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THE CODE OF CONDUCT ON THE SAFETY AND SECURITY OF RADIOACTIVE SOURCES AND THE ABU DHABI CONFERENCE

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I.INTRODUCTION

The purpose of this report is to summarize the results of the International Conference on the Safety and Security of Radioactive Sources held in Abu Dhabi 27-31 October 2013. This paper brings most of the topics presented during the conference which are available in the "Findings of the President of the Conference"

This Conference was organized by the International Atomic Energy Agency (IAEA) and was hosted by the Government of the United Arab Emirates (UAE) through the Federal Authority for Nuclear Regulation (FANR) in cooperation with the International Criminal Police Organization (INTERPOL), the International Commission on Radiological Protection (ICRP), the International Source Suppliers and Producers Association (ISSPA) and the World Institute for Nuclear Security (WINS). It was attended by over 320 participants from 87 IAEA Member States, 1 non-Member State and 6 International Organizations.

The Conference´s objective was to review current success and challenges in ensuring the safety and security of radioactive sources, and to identify means to maintain the highest level of safety and security throughout their lifecycle, from manufacture to disposal. In addition to that the Conference had also the scope to review the development of the application of the Code of Conduct on the Safety and Security of Radioactive Sources and looked at the ongoing challenges relating to the safety and security of sources.

The use of radioactive sources implies benefits for the humankind so they are used extensively throughout the world for a wide range of beneficial purposes, particularly in medicine, general industry, agricultural research and educational applications. However the

use of radioactive sources implies also risks to the health and safety of persons and to the environment, risks that must be carefully managed.

Ensuring safety in the use of radiation sources and operation of related facilities is of paramount importance for the protection of people and the environment from any associated radiation risks. In order to ensure radiation safety, a cradle-to-grave system for the control of radiation sources should be established.

Establishment of such a system requires, among other things, the existence of a legislative framework for safety (relevant laws and regulations), the establishment of a national infrastructure for control of radiation sources (an operational regulatory body with sufficient resources as well as qualified and adequate staff), and the implementation of regulatory control activities (such as authorization, inspection and enforcement).

The IAEA Safety Standards and other publications like the Code of Conduct on Safety and Security of Radioactive Sources, together with the Guidance on the Import and Export of Radioactive Sources provide the international requirements and recommendations for an appropriate and sustainable regulatory system for the control of sources.

Finally the conclusion is focus on the discussion about the future legal status about the Code of Conduct Code of Conduct on Safety and Security of Radioactive Sources.

II. THE CODE OF CONDUCT ON THE SAFETY AND SECURITY OF RADIOACTIVE SOURCES AND SUPPLEMENTARY GUIDANCE ON THE IMPORT AND EXPORT OF RADIOACTIVE SOURCES.

The need to ensure the safety and security of these sources has been recognized for many years, therefore, the International Atomic Energy Agency (IAEA) organized a number of specific international conferences[1] to examine the issues and make recommendations, the scope was on the experiences gained in accidents with radioactive sources because of the inadequate controls over radioactive sources. After September 2001, the international community concerns regarding the possible use of radioactive sources for malicious

[1] *-The International Conference on the Safety of Radiation Sources and the Security of Radioactive Materials, Dijon 1998;*
-The International Conference of National Regulatory Authorities with Competence in the Safety of Radiation Sources and the Security of Radioactive Material, Buenos Aires 2000;
-The International Conference on Security of Radioactive Sources, Vienna 2003;
-The International Conference on the Safety and Security of Radioactive Sources: Towards a Global System for the Continuous Control of Sources throughout their Life Cycle, Bordeaux 2005,
-The International Conference on Control and Management of Radioactive Material Inadvertently Incorporated into Scrap Metal, Tarragona 2009.
-The International Conference on National Infrastructures for Radiation Safety, Rabat 2003; The International Conference on Nuclear Security: Global Directions for the Future, London in 2005;
-The International Conference on Effective Nuclear Regulatory Systems, Ottawa 2013,
-The International Conference on Nuclear Security: Enhancing Global Efforts, Vienna 2013.

purposes, so therefore the international conferences brought the discussion about the need to strengthen controls over the security of radioactive sources.

The Code of Conduct on the Safety and Security of Radioactive Sources has been strengthened to take account of international concerns following the events of September 11, 2001. The text of the revised Code was approved by the IAEA Board of Governors in September 2003 and in resolution GC(47)/RES/7 the IAEA General Conference welcomed the Board's approval, while recognizing that the Code is not a legally binding instrument. The Code was published by IAEA in January 2004 and many countries have written to the Director General, expressing their support for the Code. The Secretariat has been working with Member States to develop practical guidance on how to comply with the Code. In this regard the text of Guidance on the Import and Export of Radioactive Sources was approved by the IAEA Board of Governors in September 2004, and in resolution GC(48)/RES/10.D the IAEA General Conference welcomed the Board's approval; endorsed the Guidance while recognizing that it is not legally binding; encouraged States to act in accordance with the Guidance on a harmonized basis

II.a) Information exchange and lessons learned

In response to a recommendation from the Bordeaux Conference in 2005, a formalized process for the exchange of information between States on implementation of the Code and the supplementary Guidance was established in 2006. This process calls for international meetings every three years where States are invited to prepare and submit national reports on their efforts to implement the provisions in the Code. Two such meetings have been held to date, in 2007 and in 2010, and the Conference in Abu Dhabi in 2013 represented the third such meeting. Participation at each successive review meeting has increased. The reports of those information exchange meetings are available on the IAEA web site.

II.b) Forms to facilitate information exchange

A group of technical and legal experts prepared the text of the attached model forms to facilitate the exchange of information in relation to the import and export of Category 1 and 2 sources, pursuant to the IAEA publication on Guidance on the Import and Export of Radioactive Sources. These forms are available in six languages and are provided for information only. The IAEA cannot accept any responsibility for their subsequent use or modification.

- Request to the importing state for consent to import category 1 radioactive sources or to import Category 1 and 2 sources under exceptional circumstances form
- Request to the importing State for confirmation that the recipient is authorized to receive and possess Category 2 radioactive sources form
- Notification to the importing state prior to shipment of Category 1 or 2 radioactive sources form

II c) The significance of the Code of Conduct on the Safety and Security of Radioactive Sources

The Code of Conduct on the Safety and Security of Radioactive Sources is the principal international instrument for both the safety and the security of radioactive sources. The Code of Conduct and the Guidance complement the existing Safety Standards Series, specifically the Basic Safety Standards which were first published in 1962 and which have been regularly updated since then. Since 2004, with the growing awareness of the need for security, the IAEA has established the Nuclear Security Series (NSS) and has published the Nuclear Security Fundamentals, nuclear security recommendations including NSS No. 14 (Nuclear Security Recommendations on Radioactive Material and Associated Facilities) and NSS No. 15 (Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control) as well as several guides. These guides include two documents specifically related to radioactive sources: NSS No. 11 (Implementing Guide on Security of Radioactive Sources) and NSS No. 5 (Reference Manual on Identification of Radioactive Sources and Devices)

III. FINDINGS OF THE ABU DHABI CONFERENCE

III.a) Achievements in the safety and security of radioactive sources

The Conference enabled States to share a number of significant achievements since the approval of the Code of Conduct in 2003;

 To date, 119 States have made a political commitment with regard to the Code of Conduct on the Safety and Security of Radioactive Sources, thereby reflecting a wide acceptance of the Code as the primary instrument for the safety and security of radioactive sources. 84 States have made a political commitment to the supplementary Guidance on the Import and Export of Radioactive Sources;

 National regulatory infrastructures have been strengthened and, in many cases where they previously did not exist, they have now been developed. As a result, the number of accidents leading to serious radiation exposure has notably declined;

 The formalized process, established in 2006, for States to report their progress in implementing the principles in the Code is a useful mechanism for States to assess their continuing progress in implementing the provisions of the Code, to identify further needs and to benefit from the experiences of others. According to this process, a total of 68 Member States submitted national reports for the Conference. The Conference noted that the process of preparing national reports constituted a valuable self-assessment opportunity;

 Bilateral, regional and multilateral cooperation programmes have been established to assist in the establishment of regulatory infrastructures; to share experiences; to assist in the improvement of both the physical protection and security management of radioactive sources throughout their life cycle; and to build capacity for radiological emergency preparedness and response. The latter includes building an effective response capacity for dealing with radiological accidents, situations in which radioactive sources are out of regulatory control, and malicious acts involving radioactive material.

 Many States have implemented strategies for regaining control over orphan sources;

 Post-graduate educational programmes on the safety of radioactive sources and on nuclear security now exist in a number of States in different regions of the world, and training programmes for various professional groups involved in safety and security have been established with the aim of developing and maintaining the appropriate competences;

 Some States have established bilateral administrative arrangements to exchange information consistent with the supplementary Guidance on the Import and Export of Radioactive Sources;

 The IAEA's role in supporting States' efforts to improve the safety and security of radioactive sources was commended. Specifically, a number of States have availed themselves of the peer review and advisory services provided by the IAEA. These peer reviews have been particularly helpful in identifying the strengths and weaknesses of national infrastructures for safety and security of radioactive sources.

III.b) Long-term management of disused sources

The Conference discussed various options for the management of radioactive sources at the end of their useful lives. These include: increasing the recommended working life[2]; return to supplier/manufacturer; reuse or recycling; long-term storage; or disposal. Participants accepted that a source does not become waste until it reaches the point when final disposal becomes the only viable option[3].

Participants agreed that returning a source to its supplier is the preferred, baseline management option for a source which has reached the end of its useful life. However, implementing this option requires the establishment of a safe and secure national interim storage facility, in the framework of a national policy for the management of disused sources. Returns also require funding to cover costs such as prior packaging and transport. When a disused source is replaced by a new source, this funding is generally included within the framework of the sale contract. This funding is also provided through the establishment of financial provision when purchasing radioactive sources, particularly those in Categories 1 and 2, as defined by the IAEA. However, there are uncertainties on the adequacy of these provisions with the actual costs that might be needed at the time of returning the source which may occur several years or decades after the purchase. Identifying the supplier to whom a disused source can be returned is also not always straightforward, due to the age of the source and the possibility that the manufacturer may no longer be in business: a back-up option in the form of a storage or disposal facility should be available on either a regional or national basis. Importantly, any solution relating

[2] *Recommended working life is a concept defined in 'Radiological protection—Sealed radioactive sources—General requirements and classification', ISO 2919:2012.*

[3] *The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management defines radioactive waste as 'radioactive material in gaseous, liquid or solid form for which no further use is foreseen by the Contracting Party or by a natural or legal person whose decision is accepted by the Contracting Party…' Further, Article 28 of that Convention obliges each Contracting Party to 'allow for reentry into [its] territory of disused sealed sources if, in the framework of its national law, it has accepted that they be returned to a manufacturer qualified to receive and possess the disused sealed sources'.*

to disused or orphan sources must guarantee continuity of regulatory control. A significant challenge in enabling the use of such a facility will lie in overcoming any potential conflicts in regulations relating to transport, radiation, waste safety and security.[4]

III. c) Information exchange

The Conference discussed how the voluntary mechanism for reporting on the implementation of the Code and the supplementary Guidance might be improved. The Conference concluded that there was merit in developing guidance for States in the preparation of their national reports. Such guidance would contribute to consistency in describing activity against all areas of the Code in the national reports, thereby encouraging more comprehensive national reports. These, in turn, would increase the effectiveness of the next review meeting and facilitate the in-depth exchange of information, knowledge and experience. Another benefit would be a more precise identification of progress, challenges, gaps and needs for further assistance and cooperation. The self-assessment methodology and tools developed by the IAEA provides a good framework for developing this guidance. At the same time, the guidance for national reports should not be so onerous as to discourage States from submitting national reports, which is after all voluntary.

III d) Liabilities and financial issues

The existing international legal framework surrounding nuclear third party liability expressly excludes radioactive sources from its scope. Liability with respect to incidents and accidents involving radioactive sources, as well as management of legacy sources, is therefore unclear. Even if, at the national level, legal liability for an incident is clear, there are generally no provisions which ensure that funds are available to cover all associated costs. It is clear that further consideration of this complex issue is required, and the Conference recommended that it should be examined further by the IAEA. One possible solution would be for the IAEA to request the International Expert Group on Nuclear Liability (INLEX) to take up this issue.

VI FUTURE CHALLENGES

The Conference noted that a number of important areas remain to be addressed:

- Not all States have made a political commitment to the Code, and some States which have done so have made little progress in implementing its provisions. Further, some States support the Code but not the Guidance. Having committed to the Code of Conduct and to the supplementary Guidance, progress in implementing the provisions in these documents will only be achieved if commitment is translated into action;

[4] *Recommendations about this issue are available on the IAEA web site. "Findings of the President of the Conference" International Conference on the Safety and Security of Radioactive Sources: Maintaining Continuous Control of Sources throughout Their Life Cycle. 27-31 October 2013 – Abu Dhabi, United Arab Emirates*

While the legal and regulatory framework addresses safety in many States, there are – despite some progress - often inadequate controls to ensure the security of radioactive sources.

National infrastructures for safety and security of radioactive sources can exhibit weaknesses in the following areas:
The empowerment, competence and effective independence of the regulatory body;

The clarification of responsibilities in cases where there is more than one regulatory body with responsibilities for the safety and security of radioactive sources, and the establishment of arrangements to avoid or resolve potential conflicts where there is an overlap of responsibilities;

The provision of resources for the regulatory body, ensuring in particular that arrangements with regard to funding, staff numbers and competence, training and equipment, are sufficient for the regulatory body to carry out its duties effectively;

An appropriate national policy and strategy for the management of radioactive waste including disused radioactive sources;

An appropriate national policy and strategy for the education and training of professionals involved in the safety and security of radioactive sources.

Management of scrap metal contaminated with radioactive material continues to be a problem. Despite some progress in the area, the fact remains that a high proportion of the incidents reported to the Conference involved orphan sources mixed with scrap metal;

Transport of disused radioactive sources to the country of origin or to a storage facility may be difficult because of the absence of certified Type "B" transport containers that are consistent with the requirements of the current Transport Regulations. The Conference was informed about development with regard to design and licensing of suitable containers;

Financial and other liabilities have not yet been widely established for dealing with disused and orphan sources, and also with incidents and accidents involving radioactive sources

VII CONCLUSION & DISCUSSION

The need for a legally binding international instrument?

Looking to the future, the Conference discussed at some length whether, based on the Code of Conduct and supplementary Guidance, a legally binding international instrument, i.e. a convention, should be developed on the safety and security of radioactive sources. Whilst recognizing the many advantages which might accrue from having a convention (particularly in terms of provision of resources by governments), participants nevertheless acknowledged that the existing voluntary arrangements had been recognized by 119 Member States and that significant progress had been made in improving the safety and security of radioactive sources as a result of those Member States following the recommendations of the extant Code of Conduct and supplementary Guidance. Many participants considered that this achievement should not be undermined, particularly since there was no guarantee that a convention would include the same detailed provisions as the current Code of Conduct; or that it would attract a similar number of Member States to

those currently supporting the Code of Conduct. Furthermore, it was felt that the development and eventual ratification of such a convention and the implementation of its requirements would take much more time than had been the case with the Code of Conduct. Participants also expressed concern about how a convention might be introduced in parallel with the ongoing implementation of the existing Code of Conduct. There could also be conflicts in requirements which could dilute the effectiveness of existing safety and security provisions. Finally, it was noted that the issue of potential overlap with the Joint Convention would need to be carefully negotiated.

Throughout the discussion, participants acknowledged that a global system of protection was required whereby the priority would be to promote the levels of consistency and sustainability in the management of the safety and security of radioactive sources. They recognized that whilst much had been achieved, more was needed. It was a matter of judgment as to whether these further improvements might be achieved through the 'Code of Conduct' or whether a legally binding 'Convention' should be the platform for this. One solution might be for the negotiation of a legally binding 'Convention' with the same level of detail as the 'Code', and with no diminution or diversion of resources currently allocated to implementing the 'Code' whilst the 'Convention' is negotiated and then subject to the lengthy process of ratification by States.[5]

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[5] ***Recommendation:*** The Conference recommended that the IAEA should convene a working group to assess the merits of developing a Convention on the safety and security of radioactive sources, and to make recommendations. This would enable an informed decision to be made with regard to whether the Secretariat should seek Member State support for the development of a legally binding 'Convention'.