Asia and South Pacific Regional Meeting for Sharing Experience and Lessons Learned in Implementing the Code of Conduct on the Safety and Security of Radioactive Sources and its Supplementary Guidance

Jakarta, Indonesia

06 – 10 November 2023

Summary of the Chair

1. The Asia and South Pacific Regional Meeting for Sharing Experience and Lessons Learned in Implementing the Code of Conduct on the Safety and Security of Radioactive Sources (Code of Conduct) and its supplementary Guidance, was held from 06 to 10 November 2023, in Jakarta, Indonesia, under the chairmanship of Ms Julie Murray (Australia).

2. The meeting was attended by 38 experts from 19 Member States of the Asia and South Pacific regions: Australia, Bangladesh, Cambodia, China, India, Indonesia, Iran, Kuwait, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, and Vietnam. Brunei Darussalam was invited to present at the meeting.

3. The Scientific Secretaries for the meeting were Mr Timothy Hayes (IAEA Division of Radiation, Transport and Waste Safety (NSRW)), and Ms Bouchra Boustani (IAEA Division of Nuclear Security (NSNS)).

4. The objective of the meeting was to share lessons learned in relation to implementation of the Code of Conduct and its supplementary Guidance.

5. The meeting was opened by Mr Sugeng Sumbarjo, Acting Chairman of the Indonesian Nuclear Energy Regulatory Agency (BAPETEN). In his opening remarks, Mr Sumbarjo, highlighted the expanding utilisation of nuclear science and technology, and the beneficial role of radioactive sources in medical, agricultural, industrial and research applications. Mr Sumbarjo also noted that the establishment and implementation of a national legal framework for the safety and security of radioactive sources is the responsibility of each State and highlighted the role that the Code of Conduct and supplementary Guidance has in this regard. Mr Sumbarjo further noted that the Asia and South Pacific region was emerging as one of the most significant economic sectors globally where the use of radioactive sources will likely increase and stressed the need for greater regional collaboration and coordination with regards to the implementation of the Code of Conduct and supplementary Guidance.

6. The opening of the meeting was continued by Mr Timothy Hayes (IAEA). In his opening remarks, Mr Hayes welcomed participants and spoke about the role of the Code of Conduct and its supplementary Guidance to assist States in the development and/or enhancement of the regulatory infrastructure for the safety and security of radioactive sources. Mr Hayes noted the beneficial role that radioactive sources have while reminding participants that radioactive sources in the scope of the Code of Conduct (Category 1 to 3) may pose a risk if not used within an appropriate legal and regulatory framework for safety and security.

7. Presentations on topics relevant to the Code of Conduct and supplementary Guidance were made by representatives of the IAEA Secretariat and by several participating Member States during the meeting. All presentations will be made available to participants on a secured shared webpage. Therefore, their detailed contents are not replicated in this summary.

Overview of Radioactive Sources – Understanding the Safety and Security Risk

8. The Secretariat (Mr Timothy Hayes, NSRW) provided an overview of radioactive material, including radioactive sources, key concepts, and relevant definitions. Mr Hayes also provided an overview of common practices that utilize Category 1 to 3 radioactive sources, the graded approach and its application for the safety and security of radioactive sources.

9. The Secretariat (Ms Bouchra Boustani, NSNS) provided an overview of categorization of radioactive sources, including its purpose, that being to provide an internationally accepted basis for risk informed decision making. The overview included a review of Category 1 to 3 radioactive sources and their associated security levels (Level A, B and C respectively). Ms Boustani also introduced the concept of risk (likelihood and consequences) and discussed risk in relation to accidents and malicious acts further noting the interface between safety and security. To illustrate the consequences of an incident, either accidental or malicious, Ms Boustani reviewed the Goiania accident that involved a Cs-137 radioactive source.

Overview of the Code of Conduct on the Safety and Security of Radioactive Sources

10. The Secretariat (Mr Timothy Hayes, NSRW) provided an overview of the evolution of the Code of Conduct. Mr Hayes' presentation covered Code of Conduct objectives, basic principles, key provisions, initiatives, and useful resources. Mr Hayes explained the legally non-binding nature of the Code of Conduct and noted that the Code is aligned with but not part of the IAEA safety standards and nuclear security guidance. Mr Hayes also noted that the Code of Conduct supplements legally binding instruments such as the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention). Mr Hayes provided participants with practical advice on the process of providing political commitment of the Code and Guidance and encouraged implementation.

11. Dk Nurul Nazirah Pg Haji Abd Rahman (Brunei Darussalam) provided a presentation on Brunei Darussalam's progress in providing political commitment to the Code of Conduct and supplementary Guidance. Dk Rahman provided details on Brunei Darussalam's legal framework, the Radiation Protection Act and the roles and regulatory functions of the Safety, Health and Environment Authority, including authorisation, enforcement, regulatory support and international affairs. Dk Rahman discussed both the challenges and benefits associated with providing political commitment to the Code of Conduct and supplementary Guidance. In this regard, Dk Rahman reviewed the process conducted to perform a detailed gap analysis to better understand Brunei Darussalam's progress towards meeting the Code of Conduct and Guidance recommendations.

12. Ms Dahlia Cakrawati Sinaga (Chair of ASEANTOM 2023) presented on ASEANTOMs initiatives to improve safety and security of radioactive sources. Ms Sinaga provided a detailed introduction to ASEANTOM, including its objective, that being, "To enhance regulatory activities and further strengthen nuclear safety, security and safeguards within the ASEAN Community by enhancing cooperation and complementing the work of existing mechanism at the national, regional and international levels." Ms Sinaga further described the current activities being conducted and those initiatives proposed by the Chair, ASEANTOM,

to assist with the implementation of the Code of Conduct and its supplementary Guidance, in conjunction with the IAEA, notably regional workshops and training on the management option for disused sources.

Introduction to the Regulatory Authority Information System (RAIS+)

13. The Secretariat (Mr Dragan Avramovski, NSRW) provided an overview on the new Regulatory Authority Information System (RAIS+). Mr Avramovski, in his presentations and practical demonstration sessions illustrated RAIS+ functionalities and features, including Authorization of Import and Export, Management of National Source Registry, Inspection and Enforcement and the RAIS+ customization capability. It was noted that RAIS+ can assist States in implmenetation of the Code of Conduct and supplementary Guidance as it covers the whole lifecycle of radioactive sources and ensures cradle-to-grave regulatory control, with modules on Facilities, Radiation Sources and Associated Equipment, Authorization, Inspection and Enforcement. The software also includes modules on, radiological incidents and accidents; security events; occupationally exposed persons and technical services (e.g., accreditation), and manufacturers and models of sources.

Guidance on the Import and Export of Radioactive Sources

14. The Secretariat (Mr Timothy Hayes, NSRW) provided an overview of the evolution of Guidance on the Import and Export of Radioactive Sources (Guidance on Import and Export). Mr Hayes then reviewed key provisions related to the import and export Category 1 & 2 sources in accordance with the Guidance and the Code of Conduct. The role and responsibilities of the Point of Contact, terminology regarding import and export of sources not given in the Code of Conduct, "exceptional circumstances" and the purpose of the "Importing and Exporting State Questionnaire" was also reviewed.

15. Mr Darren Koh (Deputy Principal Scientific Officer, National Environment Agency Singapore) presented Singapore's experience on the import and export of radioactive sources. Mr Koh provided an overview of Singapore's Radiation Protection Act and the licensing regime under the Radiation Protection Regulations 2023. Mr Koh provided details on Singapore's implementation of the Code of Conduct and supplementary Guidance, including the timeline of Singapore's implementation. Mr Koh noted the importance of national coordination between relevant stakeholders to assist in ensuring regulatory control over radiation sources. Mr Koh reviewed a current project to enhance existing IT systems related to import and export activities. Mr Koh further presented some of the challenges faced by Singapore. One notable challenge was the potential for misinterpretation of documentation given the varying languages and the possibility of information inaccuracy.

16. Mr Mohammad Mustafijur Rahman (Bangladesh Atomic Energy Regulatory (BAERA), Bangladesh) presented Bangladesh's experience with the import and export of radioactive sources. Mr Rahman provided detailed information on the BAERA's import and export system including the relevant permissions required to import radioactive sources, the restrictions imposed on licence holders to return all disused radioactive sources back to the supplier, notification of exportation forms and Customs clearance acknowledgement letters following importation. Mr Rahman highlighted the need for cooperation and coordination with relevant stakeholders to assist in improving the import and export system. Mr Rahman further discussed both the experiences and challenges faced, including providing some important points for the IAEA to consider, such as providing regular updates to Points of

Contact and consider encouraging exporting States to export only when prior consent has been received.

17. The Secretariat (Ms Bouchra Boustani, NSNS) provided a brief presentation on the importance of the Role and Responsibility of the Points of Contacts. Ms. Boustani provided an overview of the Aiding Document developed to assist Points of Contacts in clarifying their role and responsibilities, specifically discussing the 2 parts of the document, Nominations of a Point of Contact and the Roles and Responsibilities. Importantly, it was noted that the selected Point of Contact should have appropriate technical knowledge, skill and experience and should be at the working level position. Ms. Boustani advised of the training opportunities for Points of Contact, the importance of updating contact information in the event of any change. Ms. Boustani finished the presentation with the provision of advice related to request for consent, notifications prior to shipment and the varying additional expectations of the Point of Contact.

18. A scenario-based training exercise on imports and exports Point of Contact was conducted. Participants were provided a scenario and asked a range of questions using Slido, including an important group discussion on actions taken, or not taken, in accordance with the Guidance on Import and Export, what practices led to the problems and what could have been done better to avoid the problems from the start.

Guidance on the Management of Disused Radioactive Sources

19. The Secretariat (Mr Timothy Hayes, NSRW) provided an overview of the Guidance on the Management of Disused Radioactive Sources (Guidance on Disused Sources) highlighting its key provisions. Mr. Hayes stressed the importance of a State having a national policy and strategy for the management of disused radioactive sources. Mr. Hayes highlighted the 3 management options recommended in the Guidance: return to supplier, long-term storage and disposal, and reuse and recycling while recognizing that most participating States use return to supplier as their primary management option. As many participating States have not yet provided political commitment to the Guidance on Disused Radioactive Sources, Mr. Hayes encouraged those States to use this opportunity to gain additional information on the Guidance and for them to share this information with relevant staff and decision makers in their home organizations.

20. Mr Quang Dinh (Director, Division of Legislation and Policy, Agency for Radiation and Nuclear Safety, VARANS, Vietnam) presented Vietnam's policy and strategy for the management of disused radioactive sources. Mr. Dinh provided an overview of Vietnam's disused sealed radioactive source inventory. Mr. Dinh stated that, while Vietnam does not have a separate policy for disused radioactive sources, there are policies established across many legal documents to ensure that disused radioactive sources must be managed to ensure safety for humans and the environment until they are returned to foreign manufacturers/suppliers or disposal; facilities that process and store disused radioactive sources must meet the conditions provided by the Government and must be licensed to operate by the Regulatory Agency; licensees may choose and apply one of five options to manage disused radioactive sources and that Vietnam have the policy priority of the reuse/recycling of disused radioactive sources or return disused radioactive sources to the manufacturer/supplier. Mr. Dinh advised of the varying challenges that VARANS faces and provided several solutions to overcome those challenges including preparing to make a political commitment to implement the supplementary Guidance on the Disused Sources.

21. Mr Mohd Fitri Abdul Rahman (Plant Assessment Technology Group, Malaysia Nuclear Agency) presented on the Malaysian experience of the management of disused radioactive sources, specifically regarding their experience in borehole technology. Mr. Rahman provided detailed information regarding Malaysia's radiation protection program structure, including the control of radioactive sources and the e-licensing system. Mr Rahman presented an extensive brief on the background of the borehole project, including documents submitted to the Regulator, the Malaysian borehole design, site specifics, drilling methods and the varying lessons learned from the 3 borehole locations. Mr Rahman provided advice on the status of the project, where construction is 90% complete. Mr Rahman further provided the lessons learned from the 2021 repatriation of neutron sources to the United States via a specific project that started in 2016.

22. A scenario-based exercise on the management of disused radioactive sources was conducted where the participants reviewed a video-based scenario and were asked a range of questions using Slido, specifically around the preferred approach of agencies with regards to the final disposal of disused sources and the greatest challenges in managing disused sources.

23. Ms Julie Murray (Senior Security Adviser, ARPANSA Australia) provided a presentation on regaining regulatory control of radioactive sources, lessons learned from the lost radioactive source in Western Australia. Ms Murray provided high level context to the Australian regulatory framework to set the scene for the presentation. Ms Murray then provided detail of the incident, including the location, the source, the issue and packaging and transport information. Ms Murray described how the incident was resolved, key contributing factors, licence holder actions, some overarching comments on the incident as well as several lessons learned.

Regulatory Control of Radioactive Sources

24. The Secretariat (Ms Bouchra Boustani, NSNS), presented on Technical Report Series No. 1002 - Notification, Authorization, Inspection and Enforcement for the Safety and Security of Radiation Sources. The purpose of the presentation was to introduce the participants to the document and its application in assisting to implement core regulatory functions of notification, authorization, inspection and enforcement. Ms Boustani summarized the presentation highlighting that safety and security are equally important and that TRS No. 1002 provides practical advice for the regulatory control of radiation sources considering safety and security.

25. Mr. Pongpan Makkaew (Office of Atoms for Peace, Thailand) presented Thailand's experience with the regulatory functions of authorization and notification. Mr. Makkaew provided detailed information on Thailand's Act and Regulations, including types of authorizations, notifications and exemptions and a simplified version of the internal procedures for authorizations. Mr Makkaew further advised of the lessons learned and challenges faced by Thailand, such as the legal definitions are not currently consistent with the Code of Conduct and Thailand's attempt to adopt a graded approach, given the need to enhance their categorization process. Mr Makkaew highlighted the IAEA's invaluable assistance with implementation of the Code of Conduct to date and that additional assistance through potential collaboration, resources and expertise would be greatly appreciated.

26. Ms Maria Teresa Salabit (Philippine Nuclear Research Institute, PNRI) presented Philippine's experience with the regulatory functions of inspection and enforcement. Ms. Salabit provided information on the Philippines regulatory framework, including use of the IAEA safety

standards and application of PNRI regulations. Ms. Salabit presented information on the inspection schedule and provided examples of inspections. Ms Salabit, while expressing some of the challenges within the regulatory process, provided several good practices, particularly regarding the publishing of procedure manuals in areas of conduct of regulatory inspection and audits, enforcement process and the issuance of permits to transport. Ms Salabit further advised that the Philippines utilise IAEA GSR Part 1 and GSG-13, and that the PNRI's inspection and enforcement program for radioactive material licensing is essentially in accordance with the IAEA recommendations, however, needs improvement, and the ongoing need for capacity building for the PNRI inspection staff.

27. A scenario-based exercise on the inspection and enforcement was conducted via Slido where the participants were provided a scenario and asked a range of questions. The participants were asked to apply the basic principles of the Code regarding the Regulatory body's authority in relation to inspection and enforcement.

28. Mr I Made Ardana (Nuclear Energy Regulatory Agency, BAPETAN, Indonesia) presented Indonesia's experience with the implementation of the Code of Conduct and Supplementary Guidance. Mr. Ardana provided detailed information on Indonesia's radioactive source utilization, infrastructure for regulatory control for the safety and security of radioactive sources, including legislation, regulation, licensing, inspection and the numerous regulatory lessons learned throughout the COVID-19 period. Mr Ardana discussed the experiences and challenges with imports and exports, the management of disused sources and the national policies for regaining control over orphan sources. Information was presented on the extensive national coordination mechanisms among many stakeholders and finished with good practices and expected future developments such as the development of National Security Infrastructure to improve detection and response capabilities and enhancing the implementation of repatriation of radioactive sources.

29. The Secretariat (Mr Timothy Hayes, NSRW) presented on IAEAs support for the implementation of the Code of Conduct and supplementary Guidance. In this regard, Mr Hayes reviewed the Code of Conduct's formalized process which calls for the periodic exchange of information and lessons learned, and the evaluation of implementation progress made by Member States. Mr. Hayes discussed the Open-ended Meeting of Technical and Legal Experts for Sharing Information on States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources – 29 May to 02 June 2023 and the Recommendations from the Co-Chairs Report to the IAEA. Mr Hayes presented the Virtual Platform of the School for Drafting Regulations, developed through the RIDP and completed and upcoming workshops. Mr Hayes provided information on IAEA Peer Reviews and Advisory Missions such as RISS, and information on the launch of the new RAIS+ system in September 2023, provided detail on the upcoming events related to the Code of Conduct as well as events in the planning stages, noting the next Open-ended Code of Conduct Meeting is scheduled for 2026.

30. The Secretariat (Mr Timothy Hayes, NSRW and Ms Bouchra Boustani, NSNS), provided a summary of the interactive session results. An overview of participating Member States and the percentage of political commitment to the Code of Conduct and its supplementary Guidance was provided. The combined results from the interactive sessions provided information on Member States progress with implementation and the challenges in establishing and/or implementing a national system for the control of radioactive sources, what level of involvement with the authorization of imports and exports participants had,

various topics were discussed where the participants sought better clarity in the role and responsibilities of Points of Contacts where a revision of the current document, and continued training from the IAEA for Points of Contacts was suggested, among other. Questions regarding the management of disused radioactive sealed sources and Member States preferred approach, where return to supplier was the main reported strategy and that no Member State reported having a back-up strategy for return to supplier. Participants advised the main areas of assistance from the IAEA could be in technical and financial support and that training on core regulatory functions and IAEA Missions were of greatest benefit to Member States.

Conclusions:

31. The key objective of the week was to share information of States' implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its supplementary Guidance. This included challenges, successes and lessons learned throughout the States implementation journey. It was noted that this objective has been met completely.

32. Regarding some of the challenges experienced by the participating Member States, it was noted that some problems were encountered with communication between importing and exporting States such as the importing State did not receive consent and notifications prior to shipments. Many Member States also advised the biggest challenges were in the management of disused radioactive sources, particularly the issues of return to supplier noting that this is the preferred management option, and the inability to ensure the financial provisions to facilitate the management of radioactive sources at the end of their useful life.

33. Several successes and good practices were reported during the meeting. These included the development and use of gap analysis to assist in implementation of the Code of Conduct and supplementary Guidance, and the use of the Code of Conduct and supplementary Guidance to develop and/or enhance the regulatory framework.

34. Consensus from participants was that the Code of Conduct and supplementary Guidance have enhanced the safety and security of radioactive sources, however, efforts to enhance and sustain the global regime for control of radioactive sources must continue given the global need for radioactive sources. Every Member State must be a key contributor to meeting that important global outcome.

35. There were also presentations on: Evolution and Key Provisions of the Guidance on the Import and Export of Radioactive Sources and the vitally important Role and Responsibility of the Point of Contact; Evolution and Key Provisions of the Guidance on the Management of Disused Radioactive Sources; Regulatory Control of Radioactive Sources, specifically Notification, Authorization, Inspection and Enforcement for the Safety and Security of Radiation Sources – and the introduction of Technical Report Series No. 1002 which is a very detailed and informative, yet very practical, publication that was developed to assist States in establishing and maintaining regulatory control through notification, authorization, inspection and enforcement in relation to facilities and activities with radiation sources, in order to achieve the fundamental safety and security objectives.

36. The Regulatory Authority Information System (RAIS+) was presented where, over the delivery of 6 sessions provided an insight into the sophisticated system and its extensive capability.

37. Further, and key to the success of the week's objectives, was the presentations provided by Member States, given the importance of sharing of information, particularly as it relates to challenges for example and how they have either overcome or intend to overcome those challenges. In that regard, sincere thanks to Brunei Darussalam, ASEANTOM, Singapore, Bangladesh, Vietnam, Malaysia, Thailand, Philippines, Australia, and Indonesia for providing such important insights into your regulatory framework and your progress with the implementation of the Code of Conduct, it was greatly appreciated. To add, the discussion and questions that followed all presentations signaled a real intent from participants to ask questions, provide comments, openly share challenges, provide lessons learned from a successful perspective and where implementation was not so successful. This highlights the meeting was a success thanks to everyone's active participation. In that regard, the Chair stressed that relationships are key to the success of the implementation of the Code of Conduct and its supplementary Guidance and that the Chair had hoped that participants had taken every opportunity to meet with and exchange contacts throughout the week.

38. There were a range of good practices, however one example is, where many Member States were undertaking gap analysis to understand where improvements can and should be made utilizing the IAEA's Code of Conduct Self-Assessment Tool.

Recommendations:

39. Discussions that took place throughout the week resulted in several recommendations for the IAEA as follows:

    a. The IAEA should examine the issues around transit and transshipment of radioactive sources and to review the role that the Guidance on the Import and Export of Radioactive Sources may have in resolving such issues.

    b. The IAEA should develop a tool or additional guidance to assist Member States to assess that the State has the appropriate technical capability, resources, and regulatory structure for the management of the source(s) in a manner consistent with the Code.

    c. The IAEA should continue to assist Member States by engaging higher levels of Government to raise awareness of the Code of Conduct and supplementary Guidance and promote sustainable implementation.

    d. The IAEA should consider reviewing the current Guidance on Import and Export and determine if a provision should be added for the importing State to provide notification to the exporting State to acknowledge receipt of radioactive sources.

    e. The IAEA should update the Point of Contact Roles and Responsibilities Aiding Document to reflect Point of Contact experiences since the original document was developed.

    f. The IAEA should consider revising the current import and export forms on the website to reflect Member State use since these forms were created and review options to translate the forms into any language required noting that the forms are currently available in all official UN languages.

g. IAEA should consider providing guidance to exporting States on reporting mechanisms to be followed when the exporting State denies an authorization of Category 1 or 2 radioactive sources.

Julie Murray

Chairperson

15 December 2023