radioactive waste management. It is the only type of waste for which an international legal regime of universal scope has been adopted, namely the Joint Convention and the 1995 IAEA Principles. See in particular Paragraph (ix) of the Preamble, Articles 1(i), 4(iv), 6(1)(iv), 11(iv) and 13(1)(iv) in the Joint Convention. See also in particular Principle 3 §313 of the 1995 IAEA Principles.

c) Fully consistent.

3.7 Fair distribution /proportionality

(a) The fair distribution or proportionality principle implies that a State’s duty to protect the environment is proportionate to its capacity to do so.

Primary sources: In international law, this principle is recognised by Principle 23 of the 1972 Stockholm Declaration and Principles 7 and 11 of the 1992 Rio Declaration which recognize the distinction between developed and developing countries.

(b) International nuclear law, including the law governing the management of radioactive waste, does not enshrine this principle, due to the specific character of the nuclear risk.
On this point, radioactive waste management law at international level does not follow international environmental law.

3.8 Limitation of production of waste

(a) The principle of limitation of production demonstrates the main objective of any regulations on waste management, i.e. reducing its volume to the greatest extent possible up to the complete recycling of all waste. This principle is not universally acknowledged as a general principle of environmental law but it is a basic principle underlying the management of waste. For this reason, it shall be considered herein.

Primary sources: Chapters 20 and 22 of Agenda 21 (Rio) encourage policies and practices to minimise and limit, where appropriate, the generation of radioactive waste. Other general texts examine this issue: OECD Recommendation of the Council on a Comprehensive Waste Management Policy C(76)155/Final, 28 September 1976 (in relation to waste in general); and UNEP Cairo Guidelines and Principles for Environmentally Sound Management UNEP/WG 122/3-Annex III, 9 December 1985 (in relation to hazardous waste with the exception of radioactive waste).

(b) The Joint Convention provides that generation of radioactive waste should be kept to the minimum practicable (Articles 4(ii) and 11(ii)). It should be pointed out that this requirement shall be "consistent with the type of fuel cycle policy adopted" and therefore there is a clear differentiation between limitation of waste and reprocessing of fuel. The requirement to limit waste to the greatest extent possible does not include a requirement to reprocess fuel. See also Principle 7 of the IAEA 1995 Principles.

(c) Fully consistent.

3.9 Sustainable development principle

(a) The sustainable development principle imposes a choice in relation to development. Development is intended to satisfy the needs of present generations; however, it must not deprive future generations of the possibility of satisfying their legitimate needs. It is particularly important in relation to the use of non-renewable natural resources and activities which irremediably destroy the vital environment of humans and animals, including air, water and bio-diversity. The scope of this principle is considerable. It requires the identification of long-term priorities as well as the re-definition of existing relationships between ecology, economy and technical progress. It also gives priority to the management of the environment in accordance with applicable regulations, as sustainable development can only be attained by co-operation between producers, consumers, citizens and authorities. Consequently, recent legislation tends to set goals and establish legal requirements to meet those goals; in particular, such legislation tends to use contractual instruments and long-term collaboration.

Primary sources: This principle was recognised at the 1992 Rio Conference (Principle 3). It is now enshrined in a number of environmental conventions.

(b) Using the same terminology as in international environmental law, the Joint Convention fully incorporates this principle in Article 1(ii). A specific rule on its application is set out in Article 4(vi) and (vii) and in Article 11(vi) and (vii).

(c) There is full consistency. The only problem which may be raised relates to the possible obligation to ensure “recoverability” of radioactive waste from a repository: Is such an obligation implied by this Principle and is it therefore relevant to other type of waste creating a long term risk?
3.10 Precautionary principle

(a) The precautionary principle, which is interpreted in many ways, is based on the same concerns as the prevention principle. According to the precautionary principle, the absence of absolute scientific certainty about the effects of a substance or an activity on the environment is not a sufficient reason for not taking preventive measures, where there are firm indications of potential serious damage.

Combined with the prevention principle, this principle means that measures should be taken before there is firm proof of the harmful character of an activity or substance. Such measures should focus on the origin of the harm and should be aimed at preventing the occurrence of damage to the environment.

The precautionary principle came about in the mid eighties, developed on the basis of the Vorsorgeprinzip of German Law, and was included for the first time in Principle 11 of the World Charter for Nature in 1982 and then became positive law – with a more precise definition – through a number of treaties, in particular in the field of sea environment protection. It was also incorporated into Community Law with the Maastricht Treaty, and as a result into the Legal Systems of the EU member countries consulted. The principle as formulated by Rio 1992 applies to the prevention of an "uncertain risk" i.e. in the absence of full scientific evidence.

Primary sources: The 1992 Rio Declaration recognised the precautionary principle (Principles 15 and 17). Other international texts have also recognised it. The European Union introduced it in the Single European Act without however providing a definition.

(b) In view of the high level of development of nuclear science and technology and of the experience acquired through sophisticated risk analyses, it is obvious that almost all risks associated with the use of nuclear energy are well known. However, the biological effects of low radiation doses remain uncertain and the precautionary approach is justified to prevent this risk. This approach has been adopted and maintained by the ICRP (linear theory without threshold) in their recommendations which are embodied in international radiation protection standards. In a later report, the ICRP acknowledged the relevance of the precautionary approach.

(c) The Joint Convention (Article 24) refers to these standards. However there is no provision in the Joint Convention on uncertain risks and the precautionary principle.

3.11 Right to access to justice in environmental matters

(a) The right to access to justice in environmental matters enables an individual to challenge environment-related decisions before a judicial court or another independent and impartial body established by law.


(b) The Joint Convention does not make provision for this right to access to justice in order to enable an individual to challenge a decision e.g. in relation to siting of a radioactive waste or spent fuel facility.

(c) At international level, radioactive waste management law is inconsistent with international environmental law in this regard. However, procedures initiated by individuals against administrative decisions under the Aarhus Convention (and its implementing Directives referred to above) may relate to nuclear activities.
3.12 Public participation in the decision-making process

(a) The principle of public participation in the decision-making process is closely linked to the universal, interdependent and irremediable character of environmental damage, which justifies the right of every individual to participate in the environmental decision-making process. According to this principle, everyone has access to environmental information, including information related to hazardous substances and activities, and the public is involved in the drafting of projects which have a serious impact on the environment or on territorial planning. This principle was established by Rio 1992 and introduced into international conventions on the environment, in particular the 1998 Aarhus Convention.


(b) The Joint Convention does not provide for an obligation to consult the public in relation to radioactive waste and spent fuel management, where it imposes an environmental impact assessment. The procedural requirements in relation to siting are limited to provision of information. This principle has never been adopted in nuclear law at international level and there are therefore no provisions in this respect in the field of radioactive waste management.

(c) It should be acknowledged that the Joint Convention is not consistent with international environmental law in this regard. However, as mentioned above, the Aarhus Convention (and the EC Directive 2003/35), in its provisions concerning public participation, explicitly refers to nuclear activities (see list in Annex 1..."nuclear power stations and other reactors including the dismantling or decommissioning of such power reactors, installations for the reprocessing of irradiated nuclear fuel, installations designed for the production or enrichment of nuclear fuel, for the final disposal of irradiated fuel, radioactive waste, etc...").

4 OVERVIEW OF THE APPLICATION OF THE PRINCIPLES IN DOMESTIC ENVIRONMENTAL LAW – COUNTRIES ANSWERS

This section of the Report is split in two parts. First one briefly analyses the responses provided by the countries in relation to eight of the environmental principles that the group estimated not to be especially conflictive on the side of waste management legislation. For each of the principles there is a summary of countries responses. These latter are differentiated according to their relation with environmental national law or waste management law.

The second part of this section is devoted to a more extended analysis of the responses to the questionnaire just for four selected principles. They appeared not to be so matching in the two legal areas explored: Sustainable Development, Precautionary Principle, Public Participation and Right of Access to Justice. As mentioned above, in these cases the questionnaire was complemented with specific questions concerning each of the four principles.

The questionnaire could be found in Annex 6.4.
4.1 Right to a healthy environment

4.1.1. Environmental legislation. In all the countries analyzed two principles may be observed to stand out especially for their relevance, and to provide inspiration for the others in many aspects. These are what the authors have called mega principles and are the Right to a Healthy Environment and the Principle of Sustainable Development. The Right to a Healthy Environment appears in almost all of the countries consulted as a category of fundamental law affecting persons, linked to the right to enjoy a decent lifestyle and to social and human development. Consequently, the expression of such rights is normally to be found at constitutional level. This has been reflected in the responses to the questionnaire: six countries clearly indicate that their respective Constitutions reflect this principle.

4.1.2. Legislation on radioactive wastes. Only two countries recognize that the principle is openly included in the legislation regulating radioactive waste management. In both cases, the principle is included in the Atomic Energy Act. Another country comments that, in the widest sense, the Nuclear Energy Act reflects the principle of the right to a healthy environment. The rest of the countries consider that their regulations provide coverage for the principle, either due to its being a constitutional precept, or to the fact that the objective of the law is to ensure compliance with the principle. They coincide in pointing out that the ultimate objective of radioactive waste management is to protect human health and the environment. Most of the countries consider the laws and decrees on protection against ionizing radiations to be part of the legislation on radioactive wastes.

4.2 Prevention Principle

4.2.1. Environmental legislation. All the countries consulted confirm that the Prevention Principle is explicitly contemplated in their respective environmental legislations. It is considered to be a principle having a strongly instrumental and management-related nature, aimed at orienting the different regulatory activities on activities potentially affecting the environment. It is also considered to be a principle appropriately established and developed, following its clear definition in the Stockholm Declaration in 1972. All of the countries consider this principle to be a fundamental part of Environmental Protection. Consequently, it is underlined in framework or general laws on the environment. One of the countries replied that the issue was explicitly contemplated in its Constitution and Environmental Code; a further three also include it in their respective environmental codes, and the remainder provide references to general legislation (for example, Pollution Prevention Acts) or indicate that the principle appears in the different sector legislations (air, water, wastes, noise, etc.).

4.2.2. Legislation on radioactive wastes. Three countries coincide in pointing out that their nuclear energy legislation explicitly contemplates the principle. The majority opinion is that the legal framework covering nuclear operators, one of which is the radioactive waste manager, with its characteristics of preliminary authorization, the requirements of a safety case, etc., constitutes in itself a preventive regime. Two countries reinforce this idea in also underlining the fact that their legal regulations on radioactive wastes are subject to standards on Environmental Impact Assessment.

4.3 Polluter pays principle

4.3.1. Environmental legislation. All the countries confirm that the principle is adequately covered by their respective legislations. There is unanimous agreement in considering that the aim of the principle is for the causer of the pollution to assume the costs
involved in prevention and repair, without receiving any type of compensatory financial aid. The countries surveyed provide clear legislative texts in this respect, in which the principle is considered to be an element of complete internalization of the costs of pollution prevention and correction, unlike the possibilistic approach of article 16 of the Declaration of Rio. Two countries reply that the principle is contemplated in their Constitutions, three in their Environmental Codes and the rest in their environmental framework legislation or respective sector-specific codes.

4.3.2. Legislation on radioactive wastes. The nuclear legislations of all the countries consulted except one explicitly contain the principle of “the polluter pays”. The country in question states that although the principle is not openly demonstrated, the entire legislative development and its application are guided by the precept. In general, the principle appears in the atomic energy laws of the different countries, except in two cases, where reference is to the energy-related legislation.

4.4 Environmental Impact Assessment Principle

4.4.1. Environmental legislation. Environmental impact assessment is a systematic practice in all the countries that participated in the questionnaire. It is conceived as a basic instrument deriving from the preventive objectives of the environmental legislation and adding the concepts of participation – as regards the need for the potentially affected communities and individuals to be taken into account – and integration – inasmuch as it requires the multidisciplinary contribution of experts and the weighted consideration of costs and benefits. Three countries include the principle in their Environmental Codes and the rest in specific laws of a general nature. Although supranational in its scope, in the countries belonging to the European Union Strategic Environmental Impact Assessment (SEA) is obligatory for Plans and Programmes, the aim being to complete environmental control from the phases prior to the project and thus reinforce the efficiency of the assessment instrument.

4.4.2. Legislation on radioactive wastes. All the countries respond that the legislation regulating their Environmental Impact Assessments includes the main radioactive waste management facilities, among them those for waste disposal temporary storage and treatment. Two countries coincide in pointing out that the organizations responsible for the radiological aspects of impact assessment are their respective regulatory authorities.

4.5 Public Information Principle

4.5.1. Environmental legislation. Although this principle is only dealt with in passing in the Joint Convention, WG5 has found it to be strongly implemented and developed in the countries consulted. All are part of the Aarhus Convention and include profuse references to the requirements for and benefits of public information in relation to environmental issues in their different laws and standards developments. The right to access Environmental Information is reflected in the legislation of all the countries. Its definition acquires the highest importance in two countries, which include it in the Constitution and in the Freedom of Information Act, respectively. Two countries include the principle in their Environmental Codes and a further three in specific laws.

4. "National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution...”.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
4.5.2. Legislation of radioactive wastes. The principle of public information is included manifestly in the waste-related legislation of all the participating countries. In six cases the obligation to comply with this principle is reflected in the Nuclear Energy Act. It is significant that all the countries should understand and develop the need for an active information policy with regard to radioactive waste management activities. In this respect, one country comments that the legislation attributes these tasks to its national waste management agency, other replies that nuclear licensees are required to provide public information annually and two others indicate that legally their respective regulatory authorities are responsible for providing systematic information.

4.6 Co-operation principle

The Principle of Cooperation is not only aimed to address cooperation between states in international grounds but to promote it at national level between the different actors involved in environmental protection. The principle is linked to fairness and solidarity in the Rio Declaration although there is not a common consensus about the actions deriving from it. It is agreed that interchange of relevant environmental information, joint cooperation in R + D tasks, scientific and technical assistance and early notification in case of emergency situations are some of the activities coming out. On the domestic side the principle sets a basic obligation of the state to take into account those concerned or affected by environmental decisions. The right of everyone to participate in the mandates of environmental conservation is the other side of the principle.

4.6.1. Environmental legislation. All the countries consulted had legal provisions derived from the Cooperation Principle directed at the international level. One country confirms that the national interpretation of the principle is included in the Constitution. Two of them present the principle on the national sense, whilst a third one points out that there is an active policy of governmental departments to promote internal cooperation. Another country states that the principle is integrated in environmental legislation via the environmental risk assessment principle, the information principle and the participation principle. There is a country reporting that the cooperation principle concerning environmental management is included in an Act on International Cooperation for Development.

4.6.2. Legislation on radioactive wastes. Most of the correspondents have not explicitly enunciated this principle in the waste management legislation. However, many of them consider the principle to be affecting as far as the hierarchy of the national environmental legislation which provides for it is above that of waste management. In some other cases, the responses remit to the corresponding international treaties. Although international and domestic co-operation is a common practice in this area, two countries clearly insist that their legislation openly commits nuclear authorities and waste management agencies to cooperate with waste producers.

4.7 Fair distribution/proportionality

4.7.1. Environmental legislation. Although contemplated in the Stockholm Declaration in 1972, the principle of proportionality really acquired its full strength as from the Declaration of Rio in 1992. It embodies a global and integrating spirit, such that the objectives of environmental protection and sustainable development be accessible to all States. In this respect, it is a principle that clearly transcends the area of national policies and
that is part of overseas policy actions concerning the environment. Possibly for this reason, most of the countries consulted have replied that the principle is not contained in their environmental legislation or that they do not know in what type of standards it is explicitly contemplated. One country, however, places it among the demands of its Constitution, as a result of which it is obligatory with respect to any other type of law. A third country refers to its legislation on cooperation in development. It is noteworthy that two countries consider that the requirement for proportionality might acquire national standing, inasmuch as their laws require a) that environmental policy be in keeping with the needs of social and economic development and b) that the analysis of risk and application of environmental impact assessment be in keeping with the importance of the impacts analyzed and their possible occurrence.

4.7.2. Legislation on radioactive wastes. Only one country whose Constitution contains the principle of proportionality considers that this mandate openly affects the legislation on radioactive wastes.

4.8 Limitation of production of waste

4.8.1. Environmental legislation. Although this is not a general environmental principle, it is a key objective in all radioactive waste management policies. The limitation of waste production is generally accompanied by actions promoting the recycling and valuation of waste materials. In this respect, the principle is often formulated as the principle of waste production minimization. All the countries consulted have incorporated the principle in their legislations. Similarly to what occurs with other principles, the countries that have an Environmental Code – three – generally include the principle. The rest contemplate it explicitly in their standards pertaining to the waste sector or in their general environmental protection legislation.

4.8.2. Legislation on radioactive wastes. The obligation on limiting the production of radioactive wastes is an objective in all the countries consulted. Three countries have incorporated this principle in their nuclear energy laws. Significant in these cases is the fact that the laws have been passed in the last ten years, and that they may be considered as possibly being the most innovative in this sector. Another country expressly applies this principle in the regulations through which radioactive waste management is enacted, and links its instrumentation to the requirement for management optimization. The rest of the countries indicate that limiting wastes is a requirement of their management practices.

In one case, the responsibility falls to the national radioactive waste agency. In a second country waste limitation is one of the objectives of strategic management plans, and a third considers the issue to be legally contemplated as a result of the new energy law, and that it will be improved upon with the regulation on sustainable development currently in the preparation phase.

4.9 Sustainable Development Principle

Sustainable Development is possibly one of the latest principles to be incorporated in environmental protection tasks. This Megaprinciple has received backing especially since the Declaration of Rio in 1992, although there are previous references in numerous international texts, for example in a number of European Community considerations and plans. Its definition may be considered to have multiple facets and, in the strictest sense, to be diffuse.
As from Rio 92, and in subsequent work carried out within the framework of PNUMA/UNEP, the concept of Sustainable Development is understood as being a “general paradigm belonging essentially to the field of economic science”⁵. Its objective is to include environmental costs, which are generally not internalized, in the process of economic and social decision-making. It should be added, however, that this approach aims to be universal such that the entire spectrum of situations and stages of economic and social development of our planet be addressed. Consequently, it includes the idea that protection of the environment is a part of the process of development and, vice versa, that poverty, quite apart from being unacceptable from the point of view of ensuring decent conditions for human beings, is one of the most aggressive ways of affecting the environment. In this respect, the principle does not address simply the harmonization of economy, social development protection of the environment, but also appeals to moral values such as solidarity, this being an absolute necessity for the achievement of the ethical demands of intra-generational equality.

Furthermore, the Principle of Sustainable Development aspires to be transcendental. It shares the goals of the right to a healthy environment, extending its obligations to cover specifically the generations of the future and, in general, the continuity of mankind. In this respect it incorporates the demand for inter-generational equality into the requirements and need for a healthy environment as a condition and a fundamental right of all human beings.

In view of these considerations, the difficulties involved in expressly and specifically defining this principle may be easily appreciated. In assessing the degree of compliance by the national legislations, the INLA WG5 has taken into account the reflections of the European Union in this respect. It should be remembered that the EC Treaty assigns to the Community the mission of promoting “a sustainable and non-inflationary growth respecting the environment”⁶. The EC has been reluctant to legislate in this respect, aware of the fact that today the conditions of sustainable development require a pragmatic approach and that this principle is, in the first instance, a criterion of re-ordering policies. The 5th European Union Action Programme “Towards sustainable development” understands this in terms of “a policy and strategy of continuous economic and social development not acting to the detriment of the environment nor of the natural resources on whose quality depend the continuation of the activity and the development of human beings”⁷. At present there is no regulation serving as a framework for Sustainable Development or providing indicators or elements quantifying the extent to which a project is sustainable.

This does not mean that no progress is being made towards achieving the objectives of this principle, but simply that its true utilitarian and prospective nature and consensus regarding its objectives “do not currently presuppose its effectiveness and its legally binding nature”⁸.

In order to overcome these difficulties, WG 5 has selected as an extensively and universally accepted definition that provided by the Brundtland commission: “Sustainable Development is a development satisfying the needs of today’s generation without compromising the capacity of future generations to satisfy their own needs”⁹.

The question was put to the countries consulted, which were asked to clarify how their national legislations contemplated the application of sustainable development and whether there was any jurisprudence regarding the issue. Finally, at a level more applicable to

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⁷ European Union. 5th Action Programme.

⁸ MARTÍN MATEO, Ramón. Opus cit

⁹ Report by the Brundtland Commission.
radioactive waste management, the aim was to gain insight into how the solutions of deep geological disposal and the requirement that the wastes be retrievable were considered from the point of view of their “sustainability”.

4.9.1. Environmental legislation. Six countries responded that the Principle was clearly included in their respective legal systems. Two of these countries indicated that it was contemplated in their Constitutions. A third reflected the principle in its Environmental Code and a further two referred to their different environmental laws. A single country answered that the issue was not reflected in its legislation but that it considered it to be applicable inasmuch as it belonged to the European Union and had signed the Declaration of Rio 92.

Analysis of the replies on the development of the principle in the standards shows the following orientations:

- In no case was there any mention of regulations developing the requirements of the principle.
- There is a strong opinion that the principle should be considered as a guideline for the formulation of policy programmes and strategic plans and that policies stimulating economic and social development and environmental protection measures and their economic and financial instruments are valid only to the extent to which they adhere to their rules. In this respect, one of the national correspondents pointed out that there is an important discussion going on in his country regarding the appropriateness of the principle’s being regulated by the courts of justice.
- A second tendency underlines multiple references to the requirement for sustainable development in the legislation governing land management and planning and land usage. In this respect, the local and municipal authorities play an outstanding role and the formulation of sustainable development is widened to include express mention of the shared objectives of satisfying social, economic and environmental needs.
- Consideration that the practical application of the concept of Sustainable Development is closely linked to the use of Environmental Impact Assessment instruments and methodologies. The countries that defend this position coincide with those that place the emphasis on development of sustainable strategies by local agents.

4.9.2. Legislation on radioactive wastes. The replies of the countries with regard to the demands corresponding to this principle are clearly polarized.

- On the one hand, one country reports that the principle of sustainable development is not included in its legislation on radioactive wastes. It points out, however, that in the energy sector, the Federal Sustainable Development Plan underlines the phasing out of nuclear energy as a policy aimed at promoting this principle.
- Two countries are of the opinion that their legislation on radioactive wastes contemplates the principle. Another country estimates that, being a principle contemplated in the Constitution, it is necessarily binding upon any legislation or sector-specific regulation. Another country replies that the precept is explicitly expressed in the case of the law on the management of high level long-lived wastes.
- Two countries, one of which does not have the principle included in its nuclear legislation, consider it to be incorporated since they have ratified the Joint Convention.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
One country reports that it has a jurisprudence relating to a case of practical application of this principle, although it is posed in terms of the principle of justification. The authorization of a reprocessing plant by the Government was the subject of a lawsuit brought by an environmentalist organization. The requesting party considered that its request was justified in terms expressed by article 6.1 of the EURATOM Directive. The plaintiffs opposed this decision, arguing that the assessment of the economic benefits of the installation had been incorrect due to its not considering the capital costs inherent to this “practice”. The Court of Appeal finally decreed that although in this specific case the capital costs had already been spent, and could not consequently be separated, they should be taken into account for future projects in evaluating their economic feasibility.

WG5 has wanted to carry out a small survey on the influence of the concept of sustainable development on the consideration of different radioactive waste management options, especially those considered to be definitive or final. The question is beginning to be debated by the international organizations and has become especially relevant following the entry into force of the Joint Convention in 2001. The IAEA itself concluded during the Córdoba Conference in 2000 that the extended storage of radioactive wastes was not a sustainable practice and that it offered no solution for the future. WG5 has opted for the concept of retrievability in underground disposal solutions in order to gain insight into the approach being adopted by the countries when drawing up their management options.\footnote{The IAEA has tackled the question of retrievability in the paper: “The long-term storage of radioactive waste: Safety and Sustainability. A position paper of international experts” Vienna 2003. The IAEA feels that “retrievability remains an option only as long as institutional controls and the necessary technical expertise exist and where a suitable alternative management option for the waste has been developed.”}

The replies received point to this being a subject of great interest and indicate that there is no common criterion when it comes to addressing the issue. The process is currently under development and the discussions at national level may be seen to reflect the controversy that exists internationally. In this respect, four countries declare that their radioactive waste legislations do not adopt any position as regards the sustainability of the concept of retrievability in geological disposal. Three countries report that retrievability is a practice adopted by their legislation or practices. In one of these last three, the Environmental Code dictates that the definitive disposal of high level wastes must allow for retrieval. In a second of these, the nuclear energy act underlines geological disposal as being the solution to be adopted and requires retrievability. However, this country maintains that the concept of retrievability is linked to the principle of prevention and not to sustainable development. Finally, the third country comments that retrievability has been incorporated in the design of its storage facilities as a result of public consultations. This requirement is currently part of the decision-making process. The correspondent does not believe that this question responds to the demands of sustainable development.

\textbf{4.10 Precautionary Principle}

Related to the principle of prevention to such an extent that its existence as an independent principle might be arguable, it exceeds the latter conceptually inasmuch as it takes not only the current status of science as a reference but incorporates scientific uncertainty in decision-making in relation to the environment. In the event of possible errors resulting from a lack of scientific certainty, the decision is taken to err in the side of safety, thus reversing the burden of proof in risk management processes.
The formulation of this principle in International Law underlines a series of conditions required for its application:

- Firstly, the principle is applicable when there is a risk of serious and irreversible damage and not in the event of risks that might be weighed as minor.
- In addition, the principle is based on the lack of absolute certainty regarding risk. If there is a high or very high probability of damage occurring, the principle of prevention should be applied and not that of precaution.
- The assessment of costs should be taken into account when applying the principle, this being in all cases subjected to a test of proportionality.

In the nuclear field, and especially in radioactive waste management, the application of this principle is of particular interest, for example in the eventual case of private individuals opposing certain practices or the licensing processes of facilities.

Given the rapid progress of certain scientific disciplines, and of theoretical approaches themselves, which rebuke or permanently revise their postulates, the determination of absolute certainty in any scientific assertion is impossible on many occasions. This makes risk management, and with it the application of this principle, a delicate issue with a great many nuances.

In view of these difficulties, the modulation or interpretative bias brought to this principle by jurisprudence should be very important, to such an extent in fact that it is in judicial decisions that it is taking its full meaning. The Court of Justice of the European Communities has already issued certain determinations regarding this principle. Outside the area of the environment, its application has been extended to Community actions in relation to the management of risk, for example in health and foodstuffs or the protection of consumers. The International Court of Justice has also voiced its opinion in relation to the principle, for example in the case of Nuclear Tests II or the Gabicikovo-Nagymaros affair.

For this reason, in the questionnaire questions have been introduced not only on the legislative treatment of the precautionary principle, but also on cases eventually brought before the national Courts.

On occasions, the countries have replied linking the precautionary principle to that of prevention or with very similar interpretations in two cases. In three cases, there is a very explicit formulation of this principle in the standards, one more other with constitutional standing, while in others there is no specific formulation of the principle and its practice has been imposed via the jurisprudential route and EC law. As regards nuclear standards, there is no explicit formulation of the principle in any of the countries, although its consequences may be found to be implicit in the policies and practices relating to radiological protection. Interestingly, one country points to the embodiment of this principle in its law renouncing nuclear energy.

**4.11 Right to access to justice in environmental matters**

Access to justice or the right of individuals to appeal in environmental matters concerning them depends directly on the development of the other two principles.

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13 Cases T-13/99 *Pfizer Animal Health SA*; T-70/99 *Alpharma Inc*, and T-74/00 *Aterdogan et al.*
contemplated in the Aarhus Convention, i.e.: the degree of information of such individuals and their participation in decision-making in this respect, since the exercising of legal action before the Courts is, in short, a form of participation. This right is regulated in article 9 of the Aarhus Convention.

Two aspects may be seen to be of particular interest as regards the exercising of this principle:

- That relating to active legitimization.
- That relating to the determination of the bodies before which this right may be exercised, be it an exercising of appeal by administrative procedure or a process before a judicial body, and in the latter case the determination and consequences of the jurisdictional order.

A brief analysis of both is presented below. In general, greater emphasis is laid on the environmental legal perspective than on the nuclear, since as regards the case in hand the latter presents few differences with respect to the former.16

4.11.1 Active legitimization: Determination of active legitimization is the main point of interest in the development of this principle. While the Aarhus Convention, to which the States that have participated in the questionnaire are part,17 defines the group of private individuals legitimized for the initiation of administrative or judicial proceedings with some simplicity, the concept in fact implies major difficulties.

The notion of a public legitimized to initiate proceedings is based on the wider concept of the public having a stake holding in environmental decisions, this referring to the set of three rights regulated by Aarhus. It would be appropriate to dwell on this briefly. According to the Aarhus Convention (art. 2), the stake holding public is understood as being the public affected by or potentially affected by decisions taken in relation to the environment or that has an interest to raise in decision-making.

The Convention expressly includes in this group those non-governmental organisations working in favor of the environment. From the wording it may be gathered that these organizations must be involved specifically in the protection of the environment, as a result of which, for example, the coverage by the definition of a generic involvement in favour of human rights or of local neighborhood interests might be doubtful. Furthermore, and what is more important, the Convention allows the States to impose requirements restricting or limiting the active legitimization of such associations.

In addition, the Aarhus Convention itself (art. 6, section 5) points out that each party should, where appropriate, encourage anybody having the intention of submitting a request for authorization to identify the public affected, inform the said public of the objective of the request to be submitted and undertake debate with it prior to submitting the request. By virtue of this precept, the economic actors themselves – in our case the nuclear operators – may contribute to clarifying the concept. However, leaving the actors to undertake complete definition of the limits would be contrary to the very spirit of the Convention, the aim of which is to establish objective mechanisms for determination of the affected public.

Article 6 of Aarhus refers to public participation more than it does to access to justice. This means that even before initiating the process it is advisable to clearly determine the concept of the affected public, and that such determination constitutes an important clue as regards active legitimization were the process to occur.

In view of the replies received in response to our questionnaire, we might present the following considerations:

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16 On being asked about the application of this principle in the specific field of Nuclear Law, all the countries except one stated that the reply given in the environmental domain was applicable.

17 All have signed the Aarhus Convention. For the moment, it has been ratified by all except by Switzerland.
1. The exercising of this right is not denied to the affected public in the strictest sense, this almost constituting an axiom among the countries consulted. The notion of the affected public in the strictest sense has been enunciated in the form of “direct economic interest”, special interest or “sufficient interest”, all of these denominations being understood as oriented towards the same thing. As a result, active legitimization is quite clear in the case of a private individual affected by a given project for reasons of vicinity, for example, in the case of construction of a radioactive waste management facility. Occasionally, it is even a requirement in certain processes that there be appeal to property rights affected by a given activity.

2. As we move further away from a specific interest based on direct vicinity or affected property, we will encounter greater difficulties in legitimizing diffuse interests as regards environmental processes. For example, certain representatives indicate specifically that as regards active legitimization it is not possible to use arguments based simply on concern for the environment or on competitive disadvantage due to the environmental management of a commercial rival. In this respect, another reply expresses its disappointment at the fact that costs of the process and the possibility of the plaintiff being condemned to pay such costs act as an important barrier removing the incentive for anybody wishing to exercise the right to access to justice in relation to the environment – the same reply announces a legislative modification in this respect in the near future.

3. Active legitimization commonly extends to environmental organizations, which are normally required to be dedicated specifically to protection of the environment (three cases). Certain countries formulate additional requirements, such as a certain accreditation by way of national registers.

4.11.2 Determination of the administrative or judicial body: The Aarhus convention recognizes the right to appeal, both before the ordinary Administration as a result of decisions by the administrative bodies, and before Justice. In the first case, this right relates to the right of the parties administrated to oppose the acts of their Administration, while the second commonly relates to the right to effective access to justice. The questionnaire has had effect in this second case.

An effective access to justice judicial and the right to a fair trial is generally recognized at constitutional level in the States that replied to the questionnaire. As regards nominalization of the process, the replies come straight to the point in underlining the possibility of initiating criminal proceedings before the environmental crimes commission or of taking the contentious-administrative route for acts or omissions of the Administration. The civil route appears to be more restricted, and it is specifically here that the restrictions on active legitimization referred to in the previous point are encountered.

4.12 Public Participation in the decision-making process

The Right to Public Participation in environmental decision-making especially links environmental and human rights. Compared to former approaches, in which the rights of the citizen conclude with access to information, the right to participate takes a further step in recognizing the right to participate in the management of public affairs, on the one hand, and, on the other, provides additional instruments for the sustenance and better achievement of the individual right to a healthy environment. In view of the above, it is possible to state that: a) the right to participation in environmental affairs is contemplated as a specific component of the right to participation in general; b) that participation in environmental questions
complements the full operation of democratic rule of law and shares terrain with the tasks of Public law; and c) makes the citizen co-responsible for environmental protection tasks.

Following a period during which the Right to Public Participation was vague and diffuse in its scope, the entry into force of the Aarhus Convention in 2001 favored a more specific and objective understanding. The Convention establishes the basis and conditions for the implementation of mechanisms for participation in particular processes and allows for participation at the beginning of decision-making processes. Particularly noteworthy is the effort to integrate the public when options are open through the requirement for practical provisions promoting participation in the drawing up of plans and programmes relating to the environment. Aarhus rightly considers that the exercising of the right to public participation in environmental decision-making brings with it the need to improve environmental education and increase awareness of environmental problems.

WG5 has made several detailed studies of aspects relating to the processes of public participation in radioactive waste management. At the Helsinki in 1994 and the Congress held in Cape Town in 2003, WG5 analyzed forms of public allegation in waste disposal facility siting processes and the possible incompatibility between different legislations in relation to such arrangements. The question once again is seen to be linked to environmental principles overall and its inclusion in the regulations governing radioactive waste management. In this case the application of the principle of Public Participation is wider in scope. Following the adoption of Aarhus and the entry into force of its application in other supranational legislations, such as Community Directive 2003/35/CE, of May 26th 2003, Public Participation is required to cover at least the following assumptions:

a) Participation by the stakeholder public whenever a decision-making process is initiated, with the possibility of its pertinent observations and opinions being submitted in writing or through public hearing or investigation.

b) Participation of the public in the drawing up of plans and programmes relating to the environment, within a transparent and equitable framework.

c) Participation by the public during the preparation of regulatory provisions or standards instruments of general application.

4.12.1. Environmental legislation. All the countries surveyed include the principle in their legislations, although one of them manifests that it is not specifically differentiated from common administrative procedure. Within the scope of the environmental legislations, one of the countries consulted replies that the Principle is part of its constitutional texts, and another that it is included in its Environmental Code. The rest of the countries, except for the last above mentioned, include the Principle in different sector-specific laws and decrees.

As regards the forms of participation, the replies received indicate as follows:

- All the countries contemplate Environmental Impact Assessment (EIA) for projects and the system of Strategic Assessment of the Environmental Impact of Plans and Programmes (SEA).

- Two countries refer to mechanisms for public surveys or debates different from those foreseen in the Environmental Impact regulations.

- Three countries refer to standards regulating the arrangements for allegations.

- Two countries refer to professional and institutional forms of participation of a consultative nature, of the environmental council type. In one case, these are general in nature, while in the other sector-specific objectives are also underlined (Water, National Parks, etc.).

Overall, it is noteworthy that the development in the standards of the precepts of the principle of public participation should be considered to be evolved and abundant in the legislations on land use and territorial planning, on the one hand, and in the legislation.
regulating urban development and environmental permits at municipal level, on the other. In this second case, the countries refer to the possibilities for strong interaction between the citizens and the local authorities and communities.

4.12.2. Legislation on radioactive wastes. The principle of public participation has been transferred to the legislation on wastes in all the countries participating in the questionnaire. In the replies a clear relationship may be observed between the hierarchical rank of the standards of enactment and the degree of definition and progress of the definitive waste disposal programmes and strategies, especially those relating to spent fuel and high level wastes. For example, one country reports that the principle is explicitly contemplated in its Environmental Code for all issues relating to arrangements for its high level wastes underground laboratory. Another country refers to its public administrative procedure and to the right included in the Nuclear Energy Act to object to proposals regarding new nuclear facilities. Three countries refer openly to the regulations on Environmental Impact Assessment as a mechanism for participation, without prejudice to other possibilities such as public allegations. This confirms the level of rooting of the EIA, which is repeatedly configured as a standard intrinsically to nuclear legislation. The standards on land planning are another of the areas underlined for the development of public participation.

The questionnaire attempted to gain insight into special formulae specifically promoting participation in decision-making processes regarding radioactive waste management. The issue is relevant inasmuch as the trend at international level – a trend that has provided positive achievements – is to bring about maximum public involvement in these processes. WG5 is aware of initiatives in countries that have regulated the right to veto waste facility sites by the affected populations that have culminated with the approval of a repository. In other countries this same system has also made it possible for progress to be achieved with site selection programmes. At national level, one country has used the formula of public consultation to reorient its national policies and management systems. Among the countries consulted, one quotes “public debate”, the organization and development of which are included in its legal system. The debate will be used in discussions on the research performed over the last 15 years, which is required to provide specific proposals on the definitive management of high level wastes next year. The debate first aims to dispel public reluctance regarding the question of nuclear waste and secondly to contribute to defining the democratic process of decision-making subsequent to the debate. The same correspondent also underlines the importance of another legal instrument, public polls, indicating that tacitly a negative result is binding as regards the implementation of a nuclear installation. Another country includes in the regulations enacting its Nuclear Energy law a special plan for public participation in the licensing of geological repositories. A third country reports that its current General Radioactive Waste Plan issued by the Government emphasizes the need to promote public participation, although no standards yet exist in this respect.

5 MAIN FINDINGS AND CONCLUSIONS

• In most of the cases, international environmental law and radioactive waste international legislation share outstanding principles.

• WG 5 have found two cases – the principle of right to public participation in decision-making and the principle of right to access to justice – where the legislation on radioactive waste and the international law on environment have not been developed in the same way. The Joint Convention on safety of spent fuel and radioactive waste management does not
provide the obligation of consulting the public, but solely to provide information. The Convention does not envisage the possibility of an individual to challenge a decision on sitting facilities for managing radioactive waste or spent fuel.

- In a third situation, the principle of right to public information, as presented in the Joint Convention was developed in a limited way. There is also a lack of a clear implementing scheme for this principle in the Convention.

- The three inconsistencies above may be overruled when considering that the provisions of the Aarhus Convention are directly applicable to activities concerning nuclear facilities and radioactive waste management. These two sectors are in Annex 1 of the Convention which lists all the activities regulated by the treaty.

- On the other hand, the way the principle of prevention is approached in the international legislation on waste management is more comprehensive than it is in environmental law. Although the aim of both kinds of a law is mainly prevention oriented, environmental legislation needs to take into account real possibilities for application, the right “tempo” to implement the different measures and policies and the specific needs of those countries in an early state of development. Waste management legislation is strict on that. It clearly conditions the practices to be undertaken to fulfilling the necessary measures in order to avoid damages as soon as activities begun. A proper sample of this could be found when looking how the two laws address the principle of fair distribution/proportionality. While this principle is deep at the centre of actions for sustainable development, nuclear legislation does not enshrine it due to the specific nature of radiological risks and therefore to the highest priority given to safety in the nuclear field. International environmental law and international radioactive waste management are not consistent on this point.

- Among the countries consulted, and from the point of view of environmental legislation, certain of these principles are of constitutional standing in practically all cases - this is the case for the right to a healthy environment, the right to information in the general sense and the principle of cooperation, in the sense both of international cooperation and of cooperation by the authorities in achieving objectives associated with the environment, especially in federal systems.

- A second category of principles consists of those that are contemplated either by the constitutional texts of the States or by common environmental legislation. This is the case for the principles of sustainable development and of the polluter pays.

- The remaining principles are typically regulated at the environmental legislative level, without being explicitly reflected in the Constitutions of the States. This is the case for the principle of public information on environmental matters, prevention – and in relation to this principle, that of environmental impact assessment – and the precautionary principle.

- The principle of proportionality is not generally formulated in the constitutional texts of the States, nor does it receive any explicit formulation at State legislative level, and is considered to be applicable only to the extent to which it impregnates or gives meaning to the Rules as a general principle of International Law.
Finally, the principles formulated in Aarhus are included at both the constitutional and legislative levels, albeit with different degrees of development. Normally, these principles are enounced generically in the Constitutions as fundamental rights, and are developed specifically in the environmental legislation, and in certain cases acquire some degree of specificity in nuclear legislation.

As regards the nuclear legislation, it may be appreciated that the principles of cooperation and proportionality are applicable only when covered by the environmental or State legislation, within a more general framework. Explicitly formulated in the nuclear legislation, and even in that referring to radioactive wastes, are the principles of the right to a healthy environment, sustainable development, prevention and environmental impact assessment, polluter pays, limitation of waste production, environmental information and participation in decision-making. The principle of access to justice – in relation to active legitimisation, i.e. the determination as to who has the right to initiate action before Tribunals – shows little variation in relation to environmental and nuclear matters.
### 6.1 Table demonstrating the concordance of the Joint Convention with international environmental principles

<table>
<thead>
<tr>
<th>N°</th>
<th>Principle</th>
<th>Origin</th>
<th>Articles concerned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Healthy environment</td>
<td>Stockholm, Rio</td>
<td>Preamble (xv), Article 4 (iv), Article 7 (i), Article 11 (iv), Article 14(i), Article 24(1)(iii)</td>
</tr>
<tr>
<td>2</td>
<td>Sustainable development</td>
<td>Rio</td>
<td>Article 1(ii), Article 4(vi) and (vii), Article 11(vi) and (vii)</td>
</tr>
<tr>
<td>3</td>
<td>Prevention principle</td>
<td>Stockholm, Rio + ILC 2001</td>
<td>Article 1, Article 4, Article 7(iii), Article 11, Article 14(iv), Article 17(iii), Article 24(1)(iii) and 3</td>
</tr>
<tr>
<td>4</td>
<td>Precautionary principle</td>
<td>Rio</td>
<td>Not included</td>
</tr>
<tr>
<td>5</td>
<td>Polluter-pays</td>
<td>Rio</td>
<td>Only indirect references</td>
</tr>
<tr>
<td>6</td>
<td>Co-operation</td>
<td>Rio + ILC 2001</td>
<td>Preamble (ix), Article 1(i), Article 4(iv), Article 6(1)(iv), Article 11(iv), Article 13(1)(iv)</td>
</tr>
<tr>
<td>7</td>
<td>Environmental Impact Assessment principle</td>
<td>Rio + ILC 2001</td>
<td>Articles 6(1)(ii) and (iv), Article 8, Article 13(1)(ii) and (iv), Article 15</td>
</tr>
<tr>
<td>8</td>
<td>Fair distribution/Proportionality</td>
<td>Stockholm, Rio</td>
<td>Not included</td>
</tr>
<tr>
<td>9</td>
<td>Public information</td>
<td>Rio + ILC 2001</td>
<td>Preamble (iv), Article 6(1)(iii), Article 13(1)(iii), Article 34</td>
</tr>
<tr>
<td>10</td>
<td>Public participation in decision-making process</td>
<td>Rio</td>
<td>Not included</td>
</tr>
<tr>
<td>11</td>
<td>Access to justice</td>
<td>Rio</td>
<td>Not included</td>
</tr>
<tr>
<td>12</td>
<td>Limitation of production (waste)</td>
<td></td>
<td>Article 4(ii), Article 11(ii)</td>
</tr>
</tbody>
</table>

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19 However, Articles 2(i), 21 et 22(ii) and (iii) can be considered to express this principle.

20 This is not universally acknowledged as a general principle of environmental law but it is a fundamental principle of waste management. Consequently it has been examined here.
### Summary of national answers to the principles in environmental law

<table>
<thead>
<tr>
<th>Principle</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Healthy environment</strong></td>
<td>Numerous Acts, not mentioned at constitutional level</td>
<td>At constitutional level and also in Environmental Code</td>
<td>At constitutional level</td>
<td>Not explicitly</td>
<td>At constitutional level and in the Environmental Code</td>
<td>At constitutional level</td>
<td>At constitutional level</td>
<td>At constitutional level and transposed to regional legislation</td>
</tr>
<tr>
<td><strong>Sustainable development</strong></td>
<td>In urban planning law and EIA development</td>
<td>At constitutional level and also in Environmental Code</td>
<td>Not explicitly</td>
<td>At constitutional level</td>
<td>In Environmental Code</td>
<td>In various environmental Acts</td>
<td>In various environmental Acts</td>
<td>At federal and regional legislation levels</td>
</tr>
<tr>
<td><strong>Prevention</strong></td>
<td>In various environmental Acts</td>
<td>At constitutional level and also in Environmental Code</td>
<td>In various environmental Acts</td>
<td>Important in the Environmental Code</td>
<td>Explicitly in the Environmental Code</td>
<td>In various environmental laws</td>
<td>In various environmental Acts. Case law also exists concerning the application of the principle in EIS.</td>
<td>At federal, regional and sector legislation levels</td>
</tr>
<tr>
<td><strong>Precaution</strong></td>
<td>Reply merges with the principle of prevention</td>
<td>At constitutional level and also in Environmental Code</td>
<td>Via EC Treaty. Otherwise, explicit only in law on foodstuffs</td>
<td>Not explicitly, but interpretation close to the principle of prevention</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly</td>
<td>Explicitly. Requirements to research, monitor and prepare to respond to potentially hazardous situations.</td>
<td>Explicitly in regional environmental legislation</td>
</tr>
<tr>
<td><strong>Polluter pays</strong></td>
<td>Practical application of principle in legislative development</td>
<td>At constitutional level and also in Environmental Code</td>
<td>In waste legislation</td>
<td>At constitutional level</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly</td>
<td>Explicitly in several environmental Acts</td>
<td>Explicitly at federal and regional legislation levels</td>
</tr>
</tbody>
</table>

600.26
<table>
<thead>
<tr>
<th><strong>Principle</strong></th>
<th><strong>United Kingdom</strong></th>
<th><strong>France</strong></th>
<th><strong>Spain</strong></th>
<th><strong>Switzerland</strong></th>
<th><strong>Slovenia</strong></th>
<th><strong>Hungary</strong></th>
<th><strong>USA</strong></th>
<th><strong>Belgium</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooperation</strong></td>
<td>Generically</td>
<td>In the international context but not in the environmental legislation</td>
<td>Inter-regional cooperation in the Constitution. Yes in the international context</td>
<td>Explicitly in the sense of cooperation between economic agents and the State</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly</td>
<td>Yes, requirements for co-operation or sharing of regulatory jurisdiction between federal, state and local governments..</td>
<td>At internal (inter-regional) and international levels</td>
</tr>
<tr>
<td><strong>Environmental Impact Assessment</strong></td>
<td>In specific Acts</td>
<td>In the Environmental Code and specific Regulations</td>
<td>In specific Acts</td>
<td>In Environmental Code and specific Regulations</td>
<td>In Environmental Code and specific Regulations</td>
<td>In specific Acts</td>
<td>Yes, in specific Act.</td>
<td>In specific regional legislation</td>
</tr>
<tr>
<td><strong>Proportionality</strong></td>
<td>No</td>
<td>Mentions only of EIA conditions</td>
<td>Yes, merged with the principle of cooperation</td>
<td>At constitutional level</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No, except in relation to other principles</td>
</tr>
<tr>
<td><strong>Public Information</strong></td>
<td>In two types of laws: on general freedom of information and specifically environmental information</td>
<td>At constitutional level and in Environmental Code</td>
<td>Yes, via direct transposition of the EC Directive</td>
<td>In Environmental Code</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly</td>
<td>Yes, in several Acts</td>
<td>Explicitly in main regional environmental laws</td>
</tr>
<tr>
<td><strong>Public Participation</strong></td>
<td>In various environmental laws</td>
<td>At constitutional level; collaboration in environmental protection considered obligatory. At legislative level in decision-making process.</td>
<td>In sector-specific legislation and in general State Law</td>
<td>Not specifically environmental nor differentiated from common administrative procedure</td>
<td>Yes, in Environmental Code</td>
<td>Explicitly</td>
<td>Yes, in several environmental Acts and in general State Law</td>
<td>Reply merges with that on public information. Yes</td>
</tr>
<tr>
<td>Principle</td>
<td>United Kingdom</td>
<td>France</td>
<td>Spain</td>
<td>Switzerland</td>
<td>Slovenia</td>
<td>Hungary</td>
<td>USA</td>
<td>Belgium</td>
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</tr>
<tr>
<td><strong>Access to Justice</strong></td>
<td>In any case in Criminal Law or in State Law in the event of omission. In Civil Law, requirements of direct economic interest and vicinity. Possible costs act as deterrent. System under reform</td>
<td>Environmental Code awards active legitimization to Associations. Generally, direct economic interest is a requirement</td>
<td>In any case in Penal Law or State Law in the event of omission. In Civil Law, appeal to breach of right, such as property</td>
<td>Generally, right to access in Constitution. In Environmental matters a special interest is required: reasons such as &quot;concern&quot; or competition not valid. Right of associations conditioned to application of EIA and other requirements of constitution</td>
<td>In Environmental Code</td>
<td>Yes</td>
<td>Yes, for those directly affected. Some specific environmental laws enable a general right of litigation for those not directly affected.</td>
<td>Yes, if there is sufficient interest. Profit-making associations, yes</td>
</tr>
<tr>
<td><strong>Limitation on waste production</strong></td>
<td>Yes, in policy / strategy and in regulations on packaging</td>
<td>Explicitly in Environmental Code</td>
<td>In legislation on wastes</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly in Environmental Code</td>
<td>Explicitly in regional laws</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 6.3 Summary of national answers to the principles in nuclear law and legislation on radioactive waste management

<table>
<thead>
<tr>
<th>Principles</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy environment</td>
<td>In many laws since the 1946 Atomic Energy Act</td>
<td>Understood, albeit not explicitly</td>
<td>Yes, in the nuclear energy act (widest sense)</td>
<td>Understood, albeit not explicitly</td>
<td>Yes, in the widest sense</td>
<td>Yes, explicitly</td>
<td>Not explicitly, although derived from the constitutional purposes</td>
<td>Understood, albeit not explicitly</td>
</tr>
<tr>
<td>Prevention</td>
<td>Yes, in Nuclear Law, in connection with the right to a healthy environment</td>
<td>Not explicitly, unless in connection with EIA</td>
<td>Not explicitly, unless in connection with EIA</td>
<td>Explicitly, as a principle governing the use of nuclear energy</td>
<td>Explicitly, as a principle governing the use of nuclear energy</td>
<td>_</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>Precaution</td>
<td>Reply reflects merge with the principle of prevention</td>
<td>Not explicitly, but present in radiological protection principles. Case Law only for foodstuffs</td>
<td>Not explicitly, but the interpretation is close to that of prevention</td>
<td>Not explicitly, but present in radiological protection principles. No Case Law</td>
<td>Not explicitly, Nuclear licensees must demonstrate &quot;reasonable assurance&quot; of compliance with the standards.</td>
<td>Not explicitly, but embodied in a law on the progressive phasing out of nuclear energy</td>
<td>Not as such, but implicit in other laws. Also in the ONDRAF institutional Decree</td>
<td></td>
</tr>
<tr>
<td>Polluter pays</td>
<td>Yes, in legislative development and especially the Energy Act of 2004.</td>
<td>Yes, in the electricity industry act and in the organization of Enresa</td>
<td>Yes, explicitly</td>
<td>Explicitly in nuclear law</td>
<td>Explicitly in nuclear law</td>
<td>Explicitly in several Acts affecting radioactive waste management facilities.</td>
<td>Explicitly in nuclear law</td>
<td></td>
</tr>
<tr>
<td>Principles</td>
<td>United Kingdom</td>
<td>France</td>
<td>Spain</td>
<td>Switzerland</td>
<td>Slovenia</td>
<td>Hungary</td>
<td>USA</td>
<td>Belgium</td>
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<td>----------------------------------------------------------------------------</td>
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<td>------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td><strong>Cooperation</strong></td>
<td>Yes, generically</td>
<td>Not explicitly</td>
<td>Not explicitly</td>
<td>Not explicitly, but incorporated in application of the law (cooperation between economic agents and the State)</td>
<td>Not explicitly</td>
<td>---</td>
<td>Not explicitly. Some provisions regarding state cooperation or oversight exist.</td>
<td>Explicitly, as regards inter-regional responsibility for radioactive wastes</td>
</tr>
<tr>
<td><strong>Environmental Impact Assessment</strong></td>
<td>Yes, in licensing laws</td>
<td>Yes, in licensing laws referring to general EIA legislation</td>
<td>Yes, in licensing laws referring to general EIA legislation</td>
<td>Yes, in licensing laws referring to general EIA legislation</td>
<td>Yes, in licensing laws</td>
<td>Yes</td>
<td>Yes, in specific Act on Nuclear Waste Policy</td>
<td>Yes, in licensing laws</td>
</tr>
<tr>
<td><strong>Proportionality</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Public Information</strong></td>
<td>Yes, in direct application of the system foreseen for the Environment</td>
<td>Yes, in direct application of the system foreseen for the Environment and also in waste regulations</td>
<td>Not explicitly; yes in institutional regulation</td>
<td>Explicitly, with greater emphasis in the case of wastes</td>
<td>Explicitly in nuclear law</td>
<td>Explicitly</td>
<td>Yes, there are requirements for reporting to the public</td>
<td>Yes, in the ONDRAF institutional Decree</td>
</tr>
<tr>
<td><strong>Public Participation</strong></td>
<td>Yes, in licensing laws</td>
<td>Yes, in application of Environmental Law and especially for HLW. Two types: public debate and public consultation</td>
<td>Merged with law on information: asking questions and participating in consultation bodies. No explicit legal provisions (present only in policy/strategy).</td>
<td>Yes, as right to object under nuclear law. Also specifically for geological repositories</td>
<td>Only implicitly in nuclear law, but present through Environmental Law</td>
<td>Explicitly. No specific provisions on waste management; should be understood in terms of generic nuclear energy provisions</td>
<td>Yes, in Atomic Energy Act and State Federal Law</td>
<td>Reply merged with previous issue (public information): yes</td>
</tr>
</tbody>
</table>

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
<table>
<thead>
<tr>
<th>Principles</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Switzerland</th>
<th>Slovenia</th>
<th>Hungary</th>
<th>USA</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to Justice</td>
<td>The provisions of environmental law are generally applicable</td>
<td>The provisions of environmental law are generally applicable</td>
<td>The provisions of environmental law are generally applicable</td>
<td>Yes, in licensing law, both administrative and judicial instances and for both private individuals affected and associations</td>
<td></td>
<td></td>
<td></td>
<td>Yes, for those directly affected or recognized in the Nuclear Waste Policy Act.</td>
</tr>
<tr>
<td>Limitation on waste production</td>
<td>Yes, in policy / strategy and in regulation on packaging. Also in RW management practices</td>
<td>Yes, regulatory route on RW</td>
<td>Yes, in policy /strategy and in regulation on packaging. Also in RW management practices</td>
<td>Explicitly in nuclear law</td>
<td>Explicitly in nuclear law</td>
<td></td>
<td>Explicitly in nuclear law</td>
<td>No explicitly in Law.</td>
</tr>
</tbody>
</table>
6.4 Questionnaire sent to WG5 country correspondents.

INLA Working Group V
Radioactive Waste Management


WG5- COUNTRY QUESTIONNAIRE

Topic: “How and to what extent are the principles of international environmental law applicable to radioactive waste management law?”


1. General remarks

The questionnaire below has been designed by a selected group of WG5 members to carry out a survey on the compliance of national legislation with the main principles of international environmental law when these are applicable to radioactive waste management.

To facilitate its completion, the questionnaire is based on a previous analysis of the situation at international level which identified some twelve major principles (please find attached the document entitled “International Law, Principles, Codes and Guidelines. Comparison between Environmental Protection and Radioactive Waste Management”).

For each of the principles the questionnaire asks whether they are explicitly enshrined both in the national basic environmental legislation and in the national basic nuclear/radioactive waste legislation.

In order to avoid duplication, WG5 correspondents are kindly asked to answer these questions referring only to their national law (including, if asked, case-law), but not to Community law, nor to international treaties in force in their countries.

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21 If a section or paragraph enounces the content of a principle as defined in our paper or in a very similar way, even without a direct reference to its name, please consider that this principle is “explicitly” provided for. For example, the precautionary principle would be explicitly provided for in two kinds of assertions:

1. In a section or paragraph containing the very name of the principle, such as art. 174.2 EC Treaty: Community policy on the environment (…) shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.

2. In a section or paragraph enouncing a general rule of conduct within the meaning of the principle, such as the Preamble of the UN Convention on Biological Diversity: where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.

On the contrary, a principle can be “implicitly” present in many kinds of legal measures. In this sense, members are not expected to provide us with a teleological interpretation on the principles which underlay their legislation. However, if you feel that a non explicit treatment can be of interest for our questionnaire, we will appreciate very much your contribution.
The drafting group has identified a set of five principles (Sustainable Development, Precautionary Principle, Prevention Principle, Access to Justice in Environmental Matters, Public Participation in Decision-Making) whose legal understanding and application could be prevented by several factors: novelty of their enactment, lack of experience in their usage, lack of regulations developing their fundamentals, etc. All these cases could be considered to be somewhat controversial and at the centre of a prolific debate. With this in mind, the questionnaire specifically expands on them. Questions (highlighted in yellow) are essentially aimed at determining whether national case-law or other decisions are affecting this discussion.

2. Questionnaire

1. **RIGHT TO A HEALTHY ENVIRONMENT**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

2. **SUSTAINABLE DEVELOPMENT PRINCIPLE**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.
   How does your national legislation develop this principle? Is there any relevant experience in your national case-law (either environmental or nuclear law) concerning the application of this principle? To what extent is retrievability of radioactive waste after disposal considered to be one of the requirements to comply with the principle of Sustainable Development?

3. **PREVENTION PRINCIPLE**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

4. **PRECAUTIONARY PRINCIPLE**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.
   Please comment on these provisions where the principle applies to the licensing of new facilities for radioactive waste management. Is there any relevant national case-law where:
   - a court or tribunal has ruled on the manner in which this principle should be implemented?
   - this principle has been invoked to justify rejecting a licence for a waste facility/waste repository?

5. **POLLUTER PAYS PRINCIPLE**
   Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
   Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.
6. CO-OPERATION PRINCIPLE
Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

7. ENVIRONMENTAL IMPACT ASSESSMENT PRINCIPLE
Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

8. FAIR DISTRIBUTION/PROPORTIONALITY
Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

9. PUBLIC INFORMATION PRINCIPLE
Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.

10. PUBLIC PARTICIPATION IN THE DECISION-MAKING PROCESS
Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.
Are there any specific regulations that encourage or set out procedures governing public participation in decision-making radioactive waste management other than the opening of a period of public information and the right to request further information or make observations?

11. RIGHT TO ACCESS TO JUSTICE IN ENVIRONMENTAL MATTERS
Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.
Does the Law require specific criteria to be fulfilled in order to be entitled to sue when opposed to a licensing process (such as having a direct economic interest, residence in the vicinity, certain legal form as association, etc)? Is there a single procedure to follow when suing the operator of a facility or the Authority (Common Law, Public Law, Criminal Law, etc)?

12. LIMITATION OF PRODUCTION OF WASTE
Is this principle explicitly provided for in your national environmental legislation? If affirmative, please list the titles of the corresponding Acts.
Is this principle explicitly provided for in your national legislation on radioactive waste management (or nuclear law)? If affirmative, please list the titles of the corresponding Acts.
COMMENT ET DANS QUELLE MESURE
LES PRINCIPES INTERNATIONAUX DE DROIT DE
L’ENVIRONNEMENT SONT-ILS APPLICABLES
A LA GESTION DES DECHETS RADIOACTIFS ?

Groupe de travail 5 – Gestion des déchets radioactifs
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1 INTRODUCTION


Les mesures à adopter pour assurer la conservation, la protection et la restauration de l’environnement sont par essence l’occasion d’importants textes internationaux. Plutôt que de recourir à une stratégie répressive, inévitablement vouée à l’échec, le droit international s’est orienté vers le concept de coopération entre les États, les sociétés et les populations, coopération basée sur des principes simples et fédérateurs de dimension universelle. C’est ce même esprit qui anime certaines recommandations internationales parfois appelées « soft law », que beaucoup d’entre nous perçoivent paradoxalement comme contraignantes.

Pour sa part, le droit nucléaire est apparu et s’est développé au niveau international avant le droit international de l’environnement, et bien avant que ce dernier n’acquière la dimension mondiale qu’il a aujourd’hui. Il est né du sentiment que la prévention et le contrôle des dangers liés aux rayonnements ionisants doivent faire l’objet de règles juridiques spécifiques. Sa fonction préventive s’est tout d’abord focalisée sur la population, la protection de la santé étant le principal objectif visé. Plus tard, elle s’est étendue à d’autres problématiques majeures comme la sûreté des installations, la protection de la propriété ou encore l’indemnisation des dommages. Enfin, elle a couvert de façon plus explicite la protection de l’environnement.
Le droit de la gestion des déchets radioactifs s’est, lui, développé dans presque tous les pays comme une conséquence du processus de croissance du droit nucléaire. Il partage en effet les objectifs et les principes de ce droit, et peut être considéré comme une de ses composantes. De par les domaines qu’il couvre, le droit relatif aux déchets radioactifs a pleinement participé au développement de l’interaction et de la convergence entre le droit nucléaire et le droit de l’environnement.

D’une part, ses rédacteurs ont été des pionniers, développant des méthodes pour catégoriser et manipuler en toute sécurité les déchets radioactifs, déterminant différentes phases dans la gestion des déchets, créant des schémas institutionnels interdépendants et concevant des systèmes sûrs de financement, ainsi que le droit des générations futures. Pour beaucoup, les juristes en environnement ont été les premiers à apprécier avec pragmatisme et fonctionnalité les multiples dimensions de l’objet qu’ils se chargeaient de protéger par la réglementation, ouvrant la voie à l’usage et à la généralisation de concepts aussi innovants que le principe d’étude d’impact ou le principe de précaution. À présent, il existe un lien clair et objectif entre ses deux domaines du droit qui partagent dorénavant le même but, la protection de l’environnement, bien que leur développement passe souvent par des voies distinctes.

Cette situation s’explique d’autre part par la haute spécificité du risque nucléaire et des technologies de prévention associées, ainsi que par la nature polymorphe de l’environnement.


Curieusement, le droit relatif aux déchets radioactifs a abouti au même résultat, mais par un processus différent impliquant davantage les échanges entre scientifiques et experts techniques que les actions diplomatiques. Dans ce domaine, et à l’exclusion du délicat sujet du contrôle des matières fissiles liées aux armements, il a fallu attendre l’adoption de la convention commune sur la sûreté de la gestion du combustible usé et sur la sûreté de la gestion des déchets radioactifs, en 1997, pour trouver un instrument juridique facteur d’harmonisation. Pourtant, la coopération, l’échange d’expériences et les efforts pour adopter des normes internationales concernant la sûreté et la gestion des déchets radioactifs ont été intenses et bien coordonnés entre les différents pays concernés depuis les tous débuts de l’utilisation pacifique de l’énergie nucléaire.

Ces remarques provoquent de nombreuses questions qui ont paru au groupe de travail n°5 (appelé dans la suite du document GT5) suffisamment importantes pour leur consacrer le présent rapport :

− Existe-t-il des différences, voire même des incompatibilités, entre le droit de l’environnement et le droit nucléaire en général ?
− Mis à part des questions formelles, peut-on considérer le droit nucléaire comme partie intégrante du droit de l’environnement ou comme une branche distincte du droit ?
− Certains préceptes de droit de l’environnement ne sont-ils pas applicables lorsqu’ils rentrent dans le champ d’application du droit nucléaire ?
2 ASPECTS PRATIQUES

Les questions posées en fin d’introduction ont conduit le groupe de travail 5 (GT5) à sélectionner la problématique générale sous-jacente comme sujet du rapport 2005, considérant sa portée suffisamment large et son intérêt réel pour tous les membres de l’AIDN, même non spécialisés dans la gestion des déchets radioactifs.

A l’occasion d’une première réunion à Paris en juin 2003, le GT5 a décidé d’entreprendre une analyse mettant au jour d’éventuelles incompatibilités entre le droit international de l’environnement et le droit nucléaire. Le point de départ de cette démarche a été un inventaire des textes internationaux relatifs à l’environnement, dont le groupe souhaitait qu’il soit dans un second temps complété par les textes communautaires les plus importants en la matière.

Dans cette démarche, le GT5 a particulièrement prêté attention aux points suivants :
− Bien distinguer les textes eux-mêmes des interprétations qui en sont faites,
− Ne pas se fixer d’objectifs trop ambitieux, mais concentrer l’étude sur 3 ou 4 thèmes à déterminer, comme par exemple la sûreté, la sécurité ou encore le développement durable.

Se conformant à la méthode de travail habituelle, le GT5 a alors envisagé l’élaboration d’un questionnaire à destination des différents adhérents de l’AIDN afin de déterminer dans quelle mesure les droits nationaux prennent ou non en compte les dispositions de droit international précédemment sélectionnées.

Enfin, le GT entendait clore son rapport 2005 en dressant un tableau aussi exact et exhaustif que possible des incompatibilités révélées et en apportant des suggestions permettant, le cas échéant, d’y remédier.

Une seconde réunion à Bruxelles en juin 2004 a pour le GT5 été l’occasion de cibler le travail restant à faire sur la comparaison entre les grands principes inspirant le droit international de l’environnement et le droit nucléaire. Ainsi, dans la suite de l’étude, le régime juridique international relatif à la gestion des déchets radioactifs serait comparé aux principes du droit de l’environnement figurant dans les conventions internationales. Un document synthétisant les principes retenus a dans ce sens été établi à l’intérieur du GT.

Le besoin de confronter le régime international aux droits nationaux a une seconde fois été souligné. Cette étude pouvant être assez difficile à mener, pour les États fédéraux par exemple, l’analyse se devait de se concentrer sur quelques points spécifiques. Les étapes finalement retenues pour la rédaction du rapport sont les suivantes :
− Dans un premier temps, comparaison au niveau international entre les principes du droit de l’environnement et le droit nucléaire consacrés à la gestion des déchets radioactifs. La convention commune signée à Vienne le 5 septembre 1997 a dans ce sens été sélectionnée comme texte pertinent de référence ;
− Dans un second temps, analyse des approches nationales. Un questionnaire sera préparé à l’intention des États, leur demandant de concentrer leur travail sur 3 ou 4 textes réglementaires nationaux importants dans le domaine du nucléaire,

La troisième réunion de Paris, en décembre 2004, a permis d’arrêter définitivement la formulation du titre du rapport à soumettre au Congrès, à savoir « Comment et dans quelle mesure les principes internationaux de droit de l’environnement sont-ils applicables à la gestion des déchets radioactifs ? ». 

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A propos du questionnaire, le GT a souligné l’importance de demander aux États quels principes figurent explicitement dans leurs réglementations nucléaires nationales. Quatre principes – développement durable, principe de précaution, principe de participation et droit d’accès à la justice – ont été choisis pour faire l’objet de développements spécifiques dans le questionnaire. Ce dernier a été envoyé en mars 2005.

Enfin, une réunion restreinte a eu lieu à Paris en juin 2005 afin d’adopter le rapport définitif du GT5. Cet objectif a pu être facilement atteint grâce à l’important travail réalisé sur le plan international, et grâce à l’analyse ambitieuse faite des réponses nationales au questionnaire envoyé en mars. Les membres du GT assistant à cette réunion restreinte ont travaillé d’une part sur le projet de rapport préalablement envoyé à tous les membres du GT, et d’autre part sur les suggestions et commentaires faits à cette occasion. Le rapport définitif a ensuite été adopté, avant d’être transmis à l’organisation du congrès et d’être traduit.

3 COMPARAISON ENTRE LE DROIT INTERNATIONAL DE L’ENVIRONNEMENT ET LE DROIT INTERNATIONAL NUCLEAIRE

La présente comparaison se limite à une analyse de la situation au niveau international. Les recommandations dépourvues de force contraignante et les guides ont été pris en compte, tout comme les traités et toutes les autres dispositions contraignantes. Cette position s’explique en effet par une double réalité : d’un part, la «soft law » est une composante importante du droit international de l’environnement ; d’autre part, le droit nucléaire comprend de nombreuses normes techniques ou directives qui se retrouvent exprimées sous forme de recommandations ou de formulations générales à portée non contraignante, même dans des traités officiels. Une telle flexibilité au niveau international ne signifie pas pour autant que les règles et obligations acceptées par les parties contractantes n’auront pas de force contraignante dans l’ordre juridique national.

Pour chaque principe,
§(a) résume les principales dispositions pertinentes du droit de l’environnement,
§(b) fait référence aux dispositions correspondantes de la convention commune précitée de 1997 et des « Principes de gestion des déchets radioactifs » publiés par l’AIEA en 1995, qui sont les deux textes de portée universelle traitant spécifiquement de la gestion des déchets radioactifs,
§(c) analyse dans quelle mesure ces textes nucléaires répondent aux exigences posées par le droit de l’environnement.

L’annexe 6.1 reprend les concordances entre les principes de droit de l’environnement retenus et les dispositions de la convention commune de 1997.

3.1 Droit à un environnement sain

(a) Le droit de l’environnement a utilisé le droit de vivre dans un environnement sain comme instrument permettant la protection des ressources naturelles nécessaires au maintien de la santé et de la vie humaines. Ce droit est avant tout lié à la reconnaissance de valeurs fondamentales par des déclarations de droits et de libertés publiques.
Sources : déclaration de Stockholm, 1972 (principe 1) ; déclaration de Rio, 1992 (principe 1).

Sur ce point, la déclaration de Stockholm de 1972 (principe 1) parle d’un « environnement dont la qualité permette de vivre dans la dignité et le bien-être », tandis que
la déclaration de Rio de 1992 (principe 1) évoque le « droit à une vie saine et productive en harmonie avec la nature ». La terminologie ici employée est très générale, calquée sur d’autres déclarations internationales relatives aux droits de l’Homme.

(b) La convention commune de 1997, comme la plupart des instruments de droit nucléaire, se réfère à un haut niveau de sûreté et à une protection adaptée de l’Homme et de l’environnement contre les effets nocifs des rayonnements ionisants. L’article 1 indique que les objectifs de la convention sont d’« atteindre et maintenir un haut niveau de sûreté dans le monde entier » et de « faire en sorte qu’à tous les stades de la gestion du combustible usé et des déchets radioactifs, il existe des défenses efficaces contre les risques potentiels afin que les individus, la société et l’environnement soient protégés, aujourd’hui et à l’avenir, contre les effets nocifs des rayonnements ionisants ».

Les articles 4 iv), 7 i), 14 i) et 24 1. iii) de la convention font référence à ce droit en mentionnant explicitement la protection de l’environnement.


(c) Tout l’objectif de la gestion des déchets radioactifs est précisément la protection de l’environnement. Dans ce sens, les règles relatives à la sûreté nucléaire et à la radioprotection qui sont applicables aux déchets radioactifs sont nécessairement plus rigoureuses que des déclarations générales sur l’obligation de préserver un environnement sain.

3.2 Principe de prévention

(a) Le principe de prévention part du postulat suivant : certaines activités affectant l’environnement passent souvent inaperçues, du fait que les effets de leur impact ne sont visibles que longtemps après leur exploitation, et souvent qu’au moment où leurs conséquences sont irréversibles.

Ce principe invite à ce que des mesures soient prises aussi tôt que possible, dès qu’il est clair qu’un projet aura un impact sur l’environnement. Il favorise également la prise de mesures liées aux sources d’un dommage, et non seulement aux conséquences d’une telle atteinte. Cette démarche est renforcée par le constat général que des mesures de prévention coûtent souvent moins chers que des mesures de réparation, même si ces deux types de mesures ne s’excluent pas.

Les réglementations relatives à l’exigence d’études d’impact environnementales lors de l’élaboration de grands projets et de construction ou modification d’installations ayant un impact potentiellement important sur l’environnement sont fondées sur le principe de prévention.

Ce principe signifie également que les meilleures techniques disponibles doivent toujours être choisies. Cependant, le critère d’acceptabilité économique des choix techniques est souvent requis, en particulier eu égard au principe de proportionnalité.

Sources : déclaration de Stockholm, 1972 (principe 21) ; déclaration de Rio, 1992 (principe 2) ; traité établissant l’Union européenne (article 174).

Faisant l’objet d’un article commun dans les déclarations de Stockholm et de Rio, la prévention envisagée se réfère uniquement à des dommages internationaux. La définition donnée est très générale et se doit d’être précisée par d’autres traités, de la jurisprudence et de la doctrine.

(b) La prévention est le principal objectif de la convention commune de 1997. Une comparaison avec le droit international de l’environnement met en lumière les points suivants :
le champ d’application de la convention commune n’est pas limité aux impacts internationaux mais couvre également la prévention des dommages nationaux ;

la démarche préventive s’applique à tous les stades de la gestion des déchets radioactifs (articles 1, 4 et 11), ce qui implique une action très en amont ;

les technologies utilisées doivent s’appuyer « sur l’expérience, des essais et des analyses » (article 7 iii) et article 14 iv)), ce qui équivalait au concept de « meilleures techniques disponibles » ;

les limites d’exposition aux rayonnements ionisants doivent prendre en compte les facteurs sociaux et économiques (article 24 1. iii) et 3.).

Les dispositions encadrant la prévention sont presque identiques en droit de l’environnement et en droit nucléaire. Elles peuvent être plus complètes en droit nucléaire, du fait de la sensibilité et de l’importance du sujet.

3.3 Principe pollueur-payeur

Selon sa définition originale donnée dans la recommandation OCDE du 26 mai 1972 sur les principes directeurs relatifs aux aspects économiques des politiques de l'environnement sur le plan international (C 72.128) et la recommandation OCDE du 14 novembre 1974 sur la mise en œuvre du principe pollueur-payeur (C.74.223), le principe pollueur-payeur est un instrument de politique économique créé pour affecter des coûts à la protection de l’environnement (internalisation des coûts) afin d’éviter les distorsions de concurrence.

Par la suite, son champ d’application et son objectif ont été considérablement ouverts (recommandation OCDE de 1989), jusqu’à son adoption en tant que principe de droit international de l’environnement. La règle en découlant fait maintenant partie de nombreuses conventions internationales portant sur la protection de l’environnement.

Bien que les rédactions varient, le pollueur doit en général supporter d’importants coûts liés à l’environnement : taxes pour financer l’action de l’État ou d’autres dépenses liée à la prévention, coûts de réparation et de restauration plus dommages intérêts en cas de pollution ou d’atteinte à l’environnement.

Cette évolution a grandement influencé le champ du droit de la responsabilité civile. Cependant, l’application du principe pollueur-payeur est limitée par plusieurs restrictions, dont la prise en compte de facteurs économiques.

Source : déclaration de Rio de 1992 (principe 16)

Concernant le régime juridique applicable à la gestion des déchets radioactifs, il est clair, dans la convention commune de 1997, que l’exploitant doit supporter la totalité des coûts liés à la gestion de tous ses déchets et aux opérations de démantèlement. Ceci ressort de la responsabilité première de l’exploitant (article 21), de l’obligation de s’assurer de ressources financières suffisantes (article 22 ii) et iii)) et de la très large définition des activités liées à la gestion des déchets radioactifs et au déclassement (article 2).

Nous pouvons conclure que les dispositions pertinentes du droit nucléaire satisfont à l’exigence d’intégration économique du principe pollueur-payeur.

La même conclusion s’impose concernant les implications de ce principe en matière de responsabilité civile dans la mesure où les conventions de Paris révisée et de Vienne prévoient l’entièr responsabilité de l’exploitant pour des dommages nucléaires affectant l’environnement et causés par des déchets radioactifs, même après leur stockage.

3.4 Principe d’une étude d’impact

Ce principe implique que des mesures appropriées doivent être prises afin
d’évaluer l’impact potentiel sur l’environnement de certaines activités susceptibles d’avoir des effets nocifs importants sur la biodiversité, dans le but de supprimer ou de diminuer de tels effets et, si possible, de prévoir la participation du public dans ces procédures.


(b) Ce principe est repris par la convention commune de 1997 dans ses articles 6 1. ii) et iv), 8, 13 1. ii) et iv), 15. Il figure également dans les principes 2 §311 et 9 §331 de l’AIEA. Pour ce qui est de la gestion des déchets radioactifs, ce principe renvoie aux principes plus politiques de prévention et de précaution.

(c) Compatibilité avérée.

3.5 Principe d’information du public

(a) Le principe d’information du public est le corollaire du principe de participation. Il est également nécessaire à l’application des principes de prévention et de précaution.

Afin d’apporter une protection effective et efficace à l’environnement, le public a droit d’être informé sur l’état actuel de l’environnement et sur les projets qui pourraient présenter des risques potentiels. Ce principe a acquis un statut privilégié dans les problématiques environnementales.


(b) L’importance d’informer le public est reconnue par le préambule, § iv), de la convention commune de 1997. La convention prévoit l’obligation de mettre à la disposition du public des informations sur la sûreté des installations de gestion des déchets radioactifs (article 6 1. iii) et article 13 1. iii)) ainsi qu’un rapport de synthèse des réunions des parties contractantes (article 34).

(c) L’accès à l’information a toujours été un sujet sensible du nucléaire. Mais il est à noter que la convention commune apporte de nombreuses avancées dans ce sens, comparativement à la convention sur la sûreté nucléaire.

Confrontées au droit de l’environnement, les dispositions de la convention commune peuvent paraître faibles, avec le manque évident d’un mécanisme de mise en œuvre du droit reconnu à l’information. Il doit à ce propos être souligné que les activités nucléaires sont couvertes par la convention d’Aarhus (et par la directive communautaire 2003/4), au moins indirectement, si l’on considère l’article 2 de cette convention (et l’article 2 1. b) de la directive) qui définit l’expression « information sur l’environnement » comme incluant « des facteurs tels que les substances, l’énergie, le bruit et les rayonnements […] ».

3.6 Principe de coopération

(a) Le principe de coopération n’implique pas seulement une coopération entre différents États, mais également entre l’État et le secteur économique, des associations de protection de l’environnement, des consommateurs, des producteurs, etc. Appliquer ce principe revient souvent à consulter toutes les parties prenantes. Il conduit également à préférer des solutions contractuelles à des réglementations édictées par les autorités publiques.

Dans les relations internationales, ce principe s’applique principalement aux relations Nord – Sud. Ainsi, les pays développés ont souvent le devoir d’aider les pays en voie de
développement à protéger leur environnement en partageant avec eux leurs connaissances techniques.

Ce principe n’est pas spécifique à la protection de l’environnement et fait plutôt partie des principes généraux de droit international. De fait, la déclaration de Rio de 1992 promeut la coopération internationale en matière de développement durable, et non pas de protection de l’environnement per se.

Sources : déclaration de Rio, 1992 (principes 7, 9 et 27).

(b) La coopération internationale est à la base du droit nucléaire, et en particulier de tout ce qui touche à la gestion des déchets radioactifs. Il s’agit de plus de la seule catégorie de déchets pour laquelle un régime juridique international de portée universelle a été adopté, à travers la convention commune de 1997 (voir en particulier le préambule § ix), l’article 1 i), l’article 4 iv), l’article 6 1. iv), l’article 11 iv) et l’article 13 iv)) et les principes de l’AIEA de 1995 (voir en particulier le principe 3 §313).

(c) Compatibilité avérée.

3.7 Principe de proportionnalité

(a) Le principe de proportionnalité signifie que le devoir d’un État de protéger son environnement ne doit s’entendre que proportionnellement à sa capacité de le faire.

Sources : déclaration de Stockholm, 1972 (principe 23) ; déclaration de Rio, 1992 (principes 7 et 11), qui fait la distinction entre pays développés et en voie de développement.

(b) Le droit nucléaire international, y compris les dispositions relatives à la gestion des déchets radioactifs, ne prend pas en compte ce principe, du fait de la spécificité du risque nucléaire.

(c) Sur ce point, le droit international relatif à la gestion des déchets radioactifs ne respecte pas le droit international de l’environnement.

3.8 Limitation de la production de déchets

(a) Le principe de limitation de la production de déchets reprend l’objectif principal de toute réglementation relative à la gestion des déchets, à savoir la réduction maximale du volume des déchets jusqu’à leur recyclage. Ce principe n’est pas universellement reconnu comme un principe général de droit de l’environnement, mais il est sous-jacent dans l’ensemble de la gestion des déchets. C’est pour cette raison qu’il est intégré dans la présente étude.


(b) La convention commune de 1997 indique que la production de déchets radioactifs doit être aussi faible que possible (article 4 ii) et article 11 ii)), cette exigence s’entendant « compte tenu du type de politique adoptée en matière de cycle du combustible ». Il est donc instauré une claire différence entre la limitation des déchets et le retraitement du combustible, l’exigence de limiter les déchets au niveau le bas possible n’impliquant pas d’exigence de retraitement. Voir également les principes AIEA de 1995 (principe 7).

(c) Compatibilité avérée.
3.9 **Principe de développement durable**

(a) Le principe de développement durable impose de faire un choix relatif au mode de développement. Le développement s’entend comme permettant aux générations présentes de répondre à leurs besoins, sans cependant priver les générations futures de la possibilité de satisfaire les leurs. Ce principe est particulièrement important pour l’usage des ressources naturelles non renouvelables et les activités qui pourraient porter une atteinte irréversible à l’environnement vital des hommes et des animaux, dont l’air, l’eau et la biodiversité.

Le champ d’application de ce principe est très ouvert. Il nécessite l’identification de priorités à long terme, ainsi qu’une nouvelle définition des relations entre l’écologie, l’économie et le progrès technique.

Il favorise également une gestion de l’environnement conforme aux réglementations existantes, un développement ne pouvant être durable que s’il existe une réelle coopération entre les producteurs, les consommateurs, les citoyens et les autorités. En ce sens, une tendance très nette de la réglementation récente consiste tout d’abord à déterminer des objectifs, puis, dans un second temps, à fixer des mesures permettant de les atteindre. De même, on favorise l’utilisation d’outils contractuels et de collaboration à long terme.

*Sources : déclaration de Rio, 1992 (principe 3) ; présent dans peu de conventions internationales portant sur l’environnement.*

(b) Utilisant la même terminologie que le droit international de l’environnement, la convention commune de 1997 inclut pleinement ce principe dans son article 1 ii). Des règles spécifiques d’application sont détaillées dans les articles 4 vi) et vii), 11 vi) et vii).

(c) Compatibilité avérée. Le seul problème pouvant être soulevé concerne la possible obligation de prévoir la réversibilité d’un stockage de déchets radioactifs. Cette « obligation » est-elle induite par le principe de développement durable et vaut-elle également pour les autres types de déchets créant des risques à long terme ?

3.10 **Principe de précaution**

(a) Le principe de précaution, dont les interprétations sont multiples, est fondé sur les mêmes considérations que le principe de prévention. Ici, l’absence de certitudes, compte tenu des connaissances scientifiques et techniques du moment, sur les effets d’une substance ou d’une activité sur l’environnement, ne doit pas retarder l’adoption de mesures effectives quand il existe des indices sérieux de risques de dommages graves.

Combiné au principe de prévention, ce principe incite à l’adoption de mesures avant qu’une preuve certaine ne soit apportée du caractère dangereux d’une substance ou d’une activité. De telles mesures devraient être centrées sur l’origine des dommages potentiels, avec pour objectif de prévenir la réalisation des risques identifiés.

Le principe de précaution est apparu dans les années 1980, tiré du *Vorsorgeprinzip* du droit allemand. Il est mentionné pour la première fois dans le principe 11 de la Charte mondiale sur la nature de 1982, avant de devenir un principe mieux défini de droit positif dans un grand nombre de traités, en particulier dans le domaine de la protection de l’environnement marin.

Il est également entré dans le droit communautaire par le traité de Maastricht, et par conséquent dans les droits nationaux des États membres de l’Union européenne, sans pour autant qu’une définition claire en soit donnée.

*Sources : déclaration de Rio, 1992 (principes 15 et 17).*

(b) Étant donné le haut niveau de connaissances acquis dans les sciences et technologies nucléaires, et l’expérience tirée d’analyses de risques très poussées, les risques
engendrés par l’utilisation de l’énergie nucléaire sont dans leur ensemble bien connus et appréhendés.

Pourtant, les effets sur la santé humaine de l’exposition à de faibles doses de radioactivité restent incertains ; dans ce domaine, le principe de précaution trouve une application justifiée. Cette approche a été retenue et maintenue par la Commission internationale de protection radiologique (CIPR) dans ses recommandations internationales de radioprotection ; dans un rapport ultérieur, la CIPR ira même jusqu’à reconnaître la pertinence d’une approche centrée sur la précaution.

(c) La convention commune de 1997 (article 24) se réfère à aux recommandations de la CIPR. Pourtant, elle ne contient aucune disposition relative à des risques incertains et au principe de précaution.

3.11 Droit d’accès à la justice en matière environnementale

(a) Le droit d’accès à la justice en matière environnementale permet à un individu d’attaquer des décisions liées à l’environnement devant un tribunal ou devant toute autre entité indépendante et impartiale établie par la loi.


(b) La convention commune de 1997 ne prévoit pas ce droit d’accès à la justice, qui permet à une personne d’attaquer une décision relative à l’implantation d’une installation de gestion de déchets radioactifs ou de combustible usé.

(c) Au niveau international, le droit de la gestion des déchets radioactifs n’est pas compatible avec le droit de l’environnement sur ce point. Cependant, des procédures judiciaires entamées par des individus à l’encontre de décisions administratives sous l’hospice de la convention d’Aarhus (et les directives communautaires d’application susmentionnées) pourraient concerner des activités nucléaires.

3.12 Principe de participation

(a) Le principe de participation du public dans des procédures décisionnaires est étroitement lié aux caractères universel, interdépendant et irréversible de certains dommages environnementaux, qui justifie le droit de chaque personne à participer à la prise de décisions environnementales.

Selon ce principe, toute personne :
− a le droit d’accéder à l’information environnementale, y compris à des informations relatives à des substances ou activités dangereuses ;
− peut être impliquée dans l’élaboration de projets qui peuvent avoir un impact sérieux sur l’environnement ou l’aménagement du territoire.


(b) La convention commune de 1997 ne prévoit pas l’obligation de consulter le public pour la gestion des déchets radioactifs et du combustible usé, mais elle impose la réalisation d’études d’impact. Les dispositions procédurales relatives au choix de sites
indiquent seulement qu’il convient de « mettre à la disposition du public des informations sur
la sûreté ».

Le principe de participation n’a jamais été adopté en droit international nucléaire, de
même qu’aucune disposition n’existe en la matière pour la gestion des déchets radioactifs.

c) En l’espèce, la convention commune de 1997 n’est pas compatible avec le
droit international de l’environnement. Cependant, comme mentionné précédemment, la
convention d’Aarhus (et la directive communautaire 2003/35) s’applique explicitement, pour
ses dispositions relatives à la participation du public, aux activités nucléaires (voir la liste en
annexe 1 : « Centrales nucléaires et autres réacteurs nucléaires, y compris le démantèlement
ou le déclassement de ces centrales ou réacteurs ; installations pour le retraitement de
combustibles nucléaires irradiés; installations destinées à la production ou à l’enrichissement
de combustibles nucléaires, au traitement de combustibles nucléaires irradiés ou de déchets
hauteur radioactive, à l’élimination définitive de combustibles nucléaires irradiés,
exclusivement à l’élimination définitive de déchets radioactifs, exclusivement au stockage
(prévu pour plus de dix ans) de combustibles nucléaires irradiés ou de déchets radioactifs
dans un site différent du site de production »).

4 APPLICATION DE CES PRINCIPES DANS LES DROITS NATIONAUX
NUCLEAIRES ET DE L’ENVIRONNEMENT

Le présent chapitre est scindé en deux parties. Toutes les réponses apportées par les
correspondants nationaux sont synthétisées en annexe 6.2 pour ce qui concerne le droit de
l’environnement, et en annexe 6.3 pour ce qui touche au droit nucléaire.

La première partie analyse brièvement les réponses apportées par les correspondants
nationaux aux questions portant sur les huit principes environnementaux que le GT5 a jugé
compatibles avec le droit international applicable à la gestion des déchets radioactifs. Pour
chacun de ces principes, un premier paragraphe résume la position des droits nationaux de
l’environnement, tandis que les droits nationaux applicables à la gestion des déchets
radioactifs font l’objet d’un second paragraphe.

La seconde partie de ce chapitre est consacrée à une analyse plus détaillée des réponses
nationales apportées aux questions particulières posées sur quatre principes apparus comme
posant des difficultés pour leur application en droit nucléaire : le principe de développement
durable, le principe de précaution, le droit d’accès à la justice en matière environnementale et
enfin le principe de participation.

Le questionnaire envoyé figure en annexe 6.4.

4.1 Droit à un environnement sain

4.1.1 Droit de l’environnement

Dans tous les pays consultés, deux principes peuvent être pointés comme suscitant un
intérêt particulier et étant pour les autres principes une sources d’inspiration dans de
nombreux domaines. Ces super principes, comme les a dénommés la doctrine, sont le droit à
un environnement sain et le principe de développement durable.

Le droit à un environnement sain apparaît, dans presque tous les pays consultés, comme
un droit fondamental des peuples, lié au droit de jouir d’une vie décente et du développement.
De tels droits sont souvent reconnus au niveau constitutionnel. C’est en effet ce qui ressort
des réponses apportées au questionnaire : six pays ont indiqué que leurs Constitutions
respectives reconnaissent le droit à un environnement sain.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
4.1.2 Droit applicable aux déchets radioactifs

Seuls deux pays indiquent que ce principe est explicitement inclus dans leurs réglementations relatives à la gestion des déchets radioactifs. Dans les deux cas, il figure dans une loi sur l’énergie nucléaire. Un troisième pays signale que sa loi sur l’énergie nucléaire renvoie, indirectement et en sous-entendu, au droit à un environnement sain.

Les autres pays considèrent que leurs réglementations appliquent ce principe, soit parce qu’il est mentionné à l’échelon constitutionnel, soit parce que l’objectif principal de cette réglementation est précisément de préserver au mieux la santé humaine et l’environnement.

Pour la majorité des pays consultés, les lois et décrets relatifs à la protection contre les rayonnements ionisants font partie de la réglementation applicable aux déchets radioactifs.

4.2 Principe de prévention

4.2.1 Droit de l’environnement

Les réglementations environnementales des pays consultés ont toutes explicitement intégré le principe de prévention. Considéré comme décisif et outil décisionnaire, ce principe a poussé les différentes activités de contrôle à se concentrer sur les activités pouvant affecter l’environnement.

Tous les pays le jugent défini et détaillé de manière adéquate, suivant en cela la définition claire qu’en a donnée la déclaration de Stockholm de 1972. Il est, dans toutes les réglementations nationales étudiées, un fondement de la protection de l’environnement. De ce fait, on le retrouve dans les législations générales sur l’environnement. Dans un des pays consultés, ce principe figure explicitement dans la Constitution et le Code de l’environnement. Dans trois autres, il est mentionné dans les Codes de l’environnement. Les pays restants indiquent qu’il y est fait référence dans une réglementation générale (exemple : lois sur la prévention des pollutions) ou dans les réglementations sectorielles (air, eau, déchets, bruit, etc.).

4.2.2 Droit applicable aux déchets radioactifs

Trois pays s’accordent à noter que leur législation nucléaire prend explicitement en compte ce principe. Pour la majorité, le cadre réglementaire applicable aux exploitants nucléaires, dont le gestionnaire de déchets radioactifs, constitue en soi un régime préventif. Deux pays vont dans ce sens en soulignant que leurs réglementations nationales relatives aux déchets radioactifs imposent la production d’études d’impact.

4.3 Principe pollueur-payeur

4.3.1 Droit de l’environnement

Tous les pays affirment que ce principe est intégré dans leurs réglementations respectives, avec un même objectif : la personne à l’origine d’une pollution doit supporter tous les coûts liés à la prévention et aux réparations, sans recevoir d’aide financière compensatrice d’aucune sorte.

Dans tous les pays interrogés, des dispositions réglementaires claires font de ce principe un élément d’internalisation des coûts de prévention et de lutte contre la pollution, contrairement à l’approche retenue par le principe 16 de la déclaration de Rio de 1992.

Le principe pollueur-payeur a été intégré dans les Constitutions de deux pays, les Codes de l’environnement de trois pays, dans le cadre réglementaire ou des codes spécifiques pour
les autres pays.

4.3.2 Droit applicable aux déchets radioactifs

Les réglementations nucléaires de tous les pays consultés, à l’exception d’un, font explicitement référence au principe pollueur-payeur. Dans le pays d’exception, le principe n’est pas clairement énoncé, mais la réglementation et la pratique s’en inspirent.

Le principe apparaît dans les lois nationales sur l’énergie nucléaire sauf dans deux pays, où il figure dans la réglementation relative à l’énergie.

4.4 Principe d’une étude d’impact

4.4.1 Droit de l’environnement

La réalisation d’études d’impact est une pratique commune à tous les pays ayant répondu au questionnaire. En effet, ces études sont conçues comme un instrument fondamental tiré des objectifs de prévention de la réglementation environnementale, auxquels se sont ajoutés les concepts de participation – besoin de prendre en compte l’avis des communautés et personnes concernées – et d’intégration – ces études nécessitent des contributions multidisciplinaires d’experts et un bilan coûts / avantages.

Trois pays ont incorporé le principe dans leurs Codes de l’environnement, les autres le faisant figurer dans des lois spécifiques de portée générale.

Bien que par nature supranationales, les évaluations environnementales soient obligatoires, pour et dans les pays appartenant à l’Union européenne, lors de l’établissement de certains plans et programmes. Les buts recherchés sont d'assurer un niveau élevé de protection de l'environnement et de contribuer à l'intégration de considérations environnementales dans l'élaboration et l'adoption de tels plans et de programmes.

4.4.2 Droit applicable aux déchets radioactifs

Tous les pays consultés ont indiqué que les réglementations nationales relatives aux études d’impact sont applicables aux principales installations de gestion de déchets radioactifs, parmi lesquelles les installations de stockage, d’entreposage et de traitement. Dans deux pays, les organisations responsables des aspects radiologiques des études d’impact sont les autorités de contrôle.

4.5 Principe d’information du public

4.5.1 Droit de l’environnement

Bien que ce principe n’ait fait l’objet de négociations qu’à l’occasion de son intégration dans la convention commune de 1997, le GT5 l’a trouvé fermement ancré dans les réglementations de tous les pays consultés. Il est à noter que tous sont signataires de la convention d’Aarhus et ont intégré dans leurs lois et développements réglementaires d’abondantes références aux exigences et avantages tirés du principe d’information du public concernant des sujets environnementaux.

Ainsi, le droit d’accéder à l’information environnementale est inscrit dans les réglementations de tous les pays consultés. Son expression est même de la plus haute importance dans deux pays, qui l’ont respectivement incluse dans la Constitution et la loi sur la liberté d’information. Deux autres pays mentionnent ce principe dans leurs Codes de l’environnement, et trois autres dans des lois spécifiques.
4.5.2 Droit applicable aux déchets radioactifs

Le principe d’information du public est manifestement inclus dans les réglementations applicables aux déchets radioactifs de tous les pays consultés. Dans six cas, l’obligation de se conformer à ce principe figure dans une loi sur l’énergie nucléaire.

Il paraît en effet important que tous les pays comprennent et développent une politique d’information active pour ce qui concerne les activités de gestion des déchets radioactifs. Dans ce sens, un pays indique que ces attributions relèvent de la responsabilité de l’agence nationale chargée de la gestion des déchets radioactifs ; un autre que les exploitants nucléaires doivent fournir annuellement de l’information au public ; deux autres qu’une information systématique ressort de la compétence de leurs autorités administratives respectives.

4.6 Principes de coopération

Le principe de coopération ne s’adresse pas seulement aux relations entre États sur la scène internationale, mais également, sur le plan national, aux relations entre les différents acteurs impliqués dans la protection de l’environnement. Il est lié aux notions d’équité et de solidarité mentionnées dans la déclaration de Rio, mais les actions en découlant ne font pas consensus. Les échanges d’informations environnementales pertinentes, la coopération en matière de recherche et développement, l’assistance scientifique et technique ou encore une notification rapide en cas de situation d’urgence sont quelques unes des applications possibles de ce principe.

Au plan national, ce principe crée pour l’État l’obligation de prendre en compte les personnes concernées ou impliquées par des décisions environnementales. Revers de la médaille, ce principe implique également le droit, voir le devoir de chacun à participer à la conservation de l’environnement.

4.6.1 Droit de l’environnement

Dans tous les pays consultés, il existe des dispositions réglementaires inspirées de ce principe de coopération et centrées sur l’international. Un pays indique que l’interprétation nationale de ce principe est inscrite dans la Constitution. Deux autres pays présentent une vision nationale du principe, tandis que dans un quatrième, les autorités gouvernementales mènent une politique active de promotion de la coopération interne. Un autre pays mentionne l’intégration de ce principe dans la réglementation environnementale via les principes d’études d’impact, d’information et de participation. Enfin, un pays signale que le principe de coopération appliqué à la gestion de l’environnement figure dans une loi sur la coopération internationale pour le développement.

4.6.2 Droit applicable aux déchets radioactifs

La plupart des pays interrogés n’ont pas explicitement repris le principe de coopération dans leurs réglementations relatives aux déchets radioactifs. Cependant, beaucoup considèrent ce principe comme effectif, dans la mesure où le rang hiérarchique des textes environnementaux dans lesquels ce principe est intégré est plus élevé que le rang des textes relatifs à la gestion des déchets radioactifs. Dans certains autres cas, les réponses renvoient aux traités internationaux correspondants.

Bien que la coopération internationale et nationale soit une pratique courante dans ce domaine, deux pays insistent sur le fait que leur réglementation oblige les autorités nucléaires et les agences de gestion des déchets radioactifs à coopérer avec les producteurs de déchets.
4.7 Principe de proportionnalité

4.7.1 Droit de l’environnement

Bien que mentionné dans la déclaration de Stockholm de 1972, le principe de proportionnalité n’a réellement pris tout son sens que dans la déclaration de Rio de 1992. Il est animé par un esprit mondial et fédérateur, qui rend les objectifs de protection de l’environnement et de développement durable accessibles à tous les États. Dans ce sens, le principe de proportionnalité transcende les politiques nationales et inspire les actions stratégiques internationales de protection de l’environnement.

C’est peut-être pour cette raison que la plupart des pays consultés a répondu ne pas avoir intégré ce principe en droit national de l’environnement, ou ne pas savoir dans quel texte réglementaire ce principe peut être explicitement visé. Dans un pays, pourtant, il fait partie des exigences mentionnées dans la Constitution et s’impose, à ce titre, à tous les textes législatifs et réglementaires. Un autre pays fait ici référence à sa législation sur la coopération pour le développement. Enfin, il convient de noter que pour deux pays, l’exigence de proportionnalité pourrait acquérir une force nationale car a) la politique environnementale va de pair avec les besoins de développements social et économique et b) les analyses de risques comme les études d’impact doivent être cohérentes avec l’importance des impacts étudiés et de leur possible réalisation.

4.7.2 Droit applicable aux déchets radioactifs

Seul un pays dont la Constitution reprend le principe de proportionnalité considère qu’il s’applique à la réglementation relative aux déchets radioactifs.

4.8 Limitation de la production de déchets

4.8.1 Droit de l’environnement

Même s’il ne s’agit pas d’un principe environnemental général, le principe de limitation de la production des déchets est un objectif général important de la politique de gestion de tous les déchets. Ce principe est en général assorti d’actions de promotion du recyclage et de valorisation des matériaux usagés. Dans ce cadre, il est souvent formulé comme un principe de minimisation de la production de déchets.


4.8.2 Droit applicable aux déchets radioactifs

L’obligation de réduire la production de déchets radioactifs est un objectif dans tous les pays consultés. Trois pays ont intégré ce principe dans leurs lois sur l’énergie nucléaire. Il convient à ce propos de souligner que ces lois, adoptées dans les dix dernières années, sont considérées comme les plus innovantes du secteur. Un autre pays applique explicitement ce principe via la réglementation applicable aux déchets radioactifs, et le lie à l’obligation d’optimisation des ressources. Les autres pays indiquent que la réduction des déchets est une exigence venue de la pratique.

Dans un État, la limitation de la production des déchets est de la responsabilité de
l’agence nationale chargée des déchets radioactifs. Dans un second pays, la limitation des déchets est un des objectifs inscrits dans les plans stratégiques de gestion des déchets. Enfin, un troisième pays indique que le sujet est maintenant traité dans une nouvelle loi sur l’énergie et qu’il sera encore approfondi par la réglementation relative au développement durable actuellement en cours de préparation.

4.9 Principe de développement durable

Le développement durable est peut-être l’un des derniers principes à avoir été incorporé dans le droit de l’environnement. Ce super principe connaît un succès particulièrement important depuis la déclaration de Rio de 1992, bien que de nombreux textes internationaux antérieurs, dont des considérations et plan de l’Union européenne, le mentionnaient. Sa définition est polymorphe et assez peu claire pour des juristes.

A l’exemple de la déclaration de Rio de 1992 et des travaux ultérieurs menés dans le cadre du PNUE/ONU, le concept de développement durable est compris comme « un paradigme général appartenant essentiellement au champ des sciences économiques ». Son but est d’inclure les coûts environnementaux, qui ne sont en général pas internalisés, dans les processus de décision économique et social.

Cette approche se veut résolument universelle, dans la mesure où l’ensemble des situations et phases du développement économique et social de notre planète est visé. Il engendre ainsi l’idée que la protection de l’environnement fait partie du processus de développement et, vice-versa, que la pauvreté, en plus d’être inacceptable du point de vue de la dignité humaine, est l’une des voies les plus agressives d’atteinte à l’environnement. En ce sens, ce principe ne prône pas simplement l’harmonisation de l’économie, du développement social et de la protection de l’environnement, mais en appelle également à des valeurs morales telles que la solidarité, nécessité absolue pour répondre aux exigences éthiques de l’équité intra-générationnelle.

Le principe de développement durable aspire également au transcendantalisme. Il partage les objectifs du droit à un environnement sain, en les étendant aux générations futures et, plus généralement, à la continuité de l’humanité. Ainsi, il fusionne l’exigence d’égalité inter-générationnelle aux obligations et besoins d’un environnement sain comme une condition et un droit fondamental accordé à tout être humain.

Ces quelques considérations montrent bien les difficultés rencontrées pour définir avec précision ce principe. Pour évaluer le degré de compatibilité des législations nationales, le GT5 a pris en compte les réflexions de l’Union européenne en la matière. A ce propos, il doit être rappel que le traité de l’Union européenne assigne à la Communauté une mission de « promotion d’un développement durable et non inflationniste respectant l’environnement ». L’Union européenne a toujours été réticente à légiférer en cette matière, consciente que, de nos jours, les conditions d’un développement durable nécessitent une approche pragmatique et que ce principe est, en tout premier lieu, un critère de nouvelle définition des politiques. Le cinquième programme communautaire d’action pour l’environnement « Vers un développement soutenable » le comprend comme une politique et stratégie de développement économique et social continu n’intervenant pas au détriment de l’environnement ou des ressources naturelles, sur la qualité desquelles repose la poursuite du développement des êtres humains. A ce jour, il n’existe pas de réglementation servant de cadre au développement durable et donnant des indicateurs ou éléments permettant de dire jusqu’où un projet est durable.

Ceci ne signifie pas qu’aucun progrès n’est fait pour atteindre les objectifs de ce principe, mais que sa nature réellement utilitaire et prospective, ainsi qu’un consensus autour de ses objectifs ne présupposent pas de son efficacité et de sa nature juridique obligatoire.

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
Afin d’aplanir ces difficultés, le GT5 a choisi de travailler sur une définition universellement acceptée de ce principe, venant du travail de la commission Brundtland : « le développement durable est un développement satisfaisant les besoins des générations présentes sans compromettre la capacité des générations futures de répondre aux leurs ».

La question a été posée aux pays consultés de savoir comment leurs réglementations nationales intègrent l’application du principe de développement durable et s’il existe des cas de jurisprudence en la matière. Concernant la gestion des déchets radioactifs, il leur a été demandé dans quelle mesure les solutions de stockage géologique et les exigences de réversibilité correspondent ou non à de la « durabilité ».

4.9.1 Droit de l’environnement

Six pays ont répondu que le principe de développement durable est clairement inclus dans leurs réglementations nationales. Dans deux d’entre eux, il figure dans la Constitution ; dans un troisième, il est repris dans le Code de l’environnement ; dans deux autres, il est mentionné dans des lois générales sur l’environnement.

Le principe n’est pas explicitement repris dans la réglementation d’un seul État, qui le considère comme applicable du fait de son appartenance à l’Union européenne et de la signature de la déclaration de Rio de 1992.

L’analyse des réponses concernant la mention de ce principe dans les réglementations nationales fait ressortir les orientations suivantes :
- Dans aucun cas il n’est fait mention de réglementations spécifiquement consacrées aux exigences découlant de ce principe,
- Selon une idée largement partagée, ce principe devrait être considéré comme une directive à suivre lors de l’établissement de programmes politiques ou de plans stratégiques. De plus, les politiques stimulant le développement économique et social, les mesures de protection de l’environnement ainsi que les instruments économiques et financiers mis en œuvre pour les atteindre ne devraient acquérir une force juridique que s’ils suivent ces règles. En ce sens, un correspondant national a souligné l’importance d’un débat national en cours pour savoir si ce principe peut être précisé et encadré par la jurisprudence.
- Une seconde tendance semble être la multiplication des références aux exigences d’un développement durable dans les réglementations relatives à l’urbanisme et à l’aménagement du territoire. Ici, les autorités locales et municipales jouent un rôle important, élargissant encore la notion de développement durable pour y inclure des objectifs partagés de satisfaction des besoins sociaux, économiques et environnementaux.
- La mise en œuvre concrète du concept de développement durable est étroitement liée à l’usage des instruments et méthodologies développés autour des études d’impact. Les pays défendant cette position sont également ceux qui mettent l’accent sur le développement de stratégies durables par les acteurs locaux.

4.9.2 Droit applicable aux déchets radioactifs

Les observations faites par les pays consultés concernant les exigences liées au principe de développement durable peuvent se résumer de la façon suivante :
- Un pays rapporte que le principe de développement durable n’est pas repris dans sa réglementation relative aux déchets nucléaires. Cependant, pour ce qui concerne l’énergie nucléaire, le plan fédéral de développement durable prévoit la sortie progressive de l’énergie nucléaire comme une politique centrée sur la promotion de
ce principe.

− Pour deux autres pays, leurs réglementations relatives aux déchets radioactifs prévoient ce principe. Un quatrième pays indique que, le principe figurant dans la Constitution, son application est nécessairement obligatoire pour toute réglementation, spécifique ou non. Dans un autre pays, ce principe est explicitement repris dans une loi sur la gestion des déchets HAVL.

− Deux pays, dont un n’ayant pas inclus ce principe dans son droit nucléaire, estiment qu’il s’applique à eux de par la ratification de la convention commune de 1997.

− Dans un pays, il existe une jurisprudence relative à l’application pratique de ce principe, bien qu’elle fasse plutôt référence au principe de justification. En l’espèce, une association de protection de l’environnement a attaqué une autorisation administrative relative à une installation de retraitement. Le demandeur a fondé sa requête sur l’article 6.1 de la directive EURATOM, estimant que les bénéfices économiques de l’installation n’avaient pas été correctement évalués, ne prenant pas en compte les frais financiers imputés à cette activité. La cour d’appel a finalement considéré que les frais financiers devraient être, dans les projets futurs, pris en compte dans les évaluations de faisabilité économique même si, dans le cas présent, ils avaient déjà été versés et ne pouvaient en conséquence être individualisés.

Le GT5 a voulu analyser plus avant l’influence du principe de développement durable sur les différentes options de gestion des déchets radioactifs, en particulier lorsqu’elles sont présentées comme définitives. Les débats relatifs à cette question ont débuté au sein des organisations internationales et sont devenus particulièrement importants depuis l’entrée en vigueur de la convention commune, en 2001. Pour sa part, l’AIEA, à l’occasion de la conférence de Cordoue en 2000, a conclu qu’un entreposage de longue durée des déchets radioactifs n’est pas une pratique durable, n’offrant aucune solution pour le futur. C’est pour cette raison que le GT5 a choisi de limiter son étude sur le concept de réversibilité à la solution de stockage géologique, voyant comment les pays ont pris en compte cette approche au moment de choisir des options de gestion de leurs déchets radioactifs.

Les réponses reçues montrent un grand intérêt pour ce sujet, en même temps que l’absence de critères communs pour l’aborder. Les discussions nationales semblent en cours, reflétant bien la controverse existant au niveau international. Quatre pays ont en ce sens indiqué que leurs réglementations applicables aux déchets radioactifs n’ont pas pris position sur le concept de réversibilité dans un stockage géologique.

Dans trois autres pays, la réversibilité a été adoptée par la réglementation ou la pratique. Dans le premier, le Code de l’environnement impose l’étude d’un stockage géologique réversible pour les déchets HAVL. Dans le deuxième, la loi sur l’énergie nucléaire indique que le stockage géologique est la solution de gestion retenue et qu’il doit être réversible. Mais ce pays lie le concept de réversibilité au principe de prévention, et non à celui de développement durable. Afin, le troisième pays signale que la réversibilité a été introduite dans l’architecture des installations de stockage suite à des consultations du public. Ici, l’exigence résulte donc du processus de décision – et donc de la mise en œuvre du principe de participation-, et non des exigences imposées par la prise en compte du principe de développement durable.

4.10 Principe de précaution

Lié au principe de prévention au point qu’il est possible de douter de son existence en tant que principe indépendant, le principe de précaution surpasse en théorie ce dernier car il ne se réfère pas seulement à l’état actuel de la science, mais également à l’incertitude scientifique dans les procédures décisionnelles liées à l’environnement. En cas d’éventuels
dommages résultant d’un manque de certitude scientifique, la décision doit pencher du côté de la sécurité, faisant ainsi peser la charge de la preuve sur les procédures de gestion de risque.

La formulation de ce principe en droit international impose la réunion de plusieurs conditions pour son application :

− Tout d’abord, le principe n’est applicable qu’en cas de risque de dommage grave et irréversible, et non en cas de risque considéré comme mineur ;
− De plus, le principe est fondé sur l’absence de certitude absolue concernant le risque. Ainsi, s’il existe une probabilité forte, voire très forte, de réalisation d’un dommage, il conviendra de se référer non pas au principe de précaution mais à celui de prévention.
− L’application de ce principe requiert la prise en compte d’une évaluation des coûts, soumise dans tous les cas à une exigence de proportionnalité.

Dans le secteur nucléaire, et spécialement dans la gestion des déchets radioactifs, l’application de ce principe présente un intérêt tout particulier, par exemple en cas de personnes privées attaquant certaines pratiques ou autorisations de création d’installations nucléaires.

Vu les rapides progrès de certaines disciplines scientifiques et des approches théoriques elles-mêmes, dont les postulats sont en permanente évolution, l’affirmation de certitudes en matière scientifique devient souvent impossible. La gestion des risques devient donc un sujet très délicat assorti de multiples nuances.

Pour pallier ces difficultés, la jurisprudence peut jouer un rôle primordial en introduisant des modulations ou des interprétations ; c’est d’ailleurs à travers des décisions judiciaires que ce principe prend tout son sens. La Cour de justice des communautés européennes (CJCE) a déjà pris quelques décisions en la matière. Hors du domaine environnemental, l’application de ce principe a été étendue à des actions communautaires relatives à la gestion des risques, par exemple en matière de santé, de produits alimentaires ou de protection des consommateurs. La Cour internationale de justice (CIJ) a également déjà fait entendre sa voix concernant ce principe, par exemple dans les affaires Tests nucléaires II et Gabčíkovo-Nagymaros.

Toutes ces considérations ont poussé le GT5 à introduire dans son questionnaire des questions non seulement sur le traitement réglementaire de ce principe, mais également sur les cas de jurisprudence éventuellement déjà portés devant les juridictions nationales.

Les pays consultés ont parfois été amenés à relayer leurs réponses à celles apportées au principe de prévention, ou à faire des réponses très voisines. Dans trois pays, le principe de précaution est formulé de manière explicite dans la réglementation, dont un dans la Constitution. Dans les autres pays, il n’existe aucune indication de ce principe dans les textes, mais son application a été imposée par la jurisprudence ou par la réglementation communautaire.

Concernant le droit nucléaire, aucun des pays consultés n’a fait mention de disposition réglementaire reprenant explicitement ce principe, bien que les conséquences de son application soient visibles dans les politiques et les pratiques suivies en matière de radioprotection. Il est intéressant de noter qu’un pays fait état de l’incorporation de ce principe dans sa loi de renoncement à l’énergie nucléaire.

4.11 Droit d’accès à la justice en matière environnementale

L’accès à la justice, ou le droit pour une personne d’attaquer des décisions environnementales la concernant, dépend directement du développement des deux autres principes objet de la convention d’Arhus, à savoir le degré d’information de cette personne et sa possibilité de participer aux processus pertinents de décision. L’exercice d’une telle action
judiciaire devant les tribunaux est, en bref, une forme de participation. Ce droit fait l’objet de l’article 9 de la convention d’Aarhus.

Deux aspects peuvent être étudiés avec intérêt dans le cadre de l’application de ce principe, qui feront l’objet des développements suivants, favorisant les analyses environnementales sur les analyses nucléaires, dans la mesure où elles présentent peu de différences :

− La détermination de l’intérêt à agir,
− La détermination des tribunaux devant lesquels ce droit peut être exercé, selon qu’il s’agit d’un recours contre une procédure administrative ou d’un procès au civil.

4.11.1 Détermination de l’intérêt à agir

Le vrai centre d’intérêt lié à l’étude de ce principe est la détermination ou non d’une légitimation active des personnes et associations comme acteurs à part entière de la protection de l’environnement par le droit de faire des recours judiciaires. Bien que la convention d’Aarhus, qui a été signée par tous les pays consultés par le GT5, définisse simplement les personnes privées légitimes à intenter une action devant les tribunaux judiciaires ou administratifs, ce concept rencontre dans sa mise en œuvre des difficultés importantes.

La notion de personnes légitimes à engager des poursuites est basée sur le concept plus englobant de participation du public à la prise de décisions environnementales, se référant aux trois droits encadrés par la convention d’Aarhus. En effet, l’article 2 de cette convention indique que « L’expression "public concerné" désigne le public qui est touché ou qui risque d’être touché par les décisions prises en matière d’environnement ou qui a un intérêt à faire valoir à l’égard du processus décisionnel ». La convention inclut dans ce groupe les organisations non gouvernementales « qui œuvrent en faveur de la protection de l’environnement ». Il est par exemple possible de comprendre cette disposition comme nécessitant que les organisations concernées ait un objet spécifiquement tourné vers la protection de l’environnement ; cette interprétation pourrait avoir pour conséquence de ne pas admettre les recours formés par des organisations dont l’objet porterait sur la défense globale des droits de l’Homme ou au contraire du voisinage. Enfin, et plus important, la convention autorise les États à limiter l’accès à la justice de ces associations.

Par ailleurs, l’article 6, 5. de la convention d’Aarhus indique que « chaque Partie devrait, lorsqu’il y a lieu, encourager quiconque a l’intention de déposer une demande d’autorisation à identifier le public concerné, à l’informer de l’objet de la demande qu’il envisage de présenter et à engager la discussion avec lui à ce sujet avant de déposer sa demande ». En conséquence, les acteurs économiques eux-mêmes – en l’espèce, les exploitants nucléaires - doivent contribuer à clarifier la notion de public concerné. Cependant, laisser à ces acteurs la possibilité de définir seuls cette notion serait contraire à l’esprit général de la convention, dont le but est précisément la création de mécanismes objectifs de détermination du public concerné. L’article 6 de la convention d’Aarhus se réfère à la participation du public, et non à l’accès à la justice, objet de l’article 9. Ainsi, il est conseillé de définir clairement la notion de public concerné bien avant de penser à des procès, mais en ayant à l’esprit que cette définition constitue un indice sérieux de légitimation des personnes pouvant attaquer.

Sur la base des réponses reçues par le GT5 au questionnaire envoyé aux pays, il convient de formuler les observations suivantes :

− Le droit d’accès à la justice n’est jamais dénié au public concerné au sens strict, cette constatation constituant presque un axiome commun à tous les pays consultés. Cette notion de public concerné au sens strict revient à considérer les personnes ayant un intérêt économique direct, un intérêt particulier ou un intérêt
suffisant, toutes ses formulations se recoupant. Une personne privée est donc clairement légitime à intenter une action judiciaire dès lors qu’elle habite dans le voisinage d’un projet donné, comme par exemple la construction d’installations de gestion de déchets radioactifs. Il est parfois nécessaire, dans le cadre de certaines procédures, de faire état de droits de propriété affectés par une activité.

− A côté d’un intérêt spécifique basé sur le voisinage ou la propriété, la légitimation d’intérêts diffus concernant les processus environnementaux pose de réelles difficultés. Ainsi, certains correspondants nationaux consultés indiquent qu’il n’est pas possible, dans leur pays, d’argumenter d’un intérêt général pour l’environnement ou d’une distorsion de concurrence due à la gestion de l’environnement. Un autre pays souligne que les frais afférents à un procès peuvent être mis à la charge du demandeur, sur la demande en est faite et si le demandeur est débouté, cette disposition étant vécue comme une barrière importante au droit d’accès à la justice en matière environnementale ; cette même réponse fait état d’une modification prochaine dans sa réglementation dans ce domaine.

− La possibilité d’accéder à la justice est souvent accordée aux associations de protection de l’environnement dont l’objet est suffisamment précis (trois réponses en ce sens). Certains pays imposent de s’conditions supplémentaires, comme la délivrance d’un agrément national.

4.11.2 Choix du tribunal compétent

La convention d’Aarhus reconnaît, dans son article 9, le droit de recours soit devant l’administration pour des décisions administratives, soit devant les tribunaux compétents. Dans le premier cas, il est fait référence à la possibilité qu’à toute personne de s’opposer à des actes administratifs les concernant, tandis que le second cas renvoie au droit à un accès réel à la justice. Les questions posées par le GT5 aux pays consultés se sont focalisées sur ce second cas.

Un droit d’accès effectif à la justice et le droit à un procès équitable sont généralement reconnus par les Constitutions des différents pays consultés. Concernant le procès lui-même, les réponses soulignent la possibilité d’entamer des poursuites pour des atteintes à l’environnement devant des instances pénales ou encore la possibilité d’attaquer devant les tribunaux administratifs des actes ou omissions de l’administration. La voie judiciaire civile semble plus restreinte ; c’est dans ce domaine que les restrictions au droit d’accès à la justice envisagées précédemment sont rencontrées.

4.12 Principe de participation

Le principe de participation du public aux décisions relatives à l’environnement est au carrefour des droits de l’Homme et de l’environnement. Comparé aux approches précédentes dans lesquelles les droits des citoyens renvoyaient au droit à l’information, ce principe de participation va plus loin, d’une part en reconnaissant le droit de contribuer à la gestion des affaires publiques et, d’autre part, en fournissant des instruments supplémentaires permettant de mieux satisfaire le droit individuel à un environnement sain.

Des indications ci-dessus mentionnées, il convient de retirer :

− Que le droit de participer en matière environnementale est considéré comme une spécificité du principe général de participation,

− Que la participation en matière environnementale complète le dispositif juridique démocratique et s’inscrit dans un contexte de droit administratif,

− Et que ce principe rend le citoyen co-responsable de la protection de
Après une période de flou dans la définition et le champ d’action du principe de participation du public, l’entrée en vigueur de la convention d’Aarhus en 2001 en a apporté une compréhension plus spécifique et objective. La convention définit les conditions de mise en œuvre des mécanismes de participation et permet une participation très en amont des processus décisionnels. Il convient de noter l’effort particulier fourni pour intégrer le public quand les options ne sont pas encore arrêtées, résultant de l’obligation faite aux États signataires de « prendre les dispositions pratiques pour que le public participe à l’élaboration des plans et programmes relatifs à l’environnement dans un cadre transparents et équitable ». La convention d’Aarhus souligne à juste titre à cette occasion que l’exercice du droit de participation du public en matière d’environnement engendre le besoin d’améliorer l’éducation à l’environnement et de développer la conscience des problèmes environnementaux.

De par le passé, le GT5 a publié plusieurs études sur les aspects liés aux processus de participation du public pour la gestion des déchets radioactifs : les congrès d’Helsinki en 1994 puis du Cap en 2003 ont ainsi été l’occasion d’analyser les formes de participation liées aux procédures d’implantation des stockages de déchets radioactifs et les potentielles incompatibilités entre les différents droits. Une fois encore, la question semble avant tout liée aux principes environnementaux et à son insertion dans la réglementation relative à la gestion des déchets radioactifs.

Ici, l’application du principe de participation du public a une portée plus importante. Depuis l’adoption de la convention d’Aarhus et son entrée en vigueur inspirant d’autres réglementations supranationales, comme la directive communautaire 2003/35/CE du 26 mai 2003, la participation du public est à minima requise dans les cas suivants :

- Dès qu’une décision doit être prise en matière d’environnement, avec la possibilité de soumettre toute observation et opinion jugées pertinentes par écrit ou lors d’une audition ou d’une enquête publique,
- Lors de l’élaboration de plans et programmes relatifs à l’environnement, dans un cadre transparents et équitable,
- Durant la phase d’élaboration de dispositions réglementaires et/ou d’instruments normatifs juridiquement contraignants d’application générale.

4.12.1 Droit de l’environnement

Tous les pays consultés ont inclus ce principe dans leurs réglementations, l’un d’entre eux ayant indiqué qu’il n’est pas spécifiquement différencié de la procédure administrative classique. Dans le cadre des réglementations environnementales, ce principe est inscrit dans la Constitution d’un pays, tandis qu’il figure dans le Code de l’environnement d’un autre. Dans les autres pays, ce principe est mentionné dans des lois ou décrets sectoriels spécifiques.

Les réponses reçues des pays consultés mettent en lumière les points suivants relatifs aux formes de participation :

- Tous les pays sont dotés de mécanismes d’études d’impact pour les projets et d’évaluation des incidences de certains programmes et plans sur l’environnement,
- Deux pays font état de mécanismes de débats ou d’enquêtes publics différents de ceux visés part la réglementation applicable aux impacts environnementaux,
- Trois pays font référence à des dispositions réglementant les accords,
- Enfin, deux pays indiquent des participations professionnelle et institutionnelle de nature consultative, apparentées à du conseil en environnement. Dans un cas, elles sont de portée générale, tandis que les objectifs mentionnés dans le second cas sont sectoriels (eau, parcs naturels, etc.).
Par ailleurs, il convient de noter le développement des dispositions réglementaires liées au principe de participation du public d’une part dans le droit applicable à l’usage des sols et à l’aménagement du territoire, et d’autre part dans le droit applicable à l’urbanisme et aux permis environnementaux délivrés à l’échelon municipal. Dans ce dernier cas, les pays mentionnent de possibles fortes interactions entre les citoyens et les autorités et communautés locales.

4.12.2 Droit applicable aux déchets radioactifs

Le principe de participation du public est intégré dans les réglementations applicables aux déchets radioactifs de tous les pays consultés. Les réponses montrent une claire corrélation entre le rang hiérarchique des dispositions adoptées et le degré de définition et de développement des programmes et stratégies de stockage des déchets, particulièrement dans le domaine des déchets HAVL et des combustibles usés.

Ainsi, un pays indique que ce principe est explicitement visé dans son Code de l’environnement pour tous les sujets relatifs aux laboratoires souterrains d’étude liés aux déchets HAVL. Un autre pays fait référence à ses procédures administratives et au droit inscrit dans la loi sur l’énergie nucléaire de s’opposer à des propositions relatives à de nouvelles installations nucléaires. Trois pays renvoient ouvertement aux dispositions encadrant les études d’impact comme mécanisme de participation, sans préjudices d’autres pratiques comme les enquêtes publiques. Tout ceci conforte l’enracinement des études d’impact, à maintes reprises perçues comme un outil intrinsèque du droit nucléaire.

Le questionnaire envoyé aux pays consultés s’interrogeait également sur d’éventuelles formes d’application du principe de participation spécifiques aux processus de décision relatifs à la gestion des déchets radioactifs. Le sujet est particulièrement pertinent au vu de la tendance internationale – tendance ayant conduit à des résultats encourageants – à pousser toujours plus loin l’implication du public dans ces processus.

Le GT5 est conscient que dans certains pays ayant réglementé le droit pour les populations concernées d’opposer leur veto à l’implantation d’installations de gestion des déchets, certaines initiatives ont abouti à l’approbation de stockages. Dans d’autres pays, ce même système a permis de réaliser des progrès importants concernant des programmes de sélection de sites.

Sur le plan national, un pays a consulté sa population pour donner une nouvelle orientation à sa politique nationale concernant l’énergie nucléaire et les systèmes de gestion des déchets induits.

Parmi les pays consultés, un cite le système de débat public, dont l’organisation et les modalités sont définies dans la réglementation environnementale. Un débat sera ainsi organisé à l’automne 2005 pour faire le point sur les recherches menées ces 15 dernières années en matière de gestion des déchets HAVL. Ce débat a pour objectifs de lever les interdits qui existent pour le public en matière de déchets HAVL et de contribuer à définir la suite du processus démocratique en vue d’une décision en la matière. Le même pays dispose d’un mécanisme réglementaire d’enquêtes publiques, dont le résultat négatif peut tacitement empêcher l’implantation d’installations nucléaires.

Un autre pays a intégré dans sa loi sur l’énergie nucléaire des dispositions spécifiquement dédiées à la participation du public dans les processus d’autorisation des stockages géologiques. Enfin, un dernier pays indique que l’actuel plan de gestion des déchets radioactifs rédigé par le Gouvernement insiste sur la nécessité de promouvoir la consultation du public, bien qu’aucune réglementation n’existe en ce sens.
CONCLUSION

- Dans la plupart des cas, le droit international de l’environnement et le droit international applicable aux déchets radioactifs sont régis par les mêmes grands principes.
- Le GT5 a identifié deux principes – principe de participation dans les processus décisionnels et droit d’accès à la justice – pour le développement desquels le droit international de l’environnement et le droit applicable aux déchets radioactifs n’ont pas suivi la même voie. La convention commune sur la sûreté de la gestion des combustibles usés et des déchets radioactifs de 1997 ne prévoit pas d’obligation générale de consultation du public, mais seulement une obligation de mettre à disposition du public de l’information. La convention ne prévoit pas non plus la possibilité pour un individu d’attaquer une décision d’implantation d’installations de gestion de déchets radioactifs ou de combustibles usés.
- Le principe d’information du public, tel que présenté par la convention commune susvisée de 1997, est assez limité. Il lui manque également un réel mécanisme de mise en œuvre dans les dispositions de la convention.
- Les trois incompatibilités mises en lumière ci-dessus peuvent être considérées comme levées dans la mesure où les dispositions de la convention d’Aarhus sont directement applicables aux activités relatives aux installations nucléaires et à la gestion des déchets radioactifs (voir l’annexe 1 de la convention listant toutes les activités auxquelles elle est applicable).
- L’approche retenue du principe de prévention en droit nucléaire est plus complète qu’elle ne l’est en droit international de l’environnement. Bien que l’objectif recherché dans les deux cas soit orienté vers la prévention, le droit de l’environnement nécessite de prendre en compte ses possibilités réelles d’application, la chronologie exacte de mise en œuvre des différentes décisions et politiques, et enfin les besoins spécifiques des pays en voie de développement.
- La réglementation applicable aux déchets radioactifs est en ce domaine assez stricte. Elle conditionne en effet clairement les pratiques à adopter dès la mise en œuvre de mesures propres à éviter des dommages liés au démarrage d’activités. Un bel exemple en est le traitement par ces deux branches du droit du principe de proportionnalité : tandis que ce principe est clairement au centre des actions de développement durable, le droit nucléaire ne le prévoit pas du fait de la spécificité des risques radiologiques et de l’absolue priorité donnée à la sûreté. Ici, le droit international de l’environnement et le droit international applicable à la gestion des déchets radioactifs ne sont pas compatibles.
- Parmi les pays consultés et pour ce qui concerne le droit de l’environnement, certains principes sont presque toujours repris au niveau constitutionnel. C’est ainsi le cas du droit à un environnement sain, du principe général d’information et enfin du principe de coopération, aussi bien dans le domaine international que par les autorités nationales pour atteindre des objectifs environnementaux, particulièrement dans les structures fédérales.
- Les principes visés dans les dispositions constitutionnelles des États comme dans les réglementations environnementales générales constitue une seconde catégorie de textes. Ce cas vise le principe de développement durable et le principe pollueur-payeur.
- Les principes restants sont inscrits dans les législations environnementales, sans qu’il y soit fait référence dans les Constitutions des États. Il s’agit ici du principe d’information du public, du principe de prévention en lien avec le principe d’étude.
d’impact, et enfin du principe de précaution.

- Le principe de proportionnalité n’est généralement pas mentionné dans les Constitutions des États, ni dans les textes législatifs. Il est considéré comme applicable dans la seule mesure où il donne du sens ou précise d’autres obligations, étant un principe général de droit international.

- Enfin, les principes objet de la convention d’Aarhus sont repris aussi bien au niveau constitutionnel que dans des textes législatifs, à des degrés différents de développement. Ils sont généralement énoncés dans les Constitutions comme des droits fondamentaux et sont plus spécifiquement détaillés dans les lois environnementales voire, dans certains cas et encore plus spécifiquement, en droit nucléaire.

- Quant au droit nucléaire, les principes de coopération et de proportionnalité semblent n’être applicables que s’ils sont prévus par des réglementations nationales et/ou environnementales. Au contraire, d’autres principes sont explicitement formulés dans le droit nucléaire, voire même dans le droit applicable à la gestion des déchets radioactifs : droit à un environnement sain, développement durable, principes de prévention et d’étude d’impact, principe pollueur-payeur, limitation de la production de déchets, principes d’information et de participation du public aux processus décisionnels. Le principe d’accès à la justice, en ce qu’il détermine les personnes pouvant intenter des actions judiciaires, présente peu de différence entre ses applications nucléaires et environnementales.
6 ANNEXES

6.1 Concordances entre la convention commune de 1997 et les principes de droit international de l’environnement

<table>
<thead>
<tr>
<th>Principe</th>
<th>Origine</th>
<th>Articles concernés de la convention commune</th>
</tr>
</thead>
<tbody>
<tr>
<td>Droit à un environnement sain</td>
<td>Stockholm, Rio</td>
<td>Préambule (xv), Article 4(iv), Article 7(i), Article 11 (iv), Article 14(i) Article 24(1)(iii)</td>
</tr>
<tr>
<td>Principe de prévention</td>
<td>Stockholm, Rio</td>
<td>Article 1, Article 4, Article 7(iii), Article 11, Article 14(iv), Article 17(iii), Article 24(1)(iii) et 3</td>
</tr>
<tr>
<td>Pollueur-payeur</td>
<td>Rio</td>
<td>Références indirectes uniquement</td>
</tr>
<tr>
<td>Étude d'impact</td>
<td>Rio</td>
<td>Articles 6(1)(ii) et (iv), Article 8, Article 13(1)(ii) et (iv), Article 15</td>
</tr>
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<td>Principe d'information du public</td>
<td>Rio</td>
<td>Préambule (iv) Article 6(1)(iii), Article 13(1)(iii), Article 34</td>
</tr>
<tr>
<td>Coopération</td>
<td>Rio</td>
<td>Préambule (ix) Article 1(i), Article 4(iv), Article 6(1)(iv), Article 11(iv), Article 13(1)(iv)</td>
</tr>
<tr>
<td>Proportionnalité</td>
<td>Stockholm, Rio</td>
<td>Non inclus</td>
</tr>
<tr>
<td>Limitation de la production de déchets</td>
<td>Rio</td>
<td>Article 4(ii), Article 11(ii)</td>
</tr>
<tr>
<td>Développement durable</td>
<td>Rio</td>
<td>Article 1(ii), Article 4 (vi) et (vii), Article 11(vi) et (vii)</td>
</tr>
<tr>
<td>Principe de précaution</td>
<td>Rio</td>
<td>Non inclus</td>
</tr>
<tr>
<td>Droit d'accès à la justice</td>
<td>Rio</td>
<td>Non inclus</td>
</tr>
<tr>
<td>Principe de participation</td>
<td>Rio</td>
<td>Non inclus</td>
</tr>
</tbody>
</table>
## 6.2 Sommaire des réponses nationales concernant le droit de l’environnement

<table>
<thead>
<tr>
<th>Principe</th>
<th>Royaume-Uni</th>
<th>France</th>
<th>Espagne</th>
<th>Suisse</th>
<th>Slovénie</th>
<th>Hongrie</th>
<th>USA</th>
<th>Belgique</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Droit à un environnement sain</strong></td>
<td>Dans de nombreuses lois, mais non mentionné au niveau constitutionnel</td>
<td>Au niveau constitutionnel et dans le Code de l'environnement</td>
<td>Au niveau constitutionnel</td>
<td>Pas explicitement</td>
<td>Au niveau constitutionnel et dans le Code de l'environnement</td>
<td>Au niveau constitutionnel</td>
<td>Au niveau constitutionnel</td>
<td>Au niveau constitutionnel et transposé dans les législations régionales</td>
</tr>
<tr>
<td><strong>Prévention</strong></td>
<td>Dans de nombreuses lois environnementales</td>
<td>Au niveau constitutionnel et dans le Code de l'environnement</td>
<td>Dans de nombreuses lois environnementales</td>
<td>Important dans le Code de l'environnement</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Dans plusieurs lois environnementales</td>
<td>Dans des lois sur l'environnement. Également dans la jurisprudence à propos de l'application du principe d'étude d'impact</td>
<td>Dans des lois fédérales, régionales et sectorielles</td>
</tr>
<tr>
<td><strong>Pollueur-payeur</strong></td>
<td>Application pratique de ce principe dans les lois</td>
<td>Au niveau constitutionnel et dans le Code de l'environnement</td>
<td>Dans la législation concernant les déchets</td>
<td>Au niveau constitutionnel</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement</td>
<td>Explicitement dans plusieurs lois sur l'environnement</td>
<td>Explicitement dans des lois fédérales et régionales</td>
</tr>
<tr>
<td><strong>Information du public</strong></td>
<td>Dans deux types de lois sur la liberté générale d’information et spécifique concernant les informations sur l’environnement</td>
<td>Oui, par transposition de la directive communautaire</td>
<td>Dans le Code de l'environnement</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement</td>
<td>Oui, dans plusieurs lois</td>
<td>Explicitement dans de nombreuses lois régionales sur l’environnement</td>
<td></td>
</tr>
<tr>
<td>Principe</td>
<td>Royaume-Uni</td>
<td>France</td>
<td>Espagne</td>
<td>Suisse</td>
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<tr>
<td><strong>Coopération</strong></td>
<td>De façon générique</td>
<td>Dans le contexte international mais pas dans les lois sur l'environnement</td>
<td>Coopération interrégionale dans la Constitution. Oui dans le contexte international</td>
<td>Explicitement pour la coopération entre les agents économiques et l’État</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement</td>
<td>Exigences de coopération et partage de compétences réglementaires entre l’État fédéral et les gouvernements locaux</td>
<td>Au niveau international et interne (interrégional)</td>
</tr>
<tr>
<td><strong>Proportionnalité</strong></td>
<td>Non</td>
<td>Seulement mention à propos des études d’impact</td>
<td>Oui, avec le principe de coopération</td>
<td>Au niveau constitutionnel</td>
<td>Non</td>
<td>Non</td>
<td>Non, sauf en lien avec d’autres principes</td>
<td></td>
</tr>
<tr>
<td><strong>Développement durable</strong></td>
<td>Dans les lois de planification urbaine et les études d'impact</td>
<td>Au niveau constitutionnel et dans le Code de l'environnement</td>
<td>Pas explicitement</td>
<td>Au niveau constitutionnel</td>
<td>Dans le Code de l'environnement</td>
<td>Dans plusieurs lois sur l'environnement</td>
<td>Dans plusieurs lois sur l'environnement</td>
<td>Dans des lois fédérales et régionales</td>
</tr>
<tr>
<td><strong>Précaution</strong></td>
<td>Idem que pour le principe de prévention</td>
<td>Au niveau constitutionnel et dans le Code de l'environnement</td>
<td>Via les traités de l’UE. Sinon, explicitement dans les seules lois portant sur les produits alimentaires</td>
<td>Pas explicitement, mais interprétation proche du principe de prévention</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicitement</td>
<td>Pas explicitement. Exigences concernant la recherche, la surveillance et la définition de démarches adaptées en cas d’éventuelles situations dangereuses.</td>
<td>Explicitement dans les législations environnementale s régionales</td>
</tr>
<tr>
<td><strong>Principe</strong></td>
<td><strong>Royaume-Uni</strong></td>
<td><strong>France</strong></td>
<td><strong>Espagne</strong></td>
<td><strong>Suisse</strong></td>
<td><strong>Slovénie</strong></td>
<td><strong>Hongrie</strong></td>
<td><strong>USA</strong></td>
<td><strong>Belgique</strong></td>
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<td>-------------</td>
</tr>
<tr>
<td><strong>Participation</strong></td>
<td>Dans plusieurs lois sur l’environnement</td>
<td>Au niveau constitutionnel, obligation de collaboration pour la protection de l’environnement. Au niveau législatif dans les processus décisionnaires</td>
<td>Dans des lois sectorielles spécifiques et dans une loi établie générale</td>
<td>Pas de spécificités environnementale s par rapport aux procédures administratives de droit commun</td>
<td>Explicitement dans le Code de l'environnement</td>
<td>Explicite</td>
<td>Oui, dans plusieurs lois sur l’environnement et dans une loi établie générale</td>
<td>Oui. Idem que pour l’information du public</td>
</tr>
</tbody>
</table>
6.3 Sommaire des réponses nationales concernant le droit nucléaire et le droit applicable à la gestion des déchets radioactifs

<table>
<thead>
<tr>
<th>Principes</th>
<th>Royaume-Uni</th>
<th>France</th>
<th>Espagne</th>
<th>Suisse</th>
<th>Slovénie</th>
<th>Hongrie</th>
<th>USA</th>
<th>Belgique</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prévention</strong></td>
<td>Oui, dans la loi nucléaire, en relation avec le droit à un environnement sain.</td>
<td>Pas explicitement, si ce n'est indirectement par le biais des études d'impact.</td>
<td>Pas explicitement, si ce n'est indirectement par le biais des études d'impact.</td>
<td>Explicitement, étant un principe gouvernant l'usage de l'énergie d'origine nucléaire.</td>
<td>Explicitement, étant un principe gouvernant l'usage de l'énergie d'origine nucléaire.</td>
<td>Explicitement, étant un principe gouvernant l'usage de l'énergie d'origine nucléaire.</td>
<td>Pas en tant tel, mais implicite dans d'autres lois. Également dans le décret d'organisation de l'ONDRAF.</td>
<td></td>
</tr>
<tr>
<td>Principes</td>
<td>Royaume-Uni</td>
<td>France</td>
<td>Espagne</td>
<td>Suisse</td>
<td>Slovénie</td>
<td>Hongrie</td>
<td>USA</td>
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</tr>
<tr>
<td>Coopération</td>
<td>Oui, de façon générique.</td>
<td>Pas explicitement</td>
<td>Pas explicitement</td>
<td>Pas explicitement, mais application obligatoire par la loi (coopération entre les agents économiques et l’État).</td>
<td>Pas explicitement</td>
<td>_</td>
<td>Pas explicitement</td>
<td>Explicitement, pour ce qui concerne la responsabilité interrégionale relative aux déchets radioactifs.</td>
</tr>
</tbody>
</table>

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
<table>
<thead>
<tr>
<th>Principes</th>
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<th>Espagne</th>
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<th>Slovénie</th>
<th>Hongrie</th>
<th>USA</th>
<th>Belgique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accès à la justice</td>
<td>Les dispositions législatives environnementales sont généralement applicables.</td>
<td>Les dispositions législatives environnementales sont généralement applicables.</td>
<td>Les dispositions législatives environnementales sont généralement applicables.</td>
<td>Oui, dans le cadre de la réglementation sur les processus d’autorisation, accès aux tribunaux administratifs et judiciaires, pour les personnes privées concernées et les associations.</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Les dispositions législatives environnementales sont généralement applicables.</td>
</tr>
</tbody>
</table>
6.4 Questionnaire envoyé par le GT 5 aux correspondants nationaux.

AIDN – Groupe de travail 5
Gestion des déchets radioactifs

Préparation du rapport sur la gestion des déchets radioactifs et la protection de l’environnement – AIDN Congrès de Slovénie 2005

GT 5 – Questionnaire national

Sujet : comment et dans quelle mesure les principes internationaux de droit de l’environnement sont-ils applicables à la gestion des déchets radioactifs ?

1. Remarques préliminaires

Le présent questionnaire a été élabo ré par quelques membres du GT5 afin d’étudier la compatibilité des législations nationales avec les grands principes internationaux de droit de l’environnement, dans la mesure où ceux-ci sont applicables à la gestion des déchets radioactifs.

Ce questionnaire est fondé sur une analyse préalable de la situation internationale, qui a permis d’identifier 12 grands principes (vous trouverez en document joint le document intitulé « Droit international, principes, codes et recommandations. Comparaison entre la protection de l’environnement et la gestion des déchets radioactifs »).

Pour chacun de ces principes, il est demandé si celui-ci est explicitement repris dans la réglementation générale de l’environnement, puis dans la réglementation nucléaire / relative aux déchets radioactifs. Afin d’éviter les redites, les destinataires du présent questionnaire sont aimablement invités à ne répondre que sur la base de leur droits nationaux (y compris, le cas échéant, de leurs jurisprudences), à l’exception de toute référence au droit communautaire (pour les pays membres de l’Union européenne) ou à des traités internationaux entrés en vigueur au plan national.

Cinq principes (développement durable, principe de précaution, principe de prévention, accès à la justice en matière environnementale, principe de participation) ont été identifiés comme pouvant poser problème dans leur compréhension ou leur application dans des textes réglementaires du fait de multiples facteurs : prise en compte très récente dans des textes à portée réglementaire, manque de recul sur leur utilisation, déficit de textes réglementaires les explicitant, etc. Tous ces cas peuvent être considérés comme controversés, au centre de débats prolifiques. Prenant en compte ce contexte, le présent questionnaire consacre des développements particuliers à ces principes, visant à déterminer si des jurisprudences nationales ou toute autre décision sont venues étayées les discussions susvisées.

2. Questionnaire

1. DROIT À UN ENVIRONNEMENT SAIN

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

2. PRINCIPE DE PREVENTION
Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

3. **PRINCIPE POLLUEUR-PAYEUR**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

4. **PRINCIPE D’UNE ÉTUDE D’IMPACT**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

5. **PRINCIPE D’INFORMATION DU PUBLIC**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

6. **PRINCIPE DE COOPERATION**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

7. **PRINCIPE DE PORPORTIONNALITÉ**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

8. **LIMITATION DE LA PRODUCTION DES DÉCHETS**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

9. **DEVELOPPEMENT DURABLE**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Comment votre réglementation nationale développe-t-elle ce principe ? Ce principe a-t-il déjà été appliqué dans votre jurisprudence nationale (affaires environnementales et/ou nucléaires) ? Dans quelle mesure la réversibilité d’un stockage de déchets radioactifs est-elle...
considérée comme une des exigences imposées par le principe de développement durable ?

10. **PRINCIPE DE PRECAUTION**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Merci également de bien vouloir indiquer si des dispositions applique ce principe au processus d’autorisation de nouvelles installations de gestion de déchets radioactifs. Y a-t-il des cas de jurisprudence nationale dans lesquels :

- Un tribunal ou une cour a statué sur une affaire dans laquelle ce principe devait être appliqué ?
- Ce principe a été invoqué pour justifier le rejet d’une autorisation de créer un centre de stockage de déchets ?

11. **DROIT D’ACCES A LA JUSTICE EN MATIERE ENVIRONNEMENTALE**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

La réglementation prévoit-elle des conditions spécifiques pour avoir la capacité d’engager des poursuites contre une autorisation de créer une installation de gestion de déchets (exemple : intérêt économique direct, résidence dans le voisinage, conditions administratives particulières pour les associations, etc.) ? Existe-t-il une seule procédure à suivre pour poursuivre l’exploitant d’une telle installation ou les autorités compétentes (Common Law, droit public, droit pénal, etc.) ?

12. **PRINCIPE DE PARTICIPATION**

Ce principe est-il explicitement repris dans votre réglementation environnementale nationale ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Ce principe est-il explicitement repris dans votre réglementation nationale relative aux déchets radioactifs (ou réglementation nucléaire) ? Si oui, merci de bien vouloir indiquer le titre des textes concernés.

Existe-t-il des dispositions spécifiques encourageant ou prévoyant des procédures organisant la participation du public lors de tout processus d’autorisation lié à la gestion des déchets radioactifs, procédures distinctes de l’ouverture d’une période d’information du public et de la possibilité de demander des informations complémentaires et de faire des observations ?

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
THE LONG TERM DISPOSAL OF RADIOACTIVE WASTE BENEATH THE SEA BED – AN ANALYSIS OF THE CURRENT EU LEGAL POSITION IN THE CONTEXT OF CURRENT UK POLICY

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Ian.salter@burges-salmon.com

In the United Kingdom, the body charged with development of long term solutions to the issue of radioactive waste disposal is United Kingdom Nirex Limited 'UK Nirex'. In 1997, UK Nirex was refused land use planning permission for the construction of a Rock Characterisation Facility at Sellafield by the then Secretary of State for the Environment. The grounds for refusal included the fact that not enough had been done to investigate and assess alternatives. The Secretary of State held that UK Nirex was in fact presenting as a 'fait accompli' the siting of a forerunner to a deep geological repository without rigorous assessment of alternative sites in a way which would not command public acceptance.

The 1997 decision was a watershed for UK Nirex. Both subsequent UK governments and the European Commission have recognised that retaining the option of using nuclear power depends in large part on developing credible answers to the long term storage or disposal issues around radioactive wastes. These concerns have come to the fore once again first with debates as to whether nuclear power needs to be part of the UK’s energy mix if it is to achieve its aims to reduce greenhouse gas emissions; and secondly with renewed concerns about the long term security of ground level storage of radioactive waste with the renewed terrorist threat.

Since 1997, UK Nirex has developed a rigorous and taxing means of building public consensus around issues of nuclear waste disposal. It has continued to apply and develop its technical capacity to deliver advice on nuclear waste packaging standards and arrangements, and to develop the technical aspects of the 'concept' of long term disposal. And in tandem with this technical work it has conducted a thorough investigation of the legal issues around nuclear waste disposal.

The UK government also reflected this 'step by step' approach towards building a consensus by an open and transparent series of assessments of the available options, in its key White Paper 'Managing Radioactive Waste Safely'.

The UK government also established the Committee on Radioactive Waste Management 'CoRWM' to report by 2006 on a review of all credible options for radioactive waste disposal.

CoRWM's work has resulted in a series of published assessments of options which range from the plausible to the far fetched (firing waste into space, sliding it under the tectonic plates in subduction zones and so on).
In the case of sub-seabed disposal of radioactive waste, CoRWM commissioned Professor Richard Macrory and Ray Purdy to produce a report "Sub seabed disposal of radioactive waste – legal considerations", January 2005. This report reviewed the application of the four main international legal instruments to the issue, namely:-

(i) the United Nations Convention on the Law of the Sea (UNCLOS);
(ii) the Convention on the Prevention of Marine Pollution by dumping Wastes and Other Matters (the London Convention);
(iii) the Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR); and

Having renewed the application of these different instruments to the waters and seabed beyond the UK's base line – the territorial sea, contiguous zone, (potential) Exclusive Economic Zone and High Seas : the Continental Shelf, Continental Slope, Continental Rise and Deep Seabed – Macrory and Purdy reviewed the objects of the different legal instruments.

UK Nirex was asked to Peer Review the Macrory and Purdy study for CoRWM. It did so, by means of adapting instructions already given to Leading Counsel Christopher Katkowski QC and Stephen Tromans, who had already been asked to review the legal aspects ofadioactive waste disposal, not at sea, but under the sea in brine formations under the deep seabed in a repository accessed by tunnel from the mainland. UK Nirex's perception was that this option had not been extensively or thoroughly considered by the UK government, as it tended to have been 'wrapped up' with disposal of waste at sea, for example in drums from ships, and this form of disposal had been voluntarily discontinued by the UK in line with the objects of the London Convention.

Burges Salmon LLP was instructed by UK Nirex to commission an opinion from Leading Counsel to re-examine this assumption that long-term disposal of radioactive waste in sub-seabed brine formations accessed by tunnel from the UK land mass might be ruled out by the application of the main international conventions.

Christopher Katkowski QC and Stephen Tromans in 'Legal Advice to Nirex on Sub-seabed Disposal' March 2005 found as follows –

"Our advice is as follows:
- The relevant international convention (in particular UNCLOS, the London Convention and Protocol and OSPAR) do not in our view legally preclude the long term disposal of radioactive waste in sub-seabed brine formations which are accessed by tunnel from the UK land-mass.
- It also appears to us that the UK Government would have the rights necessary, certainly in relation to the territorial sea, and probably also in relation to the Continental Shelf/EEZ area, to construct and use such a repository.
- Any such proposal would however need to be approached on the basis that it would not result in pollution of the marine environment, and to comply with the principles of the Sintra Statement as to levels of emissions of radionuclides over the lifetime of the facility. The levels and timescales of emissions contemplated by Nirex are in our view capable of being properly equated to meeting the "close to zero" requirements of the Sintra Statement.
- Any proposal would also be subject to procedural and substantive legal requirements in terms of environmental assessment (both at the general programme and specific project stage), an appropriate assessment in terms of
effects on habitats of European interest, and justification of the practice in terms of its benefits.

- We have considered the views expressed in a Study commissioned by CoRWM by Professor Richard Macrory and Ray Purdy, *Sub Seabed Disposal of Radioactive Waste – Legal Considerations* (January 2005) and find nothing there to change or affect our views expressed in this Advice."

The 'Sintra Statement' referred to in Counsel's advice was a non-binding Ministerial statement made in the context of the OSPAR Convention by UK Ministers agreeing to reduce and phase out emissions of radionuclides. This was thought to be of strong persuasive effect as to policy, while not of the legal status of the Conventions.

In Counsel's opinion therefore such a deposit by such means remains a legal option, and is not ruled out by international conventions, as may earlier have been assumed. If further investigation of this option implies that it is possible and worth considering further from a technical and engineering standpoint, this preliminary legal consideration will be a highly significant development.

Counsel went on to consider the possible application of European Community law to such a development. They reviewed in particular –

(i) the Habitats Directive 92/43/EC;
(ii) the Water Framework Directive 2000/60/EC; and any future Daughter Directive on Groundwater;
(iii) Directive 2001/42/EC on assessment of plans and projects (the SEA Directive) and Directive 85/337/EEL on the assessment of effects of projects on the Environment (the EIA Directive), on which Counsel concluded that – "The SEA Directive would apply to plans or programmes which are subject to preparation or adoption by an authority at national, regional or local level and which are required by legislative, regulatory or administrative provisions. Any such plan or programme which sets the framework for a future waste repository would be subject to SEA requirements.1 The EIA Directive would clearly apply to any project for an installation designed solely for the final disposal of radioactive waste, or indeed for its storage for a period of more than 10 years (Annex I, para 3(b)). In addition, an installation for the disposal of radioactive waste falls within the 1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context (see Appendix 1, para 3) and hence would be subject to the requirements of that Convention for the notification and consultation of affected parties.
(iv) the Directive on Basic Safety Standard (96/29/Euratom); and
(v) Article 37 of the Euratom Treaty.

Overall, with respect to EC Law, Counsel concluded that – "What we drive from consideration of these EC material is that none of them creates a legal barrier in principle to development of a sub seabed repository. They are essentially concerned with process, in terms of information and consultation,2 and in some cases they provide criteria for the decision or require risks of exposure to be minimised.3 They

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1 See Arts 2(a) and 3(2)(a). The Sea Directive has been the subject of previous advice by Christopher Katkowski QC in terms of how it may work in conjunction with the current DEFRA consultation process (discussion Paper, 2 December 2004) to outline the key steps and outputs that would need to be taken to ensure that the MRWS Programme meets the requirements of the SEA Directive
2 In particular, the SEA, Espoo and EIA requirements
3 In particular, the Habitats and Basic Safety Standards Directives
therefore should be seen as presenting procedures that will have to be followed, and possibly hurdles that will have to be surmounted, rather than absolute bars to such a proposal."

Those wishing to follow these arguments in full will find both the Macrory and Purdy Paper and Counsel's advice to UK Nirex on the UK Nirex website at www.nirex.co.uk headed – "Review of CORWM Document No 927 sub seabed disposal of radioactive wastes – Legal considerations' April 2005 – Document Number : 471717."
MULTI-NATIONAL REPOSITORIES: ETHICAL, LEGAL AND POLITICAL/PUBLIC ASPECTS

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1 INTRODUCTION

The technical challenge of implementing geological repositories for long-lived radioactive wastes (RAW) has been addressed in numerous countries for some decades. The general consensus in the scientific and technical community is that the task can be accomplished safely. However, societal issues have been tackled much less successfully, with the result that almost all national deep disposal programmes have been delayed or postponed. Concepts for shared multi-national repositories face several problems and challenges in addition to those experienced in purely national repository projects. This is the case despite the fact that they have been proposed over many years and despite the fact that they promise advantages in safety, security, environmental protection and costs.

When assessing the advantages of shared multi-national repositories, it is instructive to examine which ethical, legal and political issues most affect the feasibility of implementing such facilities. This paper addresses the key questions from two opposite sides. The early part takes a "top-down" view, summarising the international debate on the above issues and identifying relevant international legislation and initiatives for multi-national repositories. The latter part of the paper looks "bottom-up" at the problem, by discussing the situation in a small country, Slovenia. Like many countries with only a small nuclear power programme, Slovenia has limited financial resources for implementing disposal – but it has a firm commitment to fulfilling its responsibilities for safely managing all RAW arising in the country.
2 A BRIEF REVIEW OF THE ADVANTAGES AND PROBLEMS OF SHARED MULTI-NATIONAL REPOSITORIES

2.1 Advantages

a) Economy:

It is mainly economic reasons that have led to countries, especially small ones, favouring the idea of shared multi-national repositories. It is obvious that each participating country in a common project could gain significant financial advantages due to the large economies of scale in constructing and operating repositories.

b) Access to safe disposal facilities:

Some countries may not be able to afford to implement safe disposal facilities on their own. Some countries will, for economic reasons, wait several decades before constructing repositories, using the intervening time to accumulate the necessary funds. A multi-national repository can provide access, or earlier access, to safe repositories for these countries.

c) Enhanced global nuclear security:

The term security is used in connection with the prevention of misuse of nuclear materials by terrorists or potential weapons states. Safeguards control for one site is simpler than for many scattered sites and, again, may be realised sooner through cooperation.

d) Lower environmental impact:

The construction of one disposal facility instead of several reduces the negative conventional impacts of such a facility on the environment.

e) Expanded range of geological options:

If several countries participate in a multi-national repository, a larger geological area may be examined and a larger choice of geological formations is available. Simple geological environments that are particularly suitable for repositories may not be available in small countries with complex geologies.

f) Increased technical capacity:

Scientists and specialists from several countries can cooperate and share their knowledge and experience in pursuit of a common goal.

2.2 Key challenges to be addressed

a) Transportation:

Transportation routes will be longer if the wastes have to be brought from other countries. Transportation of nuclear materials, however, is not a technical problem and has been practised safely for many years. However, public reaction to transport is often negative. This can make transports enormously expensive if massive police forces are necessary to control demonstrators. In addition, the different transit rules in the different countries can cause some legal and administrative problems.

b) Different national legislations and definitions:

Each country has its own laws on disposal of RAW. Ranging from the process for development of legislation, through to allocation of responsibilities and liabilities or to definition of competent authorities, authorisations needed, classification of waste etc., there is a large variety of approaches. Some unification would be valuable. In addition, common definitions have to be agreed. For example, the simple term “radioactive waste” has different meanings. In some countries the RAW includes spent nuclear fuel (SF). Other countries consider SF as a valuable resource that may be reprocessed, and not as RAW.
c) Lack of higher authority to promote, control and enforce common agreements:
   Within each national state there is a higher authority that controls and enforces legal requirements. In the case of a multi-national repository there is no such authority. All collaboration is based on voluntary compliance.

d) Cost allocation:
   The economic status of the different countries will vary considerably. Therefore it may not be fair, or even practicable, to ask for equal payment from each participant. An adequate key for cost distribution, taking into account the diverse purchasing powers, may have to be elaborated.

e) Different time schedules:
   As each country has its own strategy for disposing of its RAW, including for example cooling time, intermediate storage etc., the date by which a final disposal facility has to be ready is different for each country. A common multi-national repository would have to be constructed and operated to fit the timetables of all users.

3 ETHICAL, LEGAL AND POLITICAL/PUBLIC ASPECTS OF SHARED MULTINATIONAL REPOSITORIES

3.1 Ethical issues

As for any national repository for RAW, a multi-national repository has to be ethical, environmentally sound, safe (in a radiological sense), secure (against terrorist acts) and of course economic [1]. The term “ethical” is probably the one that is the most controversial and the one that is interpreted most diversely by different individuals, organisations and countries. It involves several factors [2]:

- There is the common belief that disposal of RAW should be dealt with now rather than left for future generations.

- It is widely agreed that each country has a responsibility to ensure that its wastes are managed in a safe and environmentally sound manner. Taking responsibility for the correct disposal of one’s RAW means adopting a clearly safe solution for humans and the environment. Meeting this responsibility does not, however, necessarily mean disposing of the RAW within one’s own territory. In many cases however, there is a tendency to aim for this in order to allow closer control that the required standards are met – and that earlier bad examples of dumping hazardous wastes abroad are not repeated. However, there are no ethical – and also no (international) legal – obligations to dispose of RAW in the state of its origin only.

- Another principle of ethics is that no region should be forced against its will to host a repository for RAW. Even in purely national repository programmes, this goal is very hard to fulfil, given the strong local political opposition often encountered in repository siting projects. In some countries, therefore, a national government may formally impose a solution. This happened, for example, in the USA when Congress voted to override the veto of the State of Nevada and select Yucca Mountain as the preferred repository site. For multinational concepts, however, national and local acceptance will be an absolute pre-requisite.

- As the last item of ethics it should be mentioned that no unfair advantage may be taken of politically weak and/or less developed and/or poor areas. It is not ethical to offer financial compensation to a local population unless the issues have been fully explained, they have the necessary competence to judge ac-
ceptability and the chosen area is clearly technically suitable for hosting a safe repository. Nevertheless, fair compensation for accepting the responsibility and potential inconveniences involved in offering an international (or a national) disposal service should be offered to any hosting area and community.

Finally, it is worth recognising, that some national waste management organisations apply policies (as opposed to laws) against multinational disposal concepts and justify these policies by arguments of ethical responsibility. But, in practice, the policies often reflect instead a pragmatic reaction to the concern that multinational initiatives might disrupt national repository planning.

In practice, the international disposal community has debated the ethical issues associated with repositories extensively, both within national programmes and also in international circles. This is illustrated well by the work of the NEA/OECD, which led to publication of an international consensus document (a “collective opinion”) on the ethical and environmental aspects of RAW disposal [3]. The document was based on a wide-ranging meeting involving experts from within and also from outside the direct field of RAW disposal [4].

Considering all these factors and discussions, it may be concluded that there are no ethical grounds for rejecting multi-national repositories, provided that these are implemented with state-of-the-art technology and their siting is agreed between willing partners.

3.2 Legal aspects

a) Legal aspects in general

As for every large undertaking, construction, operation, closure and monitoring of a repository for RAW need a solid legal base. Items such as financing, protection of environment and humans, safety requirements, liability, competent authorities and authorisation processes etc. have to be regulated [1, 2, 5]. On a national level, this is executed according to the constitutional law of the corresponding state. On the international level - i.e. for a multi-national repository - treaties and conventions have to be concluded. Not only the legal prescriptions themselves, but also the processes of enacting legislation, have to be agreed.

b) National legislation

Countries using nuclear energy for civil purposes have mostly established laws and a legal system covering the disposal of RAW. Some of these legislations, but not all, contain a set of laws, or specific articles in laws, dealing with aspects of multinational, shared repositories and the country’s approach to participation therein. Other countries do not explicitly treat the issue of multinational repositories in their legislation. But from the fact that they permit in their laws export of their RAW or even import of foreign RAW, it may be concluded that they leave the international option open, i.e. that they indirectly allow participation in a multinational repository.

The questions of whether a country allows export and/or import of RAW are crucial and decisive for a country’s position towards multinational repositories.

Table 1 gives a summary of some European countries’ answers to these questions and – where available – of their attitudes and/or policies regarding multinational disposal of RAW [2, 6].
### Table 1: Export, import, transfer of RAW; attitude towards multinational repository

<table>
<thead>
<tr>
<th>Country</th>
<th>Import of foreign RAW for disposal permitted ?</th>
<th>Export of RAW permitted ?</th>
<th>Disposal Policy for RAW, Attitude towards multinational repository</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>No</td>
<td>Yes (conditions)</td>
<td>Return to USA (research reactor only)</td>
</tr>
<tr>
<td>Belgium</td>
<td>Yes (conditions)</td>
<td>Yes (conditions)</td>
<td>Dual track 1st priority national</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>No</td>
<td>Yes</td>
<td>Return to Russia</td>
</tr>
<tr>
<td>Croatia</td>
<td>No</td>
<td>Open</td>
<td>No official policy</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>No</td>
<td>Yes (conditions)</td>
<td>Dual track 1st priority national</td>
</tr>
<tr>
<td>Finland</td>
<td>No</td>
<td>No</td>
<td>National only</td>
</tr>
<tr>
<td>France</td>
<td>No</td>
<td>Yes (conditions)</td>
<td>National only</td>
</tr>
<tr>
<td>Germany</td>
<td>Yes (conditions)</td>
<td>Yes (conditions)</td>
<td>National only</td>
</tr>
<tr>
<td>Hungary</td>
<td>No</td>
<td>Yes</td>
<td>Dual track</td>
</tr>
<tr>
<td>Italy</td>
<td>No</td>
<td>Yes (for treatment)</td>
<td>No official policy</td>
</tr>
<tr>
<td>Latvia</td>
<td>No</td>
<td>Yes (conditions)</td>
<td>Dual track</td>
</tr>
<tr>
<td>Lithuania</td>
<td>No</td>
<td>Yes (conditions)</td>
<td>Dual track</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Yes (conditions)</td>
<td>Yes (conditions)</td>
<td>Dual track</td>
</tr>
<tr>
<td>Romania</td>
<td>No</td>
<td>Yes (conditions)</td>
<td>Mainly national; return TRIGA fuel to USA, research fuel to Russia</td>
</tr>
<tr>
<td>Slovakia</td>
<td>Yes (conditions) for treatment, no for disposal</td>
<td>Yes (conditions)</td>
<td>Dual track 1st priority national</td>
</tr>
<tr>
<td>Slovenia</td>
<td>Yes (conditions)</td>
<td>Yes (conditions)</td>
<td>Dual track</td>
</tr>
<tr>
<td>Spain</td>
<td>Yes (conditions)</td>
<td>Yes (conditions)</td>
<td>No official policy</td>
</tr>
<tr>
<td>Sweden</td>
<td>Yes (small quantities, conditions)</td>
<td>Yes (conditions)</td>
<td>National only</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Yes (conditions)</td>
<td>Yes (conditions)</td>
<td>Dual track 1st priority national</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Left open</td>
<td>Left open</td>
<td>No official policy</td>
</tr>
</tbody>
</table>

Countries that treat the issue of multinational repositories in their legislation do this in a variety of ways. The range extends from prohibiting multinational solutions completely to specifically prescribing them as a goal in the legislation.

In more detail, many nations prescribe in their laws that a national solution has to be found for their RAW, i.e. a repository within the own country. Hereby some states very strictly demand an internal solution only and prohibit consideration of multinational options. An example is Finland that prescribes an internal solution and prohibits import and export of RAW. Others take a broader approach in that they follow a "dual track policy", i.e. they look for a national solution but also consider multinational options. As examples may be listed Belgium, Bulgaria, Czech Republic, Hungary, Latvia, Lithuania, Netherlands, Slovenia and Switzerland. Switzerland, in fact – in its new Nuclear Law – explicitly lays out fair, symmetrical conditions for import and export of RAW. A third type of country prescribes explicitly in its legislation, that multinational solutions may or even must be considered. An example is Austria. Other countries have not yet decided which path they will follow, or have a national repository research and development (R&D) programme, but have not yet taken a clear decision for or against participation in a multinational repository. Examples are Croatia and Spain.

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1 § 34 Kernenergiegesetz of 21 March 2003, entered into force on 1 February 2005
2 § 36b section 2 Strahlenschutzgesetz, amendment entered into force in December 2004
c) International legislation

For participation in a multi-national repository, corresponding legislation on the national and on the international level is necessary. Firstly, on the national level, participation in a multi-national repository has to be allowed. On the international level then, the necessary treaties and conventions have to be concluded. Finally, these have to be transferred into national law to be applicable in the individual countries.

On the international level, several legal instruments on international cooperation in various fields regarding the peaceful use of nuclear energy and radioactive materials and also referring to multi-national repositories already exist. Especially in the fields of liability and transportation, several treaties and conventions have been concluded. The subject of a multi-national repository itself is addressed explicitly in the Joint convention on the Safety of Spent fuel Management and on the Safety of Radioactive Waste management (Joint convention) [5], and the Euratom Proposed Directive (Euratom Proposal) [7], to mention two important examples.

Given that the attendees at the present conference are specialists in nuclear law, we assume that they are familiar with the Joint Convention. We therefore restrict ourselves to its parts with special relevance to multi-national repositories. This is mainly the preamble, which keeps the door open for multi-national repositories. In its final version, the preamble states that RAW should, as far as it is compatible with the safety of the management of such material, be disposed of in the State in which it was generated. At the same time it recognises, that in certain circumstances safe and efficient management of RAW might be fostered through agreements among contracting parties to use facilities in one of them for the benefit of the other parties. – The IAEA itself was an early supporter of multinational approaches [8] and this support has recently been strengthened [9, 10, 11], based largely on security concerns.

The other important international legal instrument mentioned, the Euratom Proposal, is the subject of ongoing debate in the EU on the subject of EU-legislation on nuclear safety and waste disposal. Originally, the EC had proposed to enact binding legislation compelling all Member States to implement repositories for all types of RAW by fixed deadlines. Many stakeholders raised objections against the Euratom Proposal. They objected to the overly ambitious timescales, some to the encouragement given for regional solutions and a few – primarily the UK – objected to the identification of geological disposal as the preferred long-term solution. In the context of the current paper, the positions taken with respect to multinational repositories are of most interest: There was wide consensus on the subject of international repositories. The most controversial debate in the EC has been on issues of national sovereignty in nuclear legislation rather than on multi-national repositories. As a result of the dispute, the text was amended and demoted to a non-binding resolution. However efforts are

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3 Selected examples are:
- Code of Practice on the International Transboundary Movement of Radioactive Waste, IAEA/INFCIRC/386
- Council Directive 92/3 EURATOM on the supervision and control of shipments of radioactive waste between Member States and into and out of the Community
- IAEA Regulations for the Safe Transport of Radioactive materials, TS-R-1 (ST-1 Revised)
- Council Regulation Euratom No 1493/93 of 8 June 1993 on shipments of radioactive substances between Member States
- Convention on Civil Liability for Nuclear Damage of 21 May 1063 (Vienna convention) IAEA/INFCIRC/500
- Convention on third Party Liability in the Field of Nuclear Energy of 29th July 1960, amended (Paris convention), NEA
still underway at the EC to develop a Waste Directive – and the latest drafts continue to acknowledge the potential benefits of regional repositories. [12]

d) Conclusion
The sovereign right of the government of any country to refuse to import RAW is universally accepted, also in supranational structures such as the EU. At the same time, the existing legal framework would allow multi-national repositories to be implemented. Only a few states could – under their present legislation – not participate. The far majority of states and also the international community do not have any objections to multi-national repositories, or indeed support them.

3.3 Political and Public attitudes

Nuclear energy, and even more so, disposal of RAW, are politically highly charged items that engender much public controversy. Most people are content to use energy created by nuclear power, but in the debate on nuclear energy and the infrastructure that surrounds it, irrational fears play a strong role and people are often unable to discuss objectively, but rather reject any proposal on emotional grounds. Anti-nuclear pressure groups also have an enormous impact on any decision in the field of peaceful use of nuclear energy and waste management. These societal and political processes greatly influence legislation and even authorisations and present large obstacles on the way to implementing facilities for nuclear energy, including repositories for RAW. Political and sociological opinions have an enormous impact on the laws governing disposal of RAW and on their application in practice. Laws are, in a way, a mirror of public attitudes towards any important issue – although due to the usually long duration of the law making process they often lag behind the current situation.

Some examples demonstrate how policies and politics influence the enactment and enforcement of legislation.

- The UK Government has left open the question of whether their RAW may be exported and has agreed in the past to accept foreign wastes for disposal and recently to exchange wastes under an equivalence principle. However, the implementing organisation in the UK (not the government however) has expressed strong views against multinational repositories.

- Both Sweden and France, whose legislations do allow export (and for Sweden also import under certain exceptional conditions) and who have accepted foreign wastes in the past, now apply firm policies (but not laws) against multinational disposal concepts.

- German law allows import and export of RAW. However, the current German government, specifically the responsible minister, takes the firm position that no radioactive material should be imported to or exported from Germany [13].

- In Australia, one State (WA) has passed a law against import of foreign wastes but the national government – despite having a strong policy against import – did not consider that a specific Federal law was required to block this.

- Some countries (e.g. Czech Republic, Lithuania, Slovenia) have official governmental policy documents that encourage the waste agency to study the possibility of multinational disposal.

- The USA is not considering import or export of commercial SF, but it has repatriated research reactor fuels. Also, government officials are on record as
supporting the concept of small countries collaborating to implement multinational repositories.

- Russia took back SF from the Former Soviet Union, is taking back research reactor fuels and is the only country today which is officially interested in the possibility of hosting a multinational storage (and perhaps disposal) facility.

These examples demonstrate that laws and decrees by themselves do not give a complete picture of the reality in the field of RAW management. Politics and policies have to be taken into consideration too.

4 STEPS TOWARDS IMPLEMENTATION OF MULTI-NATIONAL REPOSITORIES

In spite of the existing – mainly political – barriers, over the years several initiatives and projects for international repositories have been launched. Some topical examples are mentioned here:

- **ARIUS**, Association for Regional and International Underground Storage. Arius was set up in Switzerland by waste management organisations from several countries as a non-commercial body to promote the concept of regional and international facilities for storage and disposal of all types of long-lived nuclear wastes. [14]

- **Initiative for EC-Directive**: Euratom Proposal for a council directive (EURATOM) on the management of spent fuel and radioactive waste (mentioned above). The proposal has launched a broad discussion on – among other topics – multinational repositories, but unfortunately yielded a non-binding resolution only. Nevertheless, it led to acknowledgement of wide interest in multinational repositories.

- **SAPIERR**, Support Action, Pilot Initiative for European Regional Repositories. SAPIER is a project within the 6th framework programme of the EU, which is designed to explore the feasibility of regional repositories in the EU. [15]

- **IAEA – Russia Initiative**. In July 2005, a special conference on the possibility of a Russian international repository was held, based on an agreement between the Director General of the IAEA and the responsible Russian minister. The Russian and American national academies of Science (RAS; NAS) have also been studying the concept and met in Moscow in 2003 and again in 2005 in Vienna and later on in Moscow.

- **IAEA MNA**, Expert Group on Multilateral Nuclear Approaches. This expert group was established by IAEA as part of its efforts to prevent the spread of nuclear weapons. It focuses on security issues of proliferation-sensitive parts of the nuclear fuel cycle. Among other approaches it is considering for the back end of the nuclear fuel cycle are multilateral approaches to the management and disposal of SF and RAW. [16]

5 VIEW FROM A SMALL COUNTRY, SLOVENIA

Slovenia is among the countries with the smallest nuclear programmes. It operates only one nuclear power plant (NPP), NPP Krško, which was jointly constructed by Slovenia and Croatia and is owned in equal shares by Slovenian and Croatian utilities. The NPP is a 676 MWe pressurised water reactor (PWR) and has been in commercial operation since 1983. Besides the NPP there is also a small, 250 kW TRIGA research reactor, which has been in op-
eration since the mid sixties, and the uranium mine Žirovski vrh, which was in operation in the eighties. It was closed in 1990 and is now being decommissioned.

The amounts of RAW produced in Slovenia are accordingly very small. The main producer of all waste categories is the NPP Krško. The contribution of other producers is relatively small. At the end of 2004 the amounts of low and intermediate level waste (LILW) reached about 2350 m$^3$ and the amount of SF rose to about 310 tonnes of heavy metal. The waste from the past mining and milling activities are about 2 million tons. It has been estimated that after the decommissioning of all nuclear facilities the total volume of operational and decommissioning LILW will be approximately 17000 m$^3$ and about 620 tons of heavy metal [17].

National nuclear legislation was updated in 2002. The new Act on Ionising Radiation Protection and Nuclear Safety, harmonized with the EU legislation and relevant international conventions, regulates ionising radiation protection, enables development, production and use of radiation sources and regulates implementation of nuclear safety measures in the production of nuclear energy. It also regulates RAW and SF management, import, export and transit of nuclear and radioactive materials.

Export, import and transfer of RAW and SF are allowed but are subject to licensing by the Slovenian Nuclear Safety Administration. The requirements to obtain a license comprise mainly the consent of the competent authorities in the destination country and countries of transit, the guarantee that the RAW or SF is handled according to the regulations.

In spite of the small nuclear programme and consequently higher costs of waste management and in spite of limited financial and human resources, Slovenia is fully committed to responsible, safe management of its wastes. The competencies and responsibilities are clearly allocated between the waste generator, regulator and waste disposer and all activities are thoroughly supervised. Of particular relevance here is the long-term strategy, and this must be specifically adapted to national requirements, capabilities and resources.

For a small programme it is particularly important that future nuclear liabilities are known well in advance and that provisions for covering these liabilities are in place already in the early stages of the facility's operation. Otherwise, there is a risk that the required financial resources will not be accrued during plant operation. Slovenia prepared the first Decommissioning Plan for the NPP and long-term SF strategy already in 1996 [18]. A special Fund was also established about 10 years ago to raise money to cover future decommissioning and waste disposal costs. Estimates of future liabilities are regularly updated and improved and the contributions to the Fund adjusted to new estimates to guarantee sufficient financial resources at the end of the scheduled lifetime of the NPP [19].

Due to the shared ownership of the NPP Krško, the disposal of waste is the responsibility of both countries and long-term waste management solutions need to be agreed between the two parties. Slovenia and Croatia decided to develop jointly the new revision of the Decommissioning and Waste Management Programme, covering future dismantling of the NPP as well as disposal of LILW and disposal of SF. Both parties should finance all liabilities in equal shares. The programme was finalized in 2004. However, the process of establishing a Croatian Fund for financing these activities is still pending.

Because only small quantities of RAW are produced, the disposal facilities can be dimensioned to accommodate both: the operational as well as the decommissioning waste. The repositories' construction is therefore scheduled according to the operational and decommissioning plans of NPP. Due to the limited LILW storage capacities in the NPP the disposal of LILW has clear priority in the programme. The repository is scheduled to start its operation a few years before the end of operation of the NPP and to be closed after the decommissioning is completed.
Because there is sufficient capacity for wet storage of all SF for the whole NPP lifetime, there is no time pressure on SF disposal plans. The disposal of SF and high level waste (HLW) is scheduled only after 2065, at the end of the decommissioning of the NPP and after 45 years of dry storage. Taking into account the limited financial and human resources available, a very rational and modest approach is applied in the SF disposal scenario. R&D activities are reduced to a minimum. No underground laboratory is planned. Long-term management solutions are more or less based on available technologies. The time spans in planning to accommodate the SF are also adjusted to take the advantage of different financial tools and mechanisms.

The size of the nuclear programme and small quantity of waste, the planned phasing out of nuclear energy and the limited financial and human resources are strong factors influencing development of a disposal programme. A rational approach and optimisation of all solutions are prerequisite for the feasibility of such a programme.

Slovenia developed its programme well in advance and, based on its cost estimates, it successfully raises the money for covering its future nuclear liabilities and it is hoped that Croatia will follow the same course. The programme is based on national disposal solutions for the LILW and for the SF. But since the disposal solution for SF or HLW is planned only after 2065, the programme keeps other possibilities open. Different initiatives for the disposal solution at multinational or regional level will be closely followed. Such a solution is expected to be more economical and therefore very interesting for small nuclear programmes. Slovenia is taking part in EU project SAPIERR, mentioned above, and intends to participate in the EU project CATT\(^4\), which will investigate the viability of implementing technology transfer between the member states. ARAO, the Slovenian agency of radwaste management, is also involved in ARIUS, the before mentioned association for promoting multinational approaches. However, the relatively distant need for geological disposal places limits on ARAO’s engagement in these initiatives at the present time.

6 CONCLUSIONS

The brief conclusions that that can be drawn from this paper are as follows:

- Multinational repositories can offer their users advantages in safety, security and economics when disposing of long-lived RAW.
- There are no ethical reasons to reject multinational approaches, provided that the arrangements made are between willing partners and the facilities implemented are safe and secure.
- The existing international agreements and treaties would make possible the implementation of multinational repositories.
- Support of international organisations for multinational initiatives has been growing in recent years.
- The legal position with respect to potential participation in multinational repository projects varies strongly between different countries.
- National political attitudes and policies vary even more strongly.
- Countries with small or recently established nuclear programmes, in particular, face a dilemma in that there is no urgent technical need for disposal (national or multi-national), but there is public and political pressure to show that solutions exist. Early implementation of full-scale national programmes may be ruled out on cost grounds. Directly supporting early realisation of multi-

\(^4\) CATT: Cooperation and technology transfer on long-term radioactive waste management for Member States with small nuclear programme

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national facilities also requires resources, although more modest. Neglecting or postponing multi-national initiatives could, however, lead to a situation where national repositories become de facto or de iure obligatory.

- Today, there are numerous countries in which the current policy and legislation would allow participation in a multinational disposal project in a foreign country. The political will, or the legal freedom, to act as a host country, however, are far less widely evident.

7 REFERENCES

[14] Additional information on ARiUS is provided on its web-site: www.arius-world.org.

[15] SAPIERR is further described on its web-site: www.sapierr.net See also [6].

[16] For further information see:
   http://www.iaea.org/NewsCenter.Focus/FuelCycle/index.shtml Publication of
   the group’s findings: IAEA, “Multilateral Approaches to the Nuclear Fuel Cy-
   cle”, report of Expert Group on Multilateral Nuclear Approaches, MNA, to the
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PRINCIPLES IN THE LEGAL FRAMEWORK ON FINANCIAL LIABILITY OF THE NUCLEAR INDUSTRY IN SWEDEN AND PROPOSALS ON IMPROVEMENT

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1 INTRODUCTION

This presentation describes the financing system regarding nuclear waste management in Sweden; fundamental principles in the system and some recent proposals on improvement of some weaknesses in the legislation regarding the range of the liability of the nuclear industry. The proposals are at present pondered over by the Government. It is however not yet clear if and to what extent the proposals will lead to legislative measures.

2 BACKGROUND ON THE NUCLEAR WASTE LIABILITY ON THE NUCLEAR WASTE MANAGEMENT

According to the Nuclear Activities Act the companies licensed to operate nuclear power plants have full responsibility for the safe management of all nuclear production waste and for waste from the dismantling of the facility. This responsibility includes building and operating facilities for the handling and final disposal of this waste. It also includes conducting the necessary research and development work on methods for final waste disposal. In addition, these companies must provide comprehensive information as a basis for selecting a site for a repository. Finally, the licensee is responsible for all expenses regarding final disposal.

During the seventies, the nuclear power utilities established their own internal funds for future waste management expenses. These funds were transferred to the government-run financing system that was established in 1981 when the Swedish Parliament passed the Act on the Financing of Future Expenses for Spent Nuclear Fuel etc (Financing Act). The Financing Act specifies the way in which the expenses for nuclear waste management, under the Act on Nuclear Activities, must be covered.

The licensed owner and operator of a nuclear reactor (“reactor owner”) is required to pay an annual fee to the State. The fee is charged per generated kilowatt-hour of electricity. The licensee includes this fee in the price of electricity. The exact amount varies from year to year. It is the responsibility of the reactor owners to prepare a calculation of the costs. The
cost calculation is reviewed by the Swedish Nuclear Power Inspectorate and is ultimately determined by the Government.

This fee is paid to the national Nuclear Waste Fund, which manages the funds. Previously, the funds were deposited in interest-bearing accounts at the Riksbank, the National bank of Sweden. Since 1996, the funds have been accumulated in the Nuclear Waste Fund and have been administered by the Board of the Nuclear Waste Fund. The Board is responsible for ensuring that the administration of the assets satisfies the requirements for adequate return and adequate liquidity in a long-term perspective. The Board’s task is to administer the funds through a suitable combination of deposits in accounts at the National Debt Office or in nominal and real interest rate government bonds. The Board does not have any supervisory duties other than that of administering the funds and the underlying securities, which must be provided by the reactor owners.

The basic assumption in determining the size of this fee is that each reactor is in operation for 25 years. This fee varies from year to year and is different for each utility. Its size is determined by an estimate of future expenses, by the Fund’s return and by the time remaining for payments to be made into the Fund.

2.1 Guarantees

In the mid nineties, a system of guarantees was introduced into the system to compensate for the eventuality of a nuclear power plant being closed before the end of the 25-year earning period. The reactor licensee must provide a guarantee in the form of adequate securities. If a reactor has to be closed before the end of the 25-year earning period, money will be transferred from Guarantee I to the Nuclear Waste Fund as if the reactor had remained in use for the entire 25-year earning period. For this reason, each year, in addition to the money already deposited in the Fund, Guarantee I for a nuclear power plant must be sufficient to meet all future expenses in the event that all reactors at the nuclear power plant are shut down during the current year. The size of Guarantee I for a nuclear power plant depends on the age of the reactors and decreases in the course of time. The longer the reactors have been in service, the lower the amount of the Guarantee.

The idea behind Guarantee II is that all nuclear power plants combined must ensure the capacity to pay for the managing of nuclear waste in the event that the Fund is not sufficient after all reactors have been shut down. Guarantee II must be used if the expenses for future nuclear waste management are higher than expected and must be met earlier than expected or if the actual amount in the Fund is lower than was estimated. The scope of Guarantee II can change periodically, depending on the risks perceived at various points in time.

2.2 The Nuclear Companies

Four companies are reactor owners, namely, Forsmark Kraftgrupp AB, OKG AB, Ringhals AB and Barsebäck Kraft AB. Other companies according to various arrangements wholly or partly own the reactor owners. Each reactor owner is responsible for its own dismantling costs and for its share of allocated common costs of disposal and related measures. There are therefore four funds, each of which has a guarantee attached to it worth a certain amount that can be drawn on if there are insufficient resources in that particular fund. The four funds are managed together.

The owners of the nuclear power plants have formed a jointly owned company, the Swedish Nuclear Fuel and Waste Management Company (SKB AB), to fulfil all obligations regarding nuclear waste management. This does not only include research and development work necessary for waste management but also the annual estimates for all nuclear power utilities that form the basis for the regulatory authorities’ review as well as the basis for calculating the fee.
2.3 Determining fees

As a basis for determining fees and the need for guarantees, three amounts are to be reported to the authority:
- basis for fees,
- basis for basic amount,
- supplementary amount.

The basis for fees is supposed to include all costs for managing and disposing of the spent nuclear fuel and radioactive waste that is calculated to have been produced up to and including the fee year, i.e. 2004, or during at least 25 years of operation of the reactors. The amount must also include costs for decommissioning and dismantling the reactors and for conducting the necessary research and development. The basis for fees also includes a supplementary amount for uncertainties up to a certain level.

The basis for basic amount is supposed to include the above costs, but is limited, with regard to spent fuel and radioactive waste, to the waste quantities estimated to exist at the end of the current year, i.e. at 31 December 2005. This amount provides a basis for determining the size of Guarantee I.

The supplementary amount comprises the difference between the basis for fees and an upper limit for the amount which the reactor owner must guarantee at the present time. According to the Financing Act, the supplementary amount shall cover “reasonable costs of additional measures due to unforeseen events”. This amount comprises the basis for estimating the size of Guarantee II.

3 THE PRESENT NUCLEAR WASTE MANAGEMENT SYSTEM

Until now, the Nuclear Waste Fund has covered the expenses for building and operating:
- The Central Interim Storage Facility for Spent Nuclear Fuel (CLAB) at Oskarshamn nuclear power plant
- The transport system for nuclear waste, i.e., the ship Sigyn, containers, special trucks, etc
- The Äspö Hard Rock Laboratory
- SKB AB’s research and development costs.

The Fund will eventually also cover expenses for:
- An encapsulation facility for spent nuclear fuel
- The repository for high-level waste, primarily spent nuclear fuel
- Dismantling nuclear power plants and final disposal of radioactive decommissioning waste
- Continuing research and development work.

The greater part of SKB AB’s operations, including the feasibility studies conducted in a number of municipalities to determine the feasibility of building a repository there, are financed through the Nuclear Waste Fund. The Fund must also cover expenses for review and information activities carried out in certain municipalities where SKB AB is conducting feasibility studies.

In addition, the Fund must also cover regulatory expenses for continuing control and supervision after the year 2010 or any other date after which nuclear power is no longer used in Sweden. These expenses are financed at present by a special fee levied on the nuclear power utilities but this will not be applicable when nuclear power plants are no longer in operation.
4 THE COMMITTEES PROPOSALS

And now we would like to say some words about proposals on improvement on the financing system provided by a Governmental Committee. The Committee was appointed by the Government 2003 in order to look at the requirements of the present legislation and if necessary give proposals on improvements. At the end of 2004 the Committee reported to the Government on its proposals.

The Committee’s starting point conclusion was the well-known fact that industrial and construction projects, as other, contain a risk that costs and income may take a different and more unfavourable course than in the reference scenarios presented. The Committee therefore concluded that the financing of the nuclear waste project should be planned on the assumption that costs are uncertain.

The idea is that, in the first place, the fees deposited in the funds will cover the costs. If there is insufficient money in the funds, the nuclear industry will still be liable, e.g. by the guarantees and by the general liability requirement in the Nuclear Activities Act. But the financial and the practical responsibility under the acts, however, are limited to the companies that own reactors. Yet these companies have extremely limited assets other than their nuclear reactors and can therefore not be expected to have the capacity to cover the costs when the reactors are shut down. The guarantees provided for use in the event that there is insufficient money in the funds, amounts to a relatively small sum in the context. At present no liability, above the limited amounts of guarantees, lies with the companies that owns the “reactor owners”.

The State’s ultimate responsibility has been expressed in the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, where the State has formally committed itself to ensuring that funds are available for waste management. Even in the absence of any such formal commitment, the State would have a financing responsibility since disposal in this case is a necessity that cannot be disregarded. If the industry does not pay, the State – or, in other words, the taxpayers – must.

In this way the State bears a financial risk as it may be forced to cover for a reactor owner whose fund and guarantees have been used. In such a situation, the State does not have the option of laying claim to other funds and guarantees. Payments by the State are required when the costs of the project exceed a company’s liability and when a company that is liable to pay lacks the capacity to complete its payments. Payments may also be required as a result of a dispute about the industry’s liability to pay.

This responsibility of last resort means that the State is a risk taker in the financing of the project. The basic premise of the Committee is that the financing system should be designed so as to minimise the risk that the State (and taxpayers) would need to step in and pay. The responsibility for payment must therefore rest as far as possible with the nuclear industry – more or less as is the case when a power company sets about building a new plant.

4.1 Extending the liability

Although the nuclear industry is supposed to have full liability for payment, in practice it has not. This is because the formal full liability for payment in the nuclear industry rests with the reactor companies and therefore not where the industry’s long-term ability to pay is to be found. Essentially, the present arrangements mean that:

- Companies that cannot be expected to have any long-term ability to pay, have unlimited liability, and
• Companies that can be expected to have an ability to pay have very limited liability

The Committee therefore proposes that ability to pay and liability are brought into line by a formal undertaking by owning companies of the kind of liability for payment that now rests solely with the reactor companies.

The Committee’s proposal means that the liability of the industry for costs will be formalised by extending the liability to pay fees until the time at which the final disposal sites are sealed and broadening this liability to include an owning company in each group, in addition to the reactor owner. The aim of this secondary liability payment is that it shall rest with the company in a group that has the best capacity to make the payments.

This means that the owning company in each group that is best suited to bear the liability for payment – which in principle is likely to be the leading company in the group – will also assume liability through a payment guarantee. This commitment will mean that a group will extend itself as far as it can, given its assets, as regards assuming liability for payments. Consequently, this will mean a considerable reduction in the State’s risk, compared to the present situation. A reduction of the State’s risk along these lines is in accordance with the principle that the nuclear industry must pay the costs. If a reactor owner proposes an owning company for secondary liability for payment whose ability to pay is not in parity with the potential ability to pay, the intended reduction of the State’s risk will not be attained. The Committee therefore proposes imposing a fee for the financial risk that the State then has to bear. The proposal will entail a phasing out of present systems involving guarantees for basic and additional amounts.

Other important elements of the proposal are a focus on the expected cost for each reactor owner and the introduction of better auditing routines, new assumptions for cost estimates, etc. Under the proposal, the new system for fees will be based on three-year fee periods, instead of the present one-year periods.

4.2 Focus on the expected cost for each reactor owner

One reason to focus on the expected cost for each reactor owner is that, in the view of the Committee, cost assessments and bases for fees currently lack transparency. Until now, attention has been directed towards the total future costs of the project despite the fact that the reactor owners do not have joint and equitable liabilities. Each reactor owner has independent liability for costs and each owner’s liability is tied to a separate fund. It can therefore happen that the State needs to pay for a reactor owner whose fund and guarantee have been used while also having to make refunds to another reactor owner whose funds have not been fully used.

4.3 Transparent process for withdrawals

The Committee considers it to be essential that the use of funds is followed up and audited so as to maintain confidence in the financing system. This being so, the Committee finds that auditing activities need time and financial expertise and requirements must be set for time limits, comparability, explanations for deviations, and so on, to make the follow-up process easier. The auditing authority should apply target statements and priorities in its work and should endeavour to ensure that the process for withdrawals from the funds is transparent.

4.4 New assumptions to be used in the cost estimates

The assumptions used in cost forecasts are now out of date, partly because the energy policy decision in 1997 means that the year 2010 is no longer indicated as the final year for Swedish nuclear power.
One consequence of this decision has been that the reference scenario on which the cost estimates build no longer appears realistic. The Inquiry notes that the assumptions currently used include the premise that the six reactors that pass the 25-year mark in 2005 will be shut down at the end of 2005 and that it is assumed that all reactors will be shut by 2010 at the latest.

The Committee therefore proposes that new assumptions be used in the cost estimates. The proposals relate to the active life of the reactors and associated assumptions, concerning, for example, the time period over which it must be assumed that a certain estimated cost (a fund accumulation requirement) will be covered. The proposal is that a total active life of 40 years should be assumed for each reactor, though assuming a residual active life of not less than six years. It is proposed that this assumption apply unless it can be assumed at the time an estimate is made that the reactor in question will be shut down a certain year.

4.5 A new law

The Committee proposes that the proposed change in the financing system, with extended liability for the industry in a new fee-setting process, should be regulated in a new law. It is also proposed that this new law also covers other nuclear waste than that deriving from the four commercial nuclear power plants.
ASPECTS JURIDIQUES DE L’APPLICATION DES GARANTIES NUCLÉAIRES AU STOCKAGE DES DÉCHETS RADIOACTIFS

Les problèmes de la gestion sûre des déchets radioactifs et de la levée des garanties

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RÉSUMÉ

Cet article examine si l’encadrement juridique des garanties nucléaires appliquées au stockage des déchets radioactifs, est satisfaisant, c’est à dire s’il assure l’objectif de sécurité des accords de garanties tout en respectant les exigences de sûreté, et s’il donne des solutions pratiques à la levée des garanties, qui vient naturellement à l’esprit pour les stockages géologiques.

1 INTRODUCTION

Parmi les problèmes à résoudre dans le domaine de la gestion des déchets radioactifs, qui suscitent l’opposition du public, il en est un qui ne le passionne pas, pas encore (?): c’est le problème de l’application des garanties nucléaires (safeguards) aux matières nucléaires contenues dans les déchets radioactifs dans les installations d’entreposage et de stockage (définitif) de déchets radioactifs (comprenant les combustibles usés non destinés à être retraités), avec la question principale: peut-on, et si oui à partir de quel moment, cesser d’appliquer les garanties prévues par les accords de l’A.I.E.A. (et d’Euratom dans le cadre de l’Union européenne)? Mais ce n’est pas la seule question, car il faut également étudier l’adéquation de l’application des garanties au stockage des déchets radioactifs, quand elles doivent être mises en œuvre.

Ce problème de l’application des garanties nucléaires au stockage des déchets radioactifs est international en droit, puisque, aujourd’hui, conformément aux obligations issues du T.N.P., les États non dotés d’armes nucléaires (E.N.D.A.N) confient à l’A.I.E.A. la vérification des matières nucléaires sur la base des accords de garanties, sachant que la comptabilité opérationnelle est faite, sous la supervision des inspecteurs de l’Agence (et ceux d’Euratom dans les États membres de l’Union européenne), par les États signataires des accords qui lient ces États avec l’Agence.

De nombreux travaux techniques ont été consacrés, et le sont encore, aux problèmes des garanties nucléaires appliquées au stockage des déchets radioactifs. La difficulté porte essentiellement sur le conflit sûreté – sécurité$^1$: les contrôles des accords de garantie ne

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1 La sûreté (safety) nucléaire concerne les mesures prises pour garantir une conception et une exploitation efficace et sûre des installations nucléaires et pour réduire les conséquences d’accidents. La sécurité (security) nucléaire peut être définie ici comme concernant les mesures liées à la protection des matières nucléaires et substances radioactives.
doivent pas se faire au détriment du maintien de la sûreté du conditionnement des déchets radioactifs et de l’installation proprement dite. Et l'idée qu'il faudrait maintenir un contrôle indéfini serait tout aussi perturbante pour les garanties nucléaires que pour la sûreté.

Un encadrement juridique de ces règles techniques est indispensable pour leur donner une réelle efficacité.

La question fondamentale est donc la suivante : l'encadrement juridique des garanties nucléaires, qui concernent avant tout les matières nucléaires qui ne sont pas considérées comme des déchets et les installations nucléaires de fabrication, d’utilisation ou de retraitement de ces matières, est-il satisfaisant pour l’entreposage et le stockage des déchets radioactifs ?

Quels sont les textes concernés ? Il faut distinguer les textes de l’A.I.E.A. et ceux d’Euratom, d’une part parce que leurs dispositions sont en partie différentes, d’autre part parce qu’Euratom, en tant qu’organisation internationale d’intégration, a le pouvoir d’élaborer des textes contraignants pour les États membres de l’Union européenne.

Enfin, ce problème devient d’actualité, tout au moins en ce qui concerne les combustibles usés. Tant qu’aucun site de stockage de déchets de haute activité ne se « pointait à l’horizon », il n’y avait pas urgence, sauf à réfléchir en amont, ce qu’a fait l’A.I.E.A. Avec le projet finlandais d’Olkiluoto de stockage géologique de combustibles usés, la nécessité d’un encadrement juridique devient urgente, car, comme on va le voir, les dispositions sont à prendre très en amont de la fermeture du site et même de sa construction.

2 LES TEXTES FONDAMENTAUX RÉGISSANT LES ACCORDS DE GARANTIES

2.1. L’évolution des textes

2.1.1. Avant le T.N.P.

S’il est vrai que c’est le T.N.P. qui a institutionnalisé les accords de garanties comme une obligation pour les E.N.D.A.N. (article III, § 1 et 4), des mesures équivalentes étaient prévues dans le Statut de l’A.I.E.A. de 1957 [Article III, A, 5)] pour les « activités » menées par l’Agence, mais aussi « à la demande des parties, à telle ou telle des activités de cet État dans le domaine de l’énergie nucléaire ». Ce paragraphe 5 dispose que « [l’]Agence a pour attribution d’instituer et d’appliquer des mesures visant à garantir que les produits fissiles spéciaux et autres produits, l’équipement, les installations et les renseignements ne sont pas utilisés de manière à servir à des fins militaires ».

Le 31 janvier 1961, le Conseil des gouverneurs approuvait la circulaire INFCIRC/26, publiée le 30 mars 1961, intitulée : « The Agency’s Safeguards ». Sans surprise, cette première version ne se préoccupait pas des installations de stockage (voir la définition de principal nuclear facility au § 15 de la circulaire). Le système fut révisé en 1965, par la circulaire INFCIRC/66 (« The Agency’s Safeguards System »), toujours dans le cadre volontaire, et dont le champ d’application matériel fut étendu par les révisions de 1966 et de 1968. Dans cette circulaire la définition de principal nuclear facility est élargie et comprend les « associated storage facilities ». Mais cet élargissement de la définition ne signifie pas que les installations de stockage de déchets radioactifs sont bien prises en compte dans les accords : en effet le terme associated storage facilities semble se limiter aux installations d’entreposage (storage) de matières nucléaires qui ne sont pas considérées comme des déchets, et liées (associated) à une installation principale (réacteur, usine de fabrication d’éléments combustibles, usine de retraitement) et semble exclure les installations de stockage définitif (disposal).
2. 1. 2. Après le T.N.P.

L’article III, § 1, du T.N.P. ne fait aucune restriction d’application de ces garanties quant aux installations concernées, puisqu’il dispose que « […] les garanties requises par le présent article porteront sur les matières brutes et les produits fissiles spéciaux, que ces matières ou produits soient produits, traités ou utilisés dans une installation nucléaire principale ou se trouvent en dehors d’une telle installation ». L’expression installation nucléaire principale est la même que celle définie, de façon limitative et évolution, dans les circulaires antérieures de l’A.I.E.A., l’absence de définition dans le T.N.P. pourrait conduire à lui donner une signification différente, mais la dernière partie de la disposition citée ci-dessus permet de s’affranchir de l’ambiguïté du terme installation nucléaire principale. Les installations de stockage de déchets radioactifs sont donc prises en compte par le T.N.P. Mais ceci ne résout pas entièrement le problème, car les modalités pratiques sont définies par les accords de garanties qui font référence à la circulaire INFCIRC en vigueur.

En juin 1972 est publiée la circulaire INFCIRC/153 qui fait référence à l’article III, § 1 du T.N.P. comme fondement des accords de garanties. Le titre de la circulaire est sans ambiguïté : « Structure et contenu des accords à conclure entre l’Agence et les États dans le cadre du traité de non prolifération des armes nucléaires », et le § 106 de cette circulaire précise que par installation on entend aussi « une installation de stockage séparée » 2. La définition de matière nucléaire (§ 112) fait toujours référence à l’article XX du Statut de l’Agence (avec quelques précisions complémentaires).

2. 2 Le modèle de base des accords de garanties : la circulaire INFCIRC/153

Malgré les doutes sur la définition d’installation, il n’y pas lieu d’exclure les installations de stockage de déchets radioactifs du champ d’application des accords de garanties.

Le § 8 de la circulaire précise que l’Agence doit disposer « de renseignements concernant les matières nucléaires soumises aux garanties en vertu de l’accord et les caractéristiques des installations qui ont une importance du point de vue du contrôle de ces matières », l’objectif des garanties étant rappelé au § 28 qui dispose que « l’objectif des garanties est de déceler rapidement le détournement de quantités significatives de matières nucléaires des activités nucléaires pacifiques vers la fabrication d’armes nucléaires ».

Mais comme précisé au début, ce qui nous intéresse également, et surtout pour les stockages géologiques, est de savoir dans quelles conditions il peut y avoir une levée des garanties, les contrôles étant une contrainte lourde et pouvant nuire à la sûreté de l’installation. Et sous cet angle, la circulaire, qui a une valeur contraignante implicite par la prise en compte de ses dispositions dans les accords de garanties, n’est pas décisive puisque le § 11 précise que les garanties sont levées « lorsque l’Agence a constaté que lesdites matières ont été consommées ou diluées de telle manière qu’elles ne sont plus utilisables pour aucune activité nucléaire pouvant faire l’objet de garanties ou sont devenues pratiquement irrécupérables ». Cette disposition était déjà présente au § 26, c) de la circulaire INFCIRC/66.

2 La définition d’installation du § 106 présente plusieurs ambiguïtés quant à l’application aux déchets radioactifs : l’alinéa a) fait référence aux installations de stockage (storage dans le texte anglais) séparé, ce qui, d’une part semble exclure les installations de stockage définitif et, d’autre part pourrait concerner le stockage de matières utilisables et non pas celles contenues dans des déchets (radioactifs) ; l’alinéa b) fait référence à « tout emplacement où des matières nucléaires sont habituellement utilisées » (souligné par nos soins), logiquement il ne concerne pas les installations de stockage de déchets radioactifs qui sont des produits qui, par définition, n’ont plus d’utilisation.
Il convient de noter que les mouvements transfrontières (de déchets radioactifs notamment) sont visés par la circulaire, puisqu’il est précisé au § 12 que « l’État notifie tout transfert de ces matières hors de son territoire » et que la levée de garanties pour l’État émetteur n’est prononcée que lorsque l’État destinataire a pris la responsabilité de ces matières.

Le système des garanties a évolué ensuite, avec les protocoles additionnels qui doivent être signés entre l’Agence et les États ayant signé des accords de garanties, dont le modèle a fait l’objet de la circulaire INFCIRC/540, approuvée par le Conseil des gouverneurs le 11 mai 1997, publiée en septembre 1997, corrigée par la version de décembre 1998 et dont le titre est « Modèle de protocole additionnel à l’accord (aux accords) entre un État (des États) et l’Agence internationale de l’énergie atomique relatif(s) à l’application des garanties ».

2. 3 Les conditions complémentaires du Protocole additionnel (INFCIRC/540)

Comme son nom l’indique le Protocole additionnel s’ajoute aux accords de garanties, l’article 1er du Protocole précisant bien que « [l]es dispositions de l’Accord de garanties sont applicables au présent Protocole », sauf incompatibilité.

En pratique donc, le Protocole ne change pas les dispositions des accords de garanties, avec notamment celles relatives à la levée des garanties (voir le § 11 de la circulaire INFCIRC/153), mais impose la fourniture de renseignements supplémentaires (voir l’article 2 du modèle de Protocole). Et ces renseignements concernent spécialement les déchets radioactifs, même lorsque les garanties sont levées [voir l’article 2, a, viii) du modèle de Protocole]. En effet cette obligation impose de fournir des renseignements « sur l’emplacement ou le traitement ultérieur de déchets de moyenne ou de haute activité contenant du plutonium, de l’uranium fortement enrichi ou de l’uranium 233 pour lesquels les garanties ont été levées en application du paragraphe 11 du document INFCIRC/153 ».

Cette obligation apparaît comme permanente. L’obligation de fournir des renseignements sur l’emplacement des déchets n’est pas précise et elle vide en partie de son sens la levée des garanties. La comptabilité matières n’est plus à fournir, mais l’existence des dépôts de ces matières reste à fournir indéfiniment, puisque aucune date d’arrêt de fourniture des renseignements n’est précisée dans le modèle de Protocole.

Le décor du droit positif étant planté, il faut maintenant se pencher sur la masse des travaux de l’A.I.E.A. menés pour permettre une mise en oeuvre pratique des dispositions des circulaires INFCIRC/153 et 540 appliquées au stockage des déchets radioactifs, et examiner la valeur juridique des documents résultant de ces travaux publiés par l’Agence, qui ressemblent beaucoup à des textes de soft law !

3 LES GUIDES D’APPLICATION DE L’A.I.E.A. : LEUR VALEUR JURIDIQUE

3. 1 Les travaux du premier groupe consultatif de 1988 du Département des garanties


En ce qui concerne le combustible usé le groupe a conclu que les garanties ne pouvaient être levées à aucun moment.

3 Notamment les définitions d’installation et de matière nucléaire sont identiques à celles de la circulaire 153.
4 Souigné par nos soins. A noter que cet alinéa viii) fait bien par ailleurs la distinction entre entreposage et stockage définitif, mais dans un but différent.
En ce qui concerne les « autres déchets radioactifs », le groupe reconnaissait que la plupart des déchets conditionnés pourraient être considérés comme pratiquement irrécupérables, mais recommandait de fixer des critères spécifiques pour la levée des garanties, permettant de définir de façon précise les notions de « consommés », « dilués » ou « pratiquement irrécupérables » (notions citées au § 11 de la circulaire INFCIRC/153). De toute façon, en supposant que cette « irrécupérabilité » soit reconnue dans le contexte de la technologie d’aujourd’hui, rien ne permet d’affirmer qu’elle sera encore réelle ultérieurement, en fonction de l’évolution des technologies. Un groupe d’experts a travaillé sur ces critères, et le Département des garanties de l’A.I.E.A. a publié une proposition de critères dans le document EPR-16 de 1990. Il semble qu’un consensus se soit dégagé sur la limitation des quantités, ce qui signifiait, non pas que la levée des garanties était impossible au-delà de ces quantités, mais que, dans ce dernier cas, cette levée devait être examinée au cas par cas en tenant compte de la matière nucléaire incorporée, de sa forme physique ou chimique, du type de conditionnement et du mode de stockage. Peu de travaux supplémentaires ont été conduits pour dégager des règles utilisables pour la levée des garanties des « autres déchets radioactifs ».

C’est dans le domaine du stockage des combustibles usés que se sont focalisés les travaux, d’une part parce que c’est dans ce domaine que le risque de détournement de matières nucléaires est le plus important (et le plus « facile »), d’autre part parce que c’est pour les combustibles usés que les projets sont les plus avancés et qu’il y avait donc urgence à dégager des dispositions pratiques. En plus des raisons évoquées ci-dessus pour expliquer la focalisation des travaux sur le stockage géologique du combustible usé, une raison majeure technique apparaît : une grande partie des méthodes de contrôle, que l’Agence maîtrise bien pour les installations de surface en général, sont inadaptées. Sans oublier complètement l’aspect levée des garanties, c’est surtout à l’aspect de respect des conditions des accords de garanties pour empêcher le détournement des matières nucléaires et à l’aspect compatibilité de ces mesures avec le respect de la sûreté que se sont consacrés les différents travaux.

3.2 Le programme de développement des garanties pour le stockage géologique du combustible usé (SAGOR)


En dehors de recommandations techniques détaillées sur le contenu des contrôles (contrôles sismiques, contrôles par satellites par exemple) à faire, ou sur les travaux de R & D à poursuivre, un certain nombre de principes ont été dégagés, qui figurent dans le document Policy Series no 15. Certains de ces principes figuraient déjà dans les dispositions des circulaires INFCIRC/153 et 540, mais sont ici plus orientés sur les spécificités du stockage de combustibles usés.

D’autre part, ce document distingue trois phases dans l’application du système : la phase préopératonnelle, de construction du site, à laquelle on peut associer le

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La limitation des quantités relève plus de l’exemption des garanties que de la levée des garanties.

Le concept de réversibilité, ou plutôt ici de récupérabilité (*retrievability* en anglais), qui pourrait devenir un principe de gestion des déchets radioactifs, n’a pratiquement pas d’influence sur la mise en œuvre des garanties nucléaires. L’adoption de ce concept nécessiterait simplement des contrôles plus sophistiqués. Il faut noter toutefois que la définition de *post-closure phase* du document Policy Series n° 15 (§ 2.5), phase importante dans l’organisation des garanties nucléaires, fait référence à la fermeture définitive de l’installation de stockage, en insistant sur le remplissage des galeries et en adoptant l’expression installation scellée. Cette définition n’exclut pas explicitement le concept de récupérabilité, mais semble ne pas l’envisager.

3.3 La valeur juridique de ces documents


Qu’en est-il sur le plan juridique ? Tout d’abord il convient de préciser que, sans être très explicite, la circulaire INFCIRC/153 aborde cette complémentarité garanties/sûreté, avec le § 4, c) qui dispose que « [l’]accord devrait prévoir que les garanties sont mises en œuvre de manière à être compatibles avec les pratiques de saine gestion requises pour assurer la conduite économique et sûre des activités nucléaires ». Ensuite une remarque : quelle que soit la valeur juridique des documents de l’A.I.E.A., à partir du moment où leurs dispositions sont prises en compte dans le droit interne d’un État, ces dispositions deviennent obligatoires dans l’État considéré. C’est un des aspects non négligeables du rôle de l’A.I.E.A. Mais cette solution est-elle satisfaisante sur le plan international ?

Cette absence de caractère international obligatoire est-elle gênante ? Comme il a été indiqué précédemment, l’adoption par le droit interne de dispositions issues des documents techniques, peut remédier à cette absence de caractère contraignant internationalement, mais avec le risque d’aménagements éventuels décidés par l’État considéré.

Certains des documents cités précédemment pourraient-ils être considérés comme contraignants ? Parmi les documents cités précédemment, seul le document Policy Series n° 15, pourrait se rapprocher d’un document à valeur juridique, mais à ce jour il semble qu’aucun État membre de l’Agence n’ait fait une démarche dans ce sens. Les autres documents tels que les rapports de groupes de travail ou les documents de la série TECDOC restent des documents sans valeur juridique (sauf bien sûr s’ils étaient incorporés comme annexes faisant partie intégrante d’un texte international contraignant).

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* Le terme « pratiquement irrécupérable » employé dans la circulaire INFCIRC/153 a une autre signification. La version anglaise emploie d’ailleurs un autre terme : *irrecoverable.*

* Cette mention à la complémentarité figurait déjà dans la circulaire INFCIRC/66. Le modèle de protocole additionnel y fait aussi mention dans le Préambule.

* Souligné par nos soins.
Il apparaît donc que malgré la somme des travaux menés par l’Agence, aucun de ces textes précisant les conditions d’applications des accords de garanties aux installations de stockage de déchets radioactifs n’a une valeur formellement contraignante.

4 LE CONTRÔLE DE SECURITÉ D’EURATOM

Il est intéressant maintenant d’examiner comment l’Union européenne a pris en compte le système des garanties nucléaires. Il convient tout d’abord de préciser que les missions des deux organisations sont différentes : selon l’expression d’un rapport de 1958, le contrôle de l’A.I.E.A. est un contrôle de finalité, alors que celui d’Euratom est un contrôle de conformité. La Communauté européenne de l’énergie atomique n’a pas eu le choix entre laisser ses États membres signer de façon indépendante des accords de garanties avec l’A.I.E.A. ou élaborer un droit dérivé spécifique. En effet le Traité Euratom a établi une « politique communautaire » du contrôle des matières nucléaires dans l’Union européenne, avec l’article 2, e), qui dispose que « [p]our l’accomplissement de sa mission, la Communauté doit dans les conditions prévues au Traité, garantir, par les contrôles appropriés, que les matières nucléaires ne sont pas détournées à d'autres fins que celles auxquelles elles sont destinées », et avec le chapitre VII consacré au Contrôle de sécurité. Le contrôle concerne toutes les matières nucléaires et toutes les installations (à l’exception de certaines parties d’installations utilisées à des fins de défense nationale, de la France et du Royaume Uni), le Traité Euratom ne faisant pas la distinction entre les E.D.A.N. et les E.N.D.A.N.

L’article 79 du Traité Euratom dispose que « [[I]a nature et la portée des obligations visées au premier alinéa du présent article sont définies dans un règlement établi par la Commission et approuvé par le Conseil ». Conformément à cette disposition, la Commission a adopté le 12 mars 1959 le Règlement n° 8 portant fixation de la nature et de la portée des obligations visées à l’article 79 du Traité.


L’obligation d’établir un règlement ne fixant pas le détail du contenu de ses dispositions, la Commission aurait pu se limiter à reprendre « mot pour mot » les dispositions des circulaires INFCIRC de base. Ce n’est pas la voie choisie par la Commission qui a fixé des dispositions parfois différentes de celles de l’A.I.E.A. La différence essentielle est que le règlement Euratom ne prévoit pas le concept de levée des garanties. D’autre part le problème du caractère contraignant des obligations ne se pose pas ici puisque c’est le règlement qui a été imposé et que suivant l’article 161 du Traité Euratom « [[I]e règlement a une portée

9 Cet alinéa concerne la tenue de la comptabilité matières.
11 Voir le treizième alinéa du Préambule

Proceedings of the International Conference Nuclear Inter Jura, Portorož, Slovenia, Oct. 9-14 2005
générale. Il est obligatoire dans tous ses éléments et il est directement applicable dans tout État membre ».

4.1 L’application des règlements aux installations de stockage de déchets radioactifs

Le règlement n° 8 ne faisait aucune mention des déchets radioactifs, sans qu’ils puissent être considérés comme exclus du contrôle.

Le règlement de 1976 aurait pu, malgré le deuxième alinéa de l’article premier, être considéré comme ne s’appliquant pas aux installations de stockage des déchets radioactifs. En effet, l’article premier renvoie à l’annexe I qui précise les renseignements à fournir pour les différents types d’installations. L’annexe I-E (Installations de stockage) ne semble pas concerner les déchets radioactifs. Certes il existe la catégorie G (Autres installations) qui pourrait concerner les installations de stockage, mais le § 7 de cette catégorie demande que soit donnée la description de l’utilisation des matières nucléaires, or, par définition, les déchets n’ont plus d’utilisation, donc la catégorie « autres installations » ne devrait pas concerner les installations de stockage des déchets radioactifs.

Ce n’est donc que le règlement de 2005 qui prend véritablement en compte les installations de stockage de déchets radioactifs et les déchets proprement dits, et de façon importante avec, à l’article 2, la définition des termes déchets, déchets conservés, déchets conditionnés, déchets rejetés dans l’environnement et du terme installation qui comprend explicitement les installations de stockage des déchets, avec, à l’article 3, la mention faisant l’objet de la note de bas de page n°13, avec les articles 30 (État initial des stocks de déchets et comptabilité relative à ceux-ci), 31 (Traitement des déchets) et 32 (Transferts de déchets conditionnés), avec enfin l’Annexe I-H relative aux installations de traitement des déchets ou de stockage des déchets.

La différence essentielle, en ce qui concerne les déchets radioactifs, entre les dispositions de ce dernier règlement et le système des garanties intégrées de l’A.I.E.A., porte sur des exigences supplémentaires du système Euratom par rapport aux demandes de renseignements des protocoles additionnels et sur le fait qu’Euratom n’adopte toujours pas le concept de levée des garanties.

4.2 Les liens entre l’A.I.E.A. et Euratom pour l’application des garanties

Les deux régimes sont indépendants, mais une coopération a été institutionnalisée dans les accords de garanties déjà évoqués, signés entre l’A.I.E.A., Euratom et, d’une part les États membres de l’Union européenne non dotés d’armes nucléaires, d’autre part respectivement le Royaume Uni et la France. L’article 4 de ces différents accords, intitulé « Coopération entre l’Agence, la Communauté et l’(les) État(s) considéré(s) », dispose que les différentes Parties coopéreront pour faciliter la mise en œuvre des garanties et éviter tout chevauchement. Cette coopération n’est pas limitée aux inspections, elle porte aussi sur la recherche et le

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12 Soulligné par nos soins.
13 Cette interprétation pourrait être contestée si on se projette dans le règlement de 2005 examiné ci-après, car l’article 3, 1, deuxième alinéa dispose qu’on entend notamment par « utilisation » de matières nucléaires le stockage des déchets. Mais l’absence de cette précision dans le règlement de 1976 pourrait militer a contrario en faveur de l’interprétation ci-dessus, dans le cadre de ce dernier règlement.
14 A l’inverse, la circulaire INFCIRC/153 n’a pas de disposition spécifique aux déchets radioactifs.
15 L’utilisation du terme irrécupérable dans cette définition n’a pas la même signification que « pratiquement irrécupérable » de la circulaire A.I.E.A. Il sert simplement à préciser la notion de déchet.
16 Bien que la version anglaise emploie le terme storage et non disposal, il peut être admis que ces dernières installations sont bien comprises et qu’il ne s’agit que d’un problème (regrettable) de traduction (la Commission avait déjà eu ce problème dans les premières versions de la proposition de directive déchets du paquet nucléaire).
développement, notamment concernant les contrôles à distance, particulièrement utiles pour les stockages géologiques.

Une autre coopération existe sous la forme de la participation de la Commission aux travaux de l’A.I.E.A. sur les conditions techniques d’application des accords de garantie faisant l’objet des documents décrits précédemment, mais par suite du manque de « maturité » de ces documents, aucun n’a été incorporé dans les documents à caractère obligatoire d’Euratom.

5 CONCLUSION

Au plan international, les modalités techniques des contrôles du système des garanties, appliqué au stockage des déchets radioactifs, ne font pas l’objet de documents formellement contraints, malgré la masse de travaux techniques conduits par l’A.I.E.A. Ils constituent néanmoins un corpus issu de la coopération internationale, d’une valeur indéniable, qui constitue plus qu’une forte incitation à son application par les États membres de l’Agence. Ainsi, lorsque l’urgence apparait, comme c’est le cas pour le projet finlandais d’Olkiluoto, les résultats de ces travaux de l’A.I.E.A.17, comme en bien d’autres domaines, sont intégrés dans la législation interne de l’État considéré et deviennent de véritables obligations juridiques.

Cette situation doit être considérée comme un début dans la bonne voie, sachant que la généralisation de cette méthode aurait plusieurs inconvénients : elle risque de ne pas conduire à une complète harmonisation, elle ne crée pas la solidarité internationale issue des traités internationaux, et elle ne facilite pas la mise en cause, devant une juridiction internationale, des États ne respectant pas ces obligations techniques, manquements qui pourraient nuire à l’objectif du système. En ce qui concerne les deux problèmes principaux faisant l’objet de la présente communication, la levée des garanties ne fait l’objet d’aucun texte formellement contraignant, mais son impossibilité est admise aujourd’hui pour le stockage des combustibles usés18, par contre la compatibilité sûreté – garanties fait l’objet d’une obligation, vague certes, dans les accords de garanties bilatéraux, qui reprennent le § 4, c) de la circulaire INFCIRC/153.

Au niveau de l’Union européenne, le dernier règlement traite spécifiquement des déchets radioactifs, mais ne contient aucune disposition pratique de la mise en œuvre des contrôles de sécurité.


REFERENCES


17 Travaux qui ont encore besoin d’être complétés.
18 La levée des garanties pour les autres déchets radioactifs, qui semble plus possible, n’a pas fait l’objet de travaux récents. Aucune conclusion claire n’existe.


Safeguards for the Final Disposal of Spent Fuel in Geological Repositories (SAGOR), IAEA, STR-312, 1998


NEW DECOMMISSIONING SYSTEM OF NUCLEAR POWER PLANTS
IN JAPAN

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1 INTRODUCTION

In Japan, 30 years or more have already passed since the first commercial nuclear power plant started operating, and it is expected that the decommissioning of nuclear power plants will become an actual problem in the near future. As of May 2005, there are 53 nuclear reactors under operation in total and the total electric output is about 47,000,000kW.

Up to now, decommissioning results have accumulated at some test research reactors, and at present, decommissioning is taking place in the Tokai power plant of the Japan Atomic Power Company Ltd., which is the first nuclear power plant for commerce in Japan.

When the Nuclear Regulations Law (The official name is the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors.) was established in 1957, ordering that decommissioning be carried out, it was impossible, naturally, to set proper safety regulations because of Japan’s lack of experience in decommissioning at that time.

The Nuclear Regulations Law is a law which has regulated a series of processes of nuclear use comprehensively from the construction and operation of nuclear facilities to the end of demolition. While the present safety regulation system is focused on the regulations necessary for construction and operation, the legislation for the nuclear reactor facilities is not necessarily considered sufficient for dismantlement and decommissioning post-termination.

Moreover, the necessity for legal revision was not called for immediately since Japan was not experienced in decommissioning in and outside the country at that time. Consequently, some jurists and nuclear operators now point out various problems with this law. Against this background, Japan, which adopts a policy that the site after the decommissioning of a commercial power reactor will serve as the site for a new nuclear power plant again, decided to revise a part of the Nuclear Regulations Law in order to prepare for a future of decommissioning.

The purpose of the revision was to establish the correct procedures for decommissioning, to clarify criteria for decommissioning, and to improve the practical regulation of decommissioning. In addition, the Electricity Utilities Industry Law has also regulated the decommissioning, however I will not take up the matter in this paper.

In this paper, I will point out the problems of existing legislation and outline not only the new decommissioning system of nuclear power plants, which was promulgated in May 2005 and is scheduled to be enforced at the end of this year, but I will also outline the system for the disposal of demolition waste and the decommissioning cost allowance system.
2 CURRENT STATUS OF DECOMMISSIONING IN JAPAN

2.1 Primary Policies and Standard Process

Japan declares its primary policies regarding the decommissioning of nuclear power plants in the Long-Term Program for Development and Utilization of Nuclear Energy which is set by the Atomic Energy Commission. These primary policies regarding the decommissioning of nuclear power plants are as follows:

a) The licensee of nuclear power plants shall be responsible for decommissioning.

b) Decommissioning shall proceed with sufficient regards to assurance of safety and in cooperation with the communities around the nuclear power plants.

c) Nuclear reactors shall be removed at the earliest stage after the termination of operation.

d) The sites after the decommissioning of a commercial power reactor will serve as sites for new nuclear power plants, in the future.

That is, in our narrow country, decommissioning and the construction of a new nuclear power plant are considered to be a set because of the expected difficulty in procuring a large-scale and adequate site.

The standard process of decommissioning which Japan adopts is a safe storedismantling and demolition system. This system can be divided into three main processes. The first step is system decontamination. This is removing the radioactive materials which remain in pipes and containers by using chemicals. The second step is safe store. This is a waiting period for reducing the quantity of radioactive materials by gradually decreasing radioactive materials in order to make dismantling and demolition work easier to perform later on. Last, there is dismantling and demolition.

The safe store period is expected to take five to ten years. Presently, the standard time for the whole process of decommissioning is considered to be about 30 years.

2.2 Outline of Current Legislation and its Problems

There is no law which restricts the period of operation years of a nuclear power plant in Japan. The government regulatory agency confirms the equipment soundness of a nuclear power plant about once per year, and then, operation for one more year is accepted.

Each nuclear licensee determines and carries out decommissioning for its nuclear reactor. Then, many factors, such as expected purpose, decommissioning cost, supply and demand prospect at the time of seceding from a battle line, are judged integrally by each nuclear licensee.

In Japan, there are now 20 nuclear reactors whose operation years exceed 25 years. I do not expect that decommissioning of nuclear power plants is imminent in the immediate future. Personally I think that within the next 20 years, decommissioning of several nuclear reactors will start.

The main feature of Japan’s current decommissioning system is that it requires a notification system, where the nuclear licensee must notify the government of decommissioning plans through procedures such as “notification of dismantling plan” and “notification of termination operation”. For these procedures, the nuclear licensee submits notification of decommissioning plans to the government, and the government responds with orders.

Incidentally, in the existing Nuclear Regulations Law, the range of decommissioning is not defined clearly. Therefore, the same safety regulations for the operation phase of a nuclear power plant are continuously applied during the decommissioning period. I will point out below, the problems of existing legislation, such as various procedures and safety regulations regarding decommissioning.
2.2.1 Notification of Dismantling Plan

Under the existing legislation, “those who are going to dismantle a nuclear power reactor have to submit notification of dismantling plan to government, at latest 30 days before starting dismantle.” However, this dismantling notification does not separate the operation phase from the decommissioning phase, and the same safety regulations during operation are applied through the end of the decommissioning phase. Under this framework, the dismantling of nuclear reactors will be commenced.

The problems with existing legislation regarding the notification of dismantling plan are that the criteria for dismantling techniques are undecided, and that the way the current law establishes the government’s role in the notification process differs from the way the government is actually involved in the notification process. However, of these two problems, the former cannot be fixed since improving the unified criteria of dismantling techniques is difficult because Japan has not had very much experience in decommissioning until now and because the type and scale of nuclear reactors varies in each case.

For this reason, the technical examination of decommissioning for each reactor is subject to the corresponding interpretation and application by the government. Regarding the latter problem, under Japan’s Administrative Procedure Act, the government can only legally check formal notification requirements of a notification; however in actuality, the government is involved in substantially examining the notification before it is submitted. Thus, the government’s actual role in the decommissioning process differs from the way the current law defines the government’s role in the process.

2.2.2 Notification of Termination Operation

Under the existing legislation, “when a nuclear licensee discontinues operation of reactors, he shall notify the discontinuance to government within 30 days after the day of termination, moreover, he must take measures to transfer nuclear fuel materials to eliminate contamination with nuclear fuel materials or to dispose of nuclear fuel materials or the materials contaminated with nuclear fuel materials within 30 days after the day of termination, and must file to government.” This means that the license of nuclear operation is invalid and all regulations regarding a nuclear reactor are no longer applicable.

Among the problems regarding notification of termination operation, the first is, deciding when is the point of operation’s termination? That is, is the notification of termination operation submitted after the reactor has stopped permanently and nuclear fuel is carried out, or is it submitted after all of the series of dismantling and demolition work is completed? If the notification of termination operation is interpreted as the former definition, it is thought that it is physically impossible to completely transfer nuclear fuel materials to eliminate contamination with nuclear fuel materials or to dispose of nuclear fuel materials or the materials contaminated with nuclear fuel materials within 30 days after the day of termination, and file to the government.

Moreover, if it is interpreted as the former definition, the license of nuclear operation is invalid at the time of filing, and thus the government cannot apply regulation to subsequent nuclear reactor dismantling and demolition work at all.

Another problem concerns the regulation of the completion of all decommissioning procedures. As previously mentioned, under the existing legislation, the license of nuclear operation is invalid when a nuclear licensee notifies of the termination of operation and files the completion of transferring nuclear fuel materials to eliminate contamination with nuclear fuel materials or to dispose of nuclear fuel materials or the materials contaminated with nuclear fuel materials. However, the procedure by which the government confirms completion of decommissioning procedures is not defined.
2.2.3 Safety Regulations during Decommissioning

Under the existing regulations, the license of nuclear operation is effective during the decommissioning period, and the same safety regulations (such as regular facility inspections, safety inspections, etc.) as under operation are also applied to the nuclear reactor during the decommissioning period.

However, during the decommissioning period, this is not necessarily practical because the risks become relatively low compared with the danger during operation since nuclear fuel from the reactor has already been removed.

3 NEW DECOMMISSIONING SYSTEM

In order to solve some of the problems described above, the May 2005 revision of the Nuclear Regulations Law and the order under currently review by the government regulatory agency that enforces the Law will be put into practice, and practical regulations suitable for the decommissioning stage will be carried out.

The point of the new decommissioning system is to change it from the current notification system of decommissioning procedures to an approval system, to adopt step-by-step safety regulations for the decommissioning phase, and to establish positive involvement of the government in the decommissioning activities which a nuclear licensee performs.

3.1 Adoption of Approval System by Government

The current notification system of the dismantling plan and termination operation will be abolished in 2005, and the foundation of an approval system by government will become the core of the new decommissioning system.

The revised Nuclear Regulations Law specifies: “When it is going to decommission a nuclear reactor, a nuclear licensee must in advance define a decommissioning plan, and must receive approval by government.” That is, it is a change from the notification system to an approval system. The nuclear licensee must take dismantling and demolition measures to transfer nuclear fuel materials to eliminate contamination with nuclear fuel materials or to dispose of nuclear fuel materials or the materials contaminated with nuclear fuel materials, in keeping with this plan.

Under the current decommissioning procedure, the government interprets the operation phase as continuous and includes in its interpretation of operation the completion of decommissioning procedures such as dismantling and demolition work. Therefore, according to existing legislation, a nuclear licensee submits “notification of termination operation” when the demolition of a nuclear reactor has been completed, which is the end of the decommissioning stage.

However, the new decommissioning system legally clarifies that approval of a nuclear licensee’s decommissioning plan serves as an opportunity to separate the operation phase from the decommissioning period, establishes the boundary between the operation phase and the decommissioning period, and focuses on the decommissioning period.

The new approval system was created to more accurately reflect the current practice and establish the current practice as Law. Under the new approval system, the government may substantially examine a decommissioning plan in order to approve it, whereas under the current notification system, the government may only review formal requirements of a notification plan without thorough examination of it. In addition, the criteria for demolition techniques are being examined and improved gradually until this revised law is enforced.

Until now, if the necessity for a change in a licensee’s dismantling plan arisen, the nuclear licensee must re-submit a notice of the change in plan to the government. However,
after the revision of the Nuclear Regulations Law, if there is a need to change a decommissioning plan, except for an insignificant alteration, the nuclear licensee must receive the government approval.

3.2 Clarification of Involvement by Government

Until now, only the filing by a nuclear licensee was specified by law, and the government was not actively involved in overseeing the completion of decommissioning and deregulation.

However, the new decommissioning system clarifies the procedure by which the government confirms that a nuclear licensee completed decommissioning and also clarifies the government’s role in confirming completion of decommissioning.

3.3 Step-by-step Safety Regulations According to Decommissioning Progress

Because under the new decommissioning system, the license of nuclear operation is valid until the government confirms the end of decommissioning, and various kinds of safety regulations are required in principle during decommissioning. I think that this is especially satisfactory from the side of safety.

However, during the decommissioning period, this is not necessarily practical because the risks, such as a criticality, radiation exposure, or a leak to the public of radioactive materials, becomes relatively low compared with the danger during operation since nuclear fuel from the reactor has already been removed. Consequently, under the revised Nuclear Regulations Law, safety regulations for decommissioning are contracted out gradually, and more practical regulations are applied. This change occurred because the functions called for from a nuclear reactor under operation such as stop, cool and contain, are reduced as decommissioning progresses.

And, during the decommissioning stage, management of the demolition process and disposal of radioactive waste become the main activities. Although many of these step-by-step regulations for decommissioning are not specified by the revised Nuclear Regulations Law, the government regulatory agency that oversees the decommissioning process is planning on establishing concrete regulations steps from now on.

Under the revised law, but also under review, the gradual reduction measures of the safety regulations for decommissioning which the government is considering are as follows:

a) After a decommissioning plan’s approval, regulations such as the regular inspection of the facility carried out about once a year, and the 24-hour surveillance of the organization by operation members are contracted out in principle.

b) After a decommissioning plan’s approval and the removal of spent fuel, the assignment of a licensed engineer to the reactor is contracted out. (However, a new safety administrator for the decommissioning period is assigned.)

c) After a decommissioning plan’s approval, the frequency of safety inspections, which are carried out four times per year, and daily inspection checks of the institution are decreased.

3.4 Remaining Problems

The May 2005 revision of the Nuclear Regulations Law solved almost problems by introducing new practical decommissioning system. However, the remaining problems which I consider are two points.

The first problem is that a local resident cannot participate in the decommissioning procedure which a nuclear licensee performs. The second problem is whether to apply the Environmental Assessment Act to the decommissioning procedure.
4 DISPOSAL OF DEMOLITION WASTE

A large quantity of demolition waste is generated in connection with the decommissioning of a nuclear power plant. For example, if one large-sized nuclear power plant (boiling water reactor 1,100,000kW) is dismantled and demolished, demolition waste, such as about 540,000t of concrete and metal, will arise, and this waste can be classified into three kinds.

The first is low-level radioactive waste which makes up about 2% of the total demolition waste. The second is waste that is considered unnecessary to be treated as radioactive material which makes up about 5%. The third is waste that is clearly not radioactive material which makes up about 93%. Because at present no criteria exist for a meaningful distinction between radioactive waste materials and waste materials, even materials that do not need to be treated as radioactive material are handled as radioactive waste materials. Many believe that it is important to use demolition waste that is not radioactive waste effectively by recycling it. Therefore, in conjunction with the new decommissioning system, the clearance system which distinguishes whether material is radioactive waste or not will be introduced.

The clearance system is a system by which a nuclear licensee measures the level of radiation in waste considered unnecessary for treatment as radioactive material (clearance subject) and makes it possible to be able to recycle it as resources considered to be waste below clearance level.

Clearance level is 0.01 milli-sieverts a year (ten micro-sieverts) (1/100 or less of the amount of annual exposure received from the natural world). The waste exceeding clearance level is disposed of as radioactive waste. The effectiveness of proper disposal processing will
be overseen in two steps of involvement by the government regulatory agency. That is, a nuclear licensee shall receive government approval of the measurement and the judgment method it uses to determine if a waste reaches clearance level, and the government confirms the measurement and judgment result.

Some people are convinced that all waste which comes out of nuclear facilities is radioactive waste material. I think that the government and nuclear licensees have to try hard for people and communities to gain a deeper understanding of the clearance system. Moreover, the nuclear licensee has to take the lead in the recycling and reusing of waste and has to make an effort to reduce the amount of disposal.

In addition, the waste below clearance level, is released from regulations of the Nuclear Regulations Law, and is regulated, instead, by a waste and recycling-related law as usual industrial waste or valuable resources.

5 DECOMMISSIONING COST ALLOWANCE SYSTEM

A large cost is needed for decommissioning. The cost accompanying decommissioning can be divided roughly into two parts. The first part is the demolition cost of the facilities and the equipment, and the second part is the processing cost of the disposal of demolition radioactive waste. Regarding cost appropriation, the cost of the system during a power generation stage is adopted rather than the cost of the system up to the demolition stage in order to be fair between generations by not leaving the cost burden on future generations, and to support cost reservation. In addition, having to pay the cost of demolition all at once would be extremely detrimental to the nuclear licensee’s financial condition.

Specifically, each nuclear licensee saves funds in advance every year according to the power generation performance of a nuclear power plant within the limit of 90% of the estimated demolition cost. The nuclear licensees have been saving for the demolition cost since 1988 and for the processing cost since 2000, respectively. Incidentally, these funds that the nuclear licensees have retained enter into the cost price of the electricity bill, and as of 2002, the retained earnings total about one trillion yen in savings. When starting decommissioning, a nuclear licensee takes out the reserve fund, and appropriates for decommissioning expenses.

6 CONCLUSION

The deregulation of Japan’s electric power industry began in 1995. The deregulation of Japan’s electric power industry took a gradual approach like Europe’s approach. The first step is the deregulation of power generation, and the next is the deregulation of retail supply. As a result, at present, the deregulated market is expanded to all consumers 50kW or more. Regarding the deregulation containing home use of less than 50kW, examination is going to start in 2007.

I think that nuclear licensees, who will carry big uncertainties on their backs in connection with the deregulation of the electric power industry, should welcome the new, improved, and more practical decommissioning system, including clearance system, in order to prepare for a future of decommissioning. Before, nuclear licensees did not clearly know how to manage the decommissioning of a nuclear power plant because laws regarding decommissioning were unclear. However, under the new decommissioning system, the management of decommissioning has become easier and changes to the law such as the gradual reduction of safety measures required during decommissioning, the clarification of
procedures, the criteria of techniques and the government’s involvement in decommissioning of nuclear power plants, are steps in the right direction.

At present, nuclear power generation has become the most important power supply which bears about 30% of the total electric power production in Japan. Nuclear power is positioned as a basic power supply supporting the Japanese energy policy. Japan’s energy master plan specifies: “under a major premise of the safety assurance, nuclear power generation including a nuclear fuel cycle is promoted as a basic power supply”. Moreover, from a global warming countermeasures viewpoint, it is supposed that the nuclear power generation which occupies a very important position is promoted steadily.

Because of Japan’s policy that the former site of a nuclear power plant must be reused as a new nuclear power plant site, the new decommissioning system, practical safety regulations which call for the step-by-step reduction of safety regulations during decommissioning, and the clearance system will become very useful now and in the future. Naturally, assurance of safety is a major premise.

REFERENCES


NUCLEAR DECOMMISSIONING AND ITS FUNDING IN GERMANY

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ABSTRACT

Being an integral part of the existence of all nuclear facilities, the decommissioning of those facilities is an important task to the owners as well as to the regulators and authorities. This applies not only to large nuclear facilities such as power plants and fuel cycle installations but is also referring to the multitude of small nuclear installations in the fields of medicine, industry and research. The presentation provides an overview of the statutory and legal framework, the regulatory body and the licensing procedure for the safe decommissioning and dismantling of nuclear facilities in Germany. Of particular interest is to ensure that adequate financial means for decommissioning will be available when they are needed to avoid legacy sites or stranded liabilities being financed by the taxpayer.

1 INTRODUCTION

Mr. Chairman, ladies and gentlemen, thank you very much for giving me the opportunity to present to you today the cornerstones of decommissioning and its funding in Germany. Decommissioning in these contents means not only the final shut-down of a nuclear installation but also its dismantling as well as the management of the nuclear waste which had its origin in this installation. I have to point out, that my lecture shows my personnel views and is not an official statement of the German Federal Government – neither the old one nor the new one.

After some general remarks about the situation in Germany I will give you a brief overview of the legislative framework of decommissioning. The main point of my statement will be the financing of decommissioning and the conclusions which have to be drawn.

In Germany we have the situation that already 49 nuclear facilities – small and large ones - have been finally shut down and some others will follow. Only a few months ago, the nuclear power plant “Obrigheim” has been phased out. In the future, a growing number of nuclear power plants as well as smaller nuclear installations especially in the research field will be decommissioned. The reasons are technical wear-out, the fulfilment of development-tasks and – of course - the amendment of the Atomic Energy Act which entered into force in April 2002. By amending the AtG, the German legislator decided to end the use of nuclear energy for the commercial production of electricity and to phase-out.
In all cases of decommissioning, no matter what type of nuclear facility is concerned, it needs to be ensured that adequate financial means for carrying out the decommissioning will be available when they are needed. The sums which are needed are not neglectable. For example the decommissioning of one nuclear power plant costs about 500,000 – 1 Billion Euro. The costs for decommissioning of all German nuclear facilities are estimated with at least about 25 Billion Euro.

According to the polluter-pays-principle the operator has to care for both, the decommissioning of his facility on one hand and its financing on the other hand.

2 LEGISLATIVE FRAMEWORK OF DECOMMISSIONING

2.1 Overview

Let me first of all give you a brief overview of the German legislative framework of decommissioning (Figure 1):

![Diagram of German legislative framework of decommissioning](image)

**Figure 1: German legislative framework of decommissioning - overview**

The legal basis for all regulatory activities in this field is the Atomic Energy Act (AtG). It is supplemented by several ordinances that have been issued on its basis. Concerning decommissioning and dismantling, the most important statute is section 7 para 3 AtG. According to this statute the decommissioning as well as the safe enclosure or the dismantling shall require a specific licence which will be granted if the prerequisites are met such as the necessary precaution.

Important ordinances in the field of decommissioning are the Ordinance on Radiation Protection and the Ordinance on the Nuclear Licensing Procedure. Among other things, the Ordinance on Radiation Protection provides the procedures and the quantitative requirements for the radiological survey, the release of decommissioned sites from nuclear regulatory controls and clearance levels. The Ordinance on the Nuclear Licensing Procedure contains...
provisions for the nuclear licensing procedure including the performance of an environmental impact assessment and the involvement of the public in the licensing procedure.

The AtG provides the legal basis for two basic strategies of decommissioning: immediate dismantling after shut-down on the one hand and safe enclosure prior to deferred dismantling on the other hand. The operator may choose between these options. Legally both strategies are possible.

2.2 Details

Germany is a Federal Republic. Accordingly, the German constitution (Grundgesetz – GG) stipulates that basically federal statutes shall be executed by the federal states (Länder) as matters of their own concern. However, due to the exposure of the use of nuclear energy, it is of special importance that the respective federal statutes are executed in a uniform manner across the Federation. Therefore, the competences with respect to nuclear facilities are divided: According to Art. 87 c GG in conjunction with Sec. 24, para. 1, Sentence 1 AtG, the Länder have to execute the AtG and its associated ordinances by order of the Federation. This includes, of course, the licensing according to Sec. 7 para. 3 AtG. The licensing procedure is carried out by the Land in which the respective nuclear facility is located. The Länder also have to supervise the nuclear facilities. The Länder, in turn, are being supervised by the Federation with respect to the lawfulness and appropriateness of the measures taken and are subject to directives issued by the Federation (Art. 85 para. 3, 4 GG). Besides, the Federation has a remarkable influence on the regulation of the licensing procedure.

The authorities responsible for nuclear licensing and supervision on the Länder level are the supreme Länder authorities as designated by the Länder governments. The federal supervision of the Länder authorities is performed by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

2.2.1 The Federation’s influence on the licensing procedure and its supervisory instruments

With respect to the instruments of the Federation to regulate the nuclear licensing procedure and supervise the Länder authorities, the German Constitution provides the following:

Both the Federal Legislator and the Federal Government can influence the administrative procedure carried out by the Länder by enacting federal laws and general administrative rules. Apart from this, according to Art. 85 GG, as a regular means to control the execution of the AtG, the BMU has the power to give (single or general) instructions to the Länder authorities. The BMU also disposes of a right for information. Furthermore, the Federal Government, in accordance with Art. 85 para. 4 Sentence 2 GG, is entitled to ask the Länder authorities for report and submittal of files. It is also entitled to send representatives to all the authorities that are involved in the execution of the federal law on the level of the Länder. However, recourse to these rather extensive regulatory means requires a resolution of the government.

In fulfilling its regulatory tasks, the BMU is supported by the Federal Office for Radiation Protection (BfS), a subordinate authority of the BMU that is concerned with a broad range of tasks in the fields of nuclear safety and radiation protection. The BMU may also consult experts and expert organisations as, for instance, the Technical Inspection Agencies (TÜV) as regional and the Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) as central technical expert organisations in the field of nuclear safety. Apart from this, the BMU receives further advisory support concerning questions of fundamental importance from
the Reactor Safety Commission (RSK) and the Commission on Radiological Protection (SSK). Each commission includes about 15 experts from different professional fields. The TÜVs and the GRS as well as the RSK and the SSK are independent.

It also has to be stressed that the independence of the regulatory authorities as well on the level of the Federation as on the level of the Länder is ensured by separating them legally and administratively from those institutions involved in the utilisation or promotion of nuclear energy.

2.2.2 Licensing procedure

Let me now turn to the licensing procedure as such: The procedure for granting a license for decommissioning and dismantling referred to in Sec. 7 AtG is governed by the Nuclear Licensing Procedures Ordinance (AtVfV).

2.2.2.1 Licensing procedure according to AtVfV

As mentioned before, the licensing procedure is carried out by the responsible authority of the Land in which the respective nuclear facility is located. In the case of larger facilities as, for example nuclear power plants, the licensing procedure is generally divided into several steps, with each step leading to a separate license. With regard to the complexity and the duration of large decommissioning projects (10 years and longer), the division of the licensing procedure into discrete steps is advantageous for several reasons:

- It allows the assessment of a step while the previously licensed step is executed
- the amount of information needed for the assessment of each step is limited to a reasonable size and
- new scientific findings or technical measures may be integrated into the whole process of decommissioning and dismantling more easily.

On applying for a license, the applicant has to submit documents and information as stipulated in the procedural regulations of the AtVfV and listed in the Decommissioning Guideline published by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in 1996. Among other things – e.g. construction plans or information concerning the anticipated environmental impacts – these documents must include the information necessary for the assessment on whether the state of the art in science and technology is applied. Within the application for the first license, a description of the overall planned procedure of decommissioning and dismantling has to be submitted, including the measures to be taken and the techniques to be used (Sec. 19 b, para. 1 AtVfV). Furthermore, the applicant has to explain how the necessary precautions have been taken to prevent detrimental effects resulting from the decommissioning and dismantling (Sec. 3, para. 1, No. 1 c AtVfV).

According to the AtVfV the licensing authority has to make sure that other authorities that are affected in their competence as well as the public are properly involved in the licensing procedure. The stipulations of the AtVfV also require an environmental impact assessment for the decommissioning and dismantling of nuclear power facilities. This environmental impact assessment is lead-managed by the licensing authority.

Once the license has been issued, the authority has to supervise the implementation of the works permitted in order to ensure its compliance with the specified conditions and restraints of the license.
2.2.2.2 Environmental impact assessment

The aforementioned environmental impact assessment constitutes a systematic procedure, by which the direct and indirect effects an envisaged project might have on the environment can be ascertained, described and estimated in the course of the planning stage of the project. A minimum-procedure with respect to the assessment of the environmental effects of the respective project is fixed by the Environmental Impact Assessment Act (UVPG). The UVPG supplements the AtVfV in this respect. The environmental impact assessment is an integral part of licensing procedures with respect to nuclear facilities. It therefore does not represent an independent procedure.

3 FUNDING

Ladies and gentlemen, decommissioning of nuclear facilities is a challenge to the operators as well as to the regulators and authorities. Apart from legal and technical aspects, a matter of special importance is the financing. Both operators and regulators have a high interest that adequate financial means for decommissioning will be available when they are needed. If not, there would be liabilities that have to be financed by – at last - the taxpayer. Yet, there are no specific rules regulating the financing of decommissioning in Germany. Especially the AtG does not contain any provision in that respect as far as the decommissioning process itself is concerned.

Under legal aspects, the financing of decommissioning activities and radioactive waste management is a complex matter since prescriptions of various legal fields are applicable.

3.1 Provisions for the financing of decommissioning

The responsibilities and procedures of funding differ depending on whether a nuclear facility is owned by a private company or whether it was established, operated and financed by the State. The costs for decommissioning of publicly owned nuclear installations, such as research facilities and especially the “inherited” nuclear installations of the former German Democratic Republic GDR, have to be borne by public funds, i.e. by the respective current budget of the State.

The decommissioning of the privately owned nuclear power plants and nuclear fuel cycle facilities in Germany is financed by these companies according to the “polluter-pays principle”. The companies manage decommissioning and dismantling on their own responsibility under the supervision of the competent authorities. They are expected to bear all costs connected with nuclear activities including costs for decommissioning and waste management.

Lacking a specific legal framework regarding the funding of decommissioning by the operators, presently, financial resources for this task are provided in the form of provisions. They have to be built up during the operational phase in accordance with commercial law that applies to the whole economic sector. Let me underline, that there is no specific legislation concerning the financing of decommissioning. In the nuclear sector in Germany the general legal requirements of the commercial law have to be applied.

According to German commercial law (Sec. 249 of the German commercial code - HGB), each company in general has to build up financial provisions for obligations that are unsure concerning the amount, the time of occurrence or the asset but that can be expected to a sufficient degree of certainty. According to the commercial law, provisions are to be built to the amount that is necessary according to reasonable commercial judgement.

In the nuclear sector the provisions are intended to cover all the expected costs associated with the decommissioning. These include the costs
• of the decommissioning-licensing procedure,
• the costs of dismantling
• the expenses for safe enclosure
• the cost of the interim storage and disposal of all radioactive wastes from operation and decommissioning, as well as
• the costs of the disposal of spent fuel

The provisions have to be recorded in the company’s annual accounts.

By the end of 2002, the total provisions built up by the German operators of nuclear facilities for the financing of decommissioning amounted up to about 35 Billion Euro.

It has to be stressed that the provisions built up by the operators must not be understood to constitute a decommissioning fund: As the provisions are needed firstly when the obligations become due, there are no restrictions for the operators referring to the allocation of these provisions until this time.

3.2 Financing of final disposal of radioactive waste

The necessary expenses for the final disposal of radioactive waste are initially borne by the State, but these costs are refinanced by means of contributions, advance payments, fees or expenses. A part of these costs are also included in the operator’s calculation of the aforementioned provisions.

4 CONCLUSIONS

So far, the German system of financing the decommissioning has been successful. Until now there were no cases where the lack of financial means was a problem for decommissioning projects.

Presently, there is no reason to doubt that the amount of the operator’s provisions will be sufficient. Eventually there is a need for modifications of the German system to secure the availability of financial provisions in the future because of the ongoing major changes in the energy sector.

When the German system of financing was established there was no competition in the energy-market, the public hand owned major shares of the electricity-companies and the licenses for the use of nuclear energy were not limited.

During the last years the nuclear power scene has changed a lot: the electricity market has been liberalized, the electricity-companies are privatized and the nuclear phase-out is set into force. The developments may have an effect on the availability of the provisions by the time they are needed for decommissioning. Therefore, these developments and their effects have to be observed and analysed very carefully and exactly. Perhaps further steps must be taken in future.

According to the Interinstitutional Statement of the European Council, Parliament and Commission, which was made in June 2003 in the context of the European Directive concerning the Electricity Market, the aim – also in future – must be

• that financial resources for decommissioning and waste management are adequate, that means that the sum has to be sufficiently high
• that the financial means are available when needed
• and that they are managed in a transparent way.

That is the task for the future!
Thank you for your kind attention.
REPORT OF DISCUSSIONS FROM SESSION 6
NUCLEAR WASTE MANAGEMENT AND DECOMMISSIONING

Luis Fernandez Regalado

Before opening the session, the Chairman, Mr Strohl, introduces the subject of the session by explaining the importance of compatibilise the so called environmental Law with the law that rules the Nuclear Waste Management and Decommissioning. The Chairman underlines that this is somehow the damned part of the nuclear activity. Nevertheless, he stresses as remarkable that there is a variety of options for nuclear waste management, ending with the disposal repositories in geological sites.

The Chairman gives the floor to Mr Molina who explains that he has recently replaced the former Chairman of the group, Mr Matthijs, expressing his gratitude to him. Then he explains, as introduction, the relation between waste management law as part of nuclear law and international environmental law. Mr Molina continues explaining some procedural aspects of Working Group 5 and gives the floor to Mrs Vial who makes a comparative analysis between the main principles of international environmental law and the corresponding provisions in 1997 Joint Convention and the 1995 IAEA Principles of Radioactive Waste Management, being both texts of universal scope on the subject. Mrs Vial continues with an overview of the application of the principles in domestic environmental law, concluding with the broad compatibility between environmental law and waste management and decommissioning law.

The Chairman thanks the speakers and opens the discussion, inviting the audience to ask questions or make observations concerning the Report of Working Group 5.

Mr Schattke comments on the principle of public participation in the decision-making process, casting some criticism on the way it works in some countries. Mrs Jankowitsch-Prevon, on the same principle of public participation, comments that there should be a different way to tackle this principle to obtain better public involvement on radioactive waste management. In response to the former comments, Mr Molina observes that to his opinion public participation does not mean consensus, and it is the only way to progress in waste management decision-making. That is the case of countries such as Finland or the United States.

The chairman gives the floor to Mr Ian Salter, who analyses international legal instruments concerning the long term disposal of radioactive waste beneath the sea bed, Mr Salter wonders if there are international legal obstacles for this kind of disposal, concluding that a sub seabed repository for nuclear waste may well be an open option.

The chairman thanks Mr Salter and gives the floor to Mrs Boutellier who explains the ethical, legal and political aspects of multi-national repositories. She reviews on the one hand the advantages and disadvantages of shared multinational repositories, stressing the ethical, legal and political issues, and on the other hand, the question under a small country point of view. Mrs Boutellier concludes that although political positions towards multinational
repositories varies from one to another country, only few countries would oppose clearly to multinational disposal facilities.

The Chairman thanks Mrs Boutellier and invites the audience to ask questions. Mr McIntosh makes a comment on the problem of the burden for future generations, and Miss Boutellier answers that, in principle, multinational repositories does not make difference whith other repositories, concerning the respect for future generations. The Chairman, after this, gives the floor to Mr Martensson who describes the financial system of nuclear waste management in Sweden, which is under revision, underlying the conclusions of a Governmental Committee in order to implement an extension of liability for payment, and foreseeing that the new financing system could be the object of a new law.

As there are no questions, the Chairman thanks Mr Martensson and gives the floor to Mr Montjoie, who makes an analysis about the legal framework concerning nuclear waste management guarantees. Mr Montjoie stresses that altough there is much technical work within the IAEA, this is not legal binding and only represents a strong recommendation arisen from international cooperation. The Chairman thanks Mr Montjoie and invites the audience to ask questions. Mr McIntosh makes a comment about the relation between the retrievability of waste fuel and the guarantees, which is answered by Mr Montjoie expressing doubts on how retrievability may affect the guarantees. Mrs Jankowitsch-Prevon remarks the different meaning of the word guarantee in different countries.

The Chairman gives the floor to Mr Tateda, who explains the new decommissioning system of nuclear power plants in Japan. Mr Tateda comments on the new regulation from May 2005 and the need to establish criteria for different treatment for the so called demolition waste, as waste materials and radioactive waste materials from a nuclear power plant are both handled as radioactive materials, without further distinction.

As there are no questions, the Chairman thanks Mr Tateda and gives the floor to Mr Paul who explains the funding system for nuclear decommissioning in Germany, stating a distinction between decommissioning from the former East Germany, which will be borne by public funds and that from the rest of the country, which will be borne by operators’ funds, in the light of a liberalising process. The Chairman thanks Mr Paul and invites the audience to raise questions. Mrs Janzefojivoc wants to know the concepts included under the umbrella of the funds, as the figures given vary. In his answer Mr Paul indicates that when the fund refers to € 25 billion does not include waste management. Mr Molina wants to know if there is any guarantee against bankruptcy, and Mr Paul answers that there is no insurance foreseen against bankruptcy.

The Chairman, finally, expresses his thanks to all the speakers, participants and members of the Working Group 5, underlying the high quality of their report as well as all presentations.