

The Americas Regional Meeting on the Implementation of the Guidance on the Management of Disused Radioactive Sources

Held Virtually from IAEA Headquarters, Vienna, Austria

28 – 30 June 2021

Report of the Chair

1. The Americas regional meeting on the implementation of the Guidance on the Management of Disused Radioactive Sources (Guidance), was held from 28 to 30 June, 2021, virtually from IAEA Headquarters in Vienna, under the chairmanship of Ms C. Dominguez (Argentina).
2. The meeting was attended by 69 experts from 25 Member States of the Americas region: Argentina, Bahamas, Barbados, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Panama, Paraguay, Peru, Trinidad & Tobago, United States of America, Uruguay, and Venezuela.

The Scientific Secretaries for the meeting were Mr R. Pacheco (Division of Radiation, Transport and Waste Safety) and Mr T. Hayes (Division of Nuclear Security).

3. The objective of the meeting was to enable Member States of the Americas region to exchange experiences in relation to the management of disused radioactive sources, as recommended by the Code of Conduct on the Safety and Security of Radioactive Sources and by the Guidance on the Management of Disused Radioactive Sources; to discuss the national and regional challenges faced by regulatory bodies and other stakeholders in this area. All recommendations of the meeting will be reported to the August 2021 Code of Conduct meeting to be held virtually at IAEA Headquarters in Vienna.
4. The meeting was open by Mr Muhammad Khaliq, Section Head of the Nuclear Security of Materials & Facilities Section on behalf of Ms Elena Buglova, Director of the Division of Nuclear Security. In his opening remarks, Mr Khaliq recognized the way that the ongoing COVID-19 pandemic has changed how work and meetings are conducted and stressed that despite these challenges we need to continue to hold key discussions related to the safety and security of radioactive sources and remain engaged to collectively ensure the safety and security of radioactive sources throughout their complete life-cycle. Mr Khaliq encouraged States to provide political support to the Guidance if this has not already been done. Mr Khaliq emphasised that the security of radioactive stands high in the agenda of our Member States, as expressed through IAEA's Policy Making Organs, and reiterated during high-level fora. For instance, in the Ministerial Declaration from the 2020 International Conference on Nuclear Security (ICONS 2020), held in Vienna February 2020, Member States committed to

“maintaining effective security of radioactive sources throughout their life cycle, consistent with the objectives of the Code of Conduct on the Safety and Security of Radioactive Sources and its supplementary guidance documents”, which includes the Guidance on the Management of Disused Radioactive Sources.

Mr Khaliq also highlighted the important role radioactive sources serve in society while stressing that ensuring the safety and security of radioactive sources is an ongoing effort that continues throughout the source life-cycle, including when sources become disused and that effective end of life management plans are needed for disused sources as outlined in the Guidance to reduce the probability of disused sources falling out of regulatory control and potentially contributing to accidental exposure or use in malicious acts.

5. Opening of the meeting was continued by Mr Peter Johnston, Director of the Division of Radiation, Transport and Waste Safety |Department of Nuclear Safety and Security. In the opening remarks of Mr Johnston, it was noted that there is very wide-spread acceptance of the Code of Conduct on the Safety and Security of Radioactive Sources and increasing support of its supplementary Guidance. It was highlighted by Mr Johnston that political commitment to the Code and Guidance provisions and implementation assist global improvements of the control and protection of radioactive sources, including safety and security of the disused radioactive sources. However, he noted that we can never be complacent, and efforts should continue in all circumstances, in particular the COVID-19 pandemic. Mr Johnston brought participants attention to the fact that political commitment to the Guidance is a good starting point for establishing or revising of the National Policy and Strategy or legislation and regulations for the management of disused sources. Mr Johnston stressed that results of the survey, conducted as part of the preparation of this meeting, demonstrate that more efforts are needed as we all work towards global support and implementation of the provisions of the Guidance. Mr Johnston noted that proposals and conclusions of the meeting will inform IAEA activities and may also be used in national action plans to improve safety and security on the management of disused radioactive source.
6. Presentations on topics relevant to the safety and security of disused radioactive sources were made by representatives of the IAEA Secretariat and invited participants in plenary sessions during the meeting. All presentations will be made available to participants on a secured shared webpage¹. Therefore, their detailed contents are not replicated in this report and only a short summary is provided below.

Overview of the IAEA Activities to Support the Code and Supplementary Guidance Implementation

7. The Secretariat (Mr R. Pacheco, NSRW) provided participants with an overview of the Guidance on the Management of Disused Radioactive Sources provisions. Mr Pacheco encouraged participating States to use the meeting as an opportunity to share and gain knowledge in relation to the implementation of the Guidance and stressed the benefits of making a political commitment to the Guidance: establishment or revision of the National

¹ [Participants Shared Space](#)

Policies and Strategy for the management of disused radioactive sources; implementing of comprehensive safety and security requirements and strong regulatory control over disused sources; resources for the future management of disused sources allocated before their acquisition; reuse and recycling of disused sources promotion; return to supplier issues addressed in advance, before sources enter a country; national sites for consolidation and safe and secure storage of disused sources for future disposal; safe and secure management of recovered disused and orphan sources. Mr Pacheco also drew attention that exporting States should be evaluating the infrastructure for the management of disused sources in importing States before authorizing the export. Mr Pacheco further noted that Political commitment to the Guidance is a positive signal to the exporting States in this sense. Mr Pacheco concluded by encouraging participants to consider political commitment for Guidance and stressed that no formal obligations follow such commitment as the Code and its Supplementary Guidance are non-legally binding.

8. The Secretariat (Mr T. Hayes, NSNS), reviewed the results of the regional survey on implementation of the Guidance provided to participants in advance of the meeting. Mr Hayes also encouraged participants to consider political commitment to the Guidance noting that the Americas accounts for 15% of the global political commitment to the Guidance. Mr Hayes noted that the survey results indicate that despite only 6 States in this region having provided a political commitment to the Guidance many of the provisions are being implemented or have been implemented under existing regulatory frameworks. However, Mr Hayes also noted there appears to be specific challenges in relation to the Guidance provisions on National Policy and Strategy, transport, short-term storage, agreements related to return to supplier and international and domestic cooperation. In relation to National Policy and Strategy, the results of the survey indicated that while some States in this region have developed a National Policy and Strategy most of them do not fully meet the provisions of the Guidance and many States are still in the process of developing the policy and strategy. It was also noted that many States indicated that there is a need for assistance and additional guidance in this regard. The Guidance provisions related to long-term interim storage appeared to have a good progress due to international cooperation, however this capacity is not available to 37% of the States that responded to the survey. It was presented that the survey was used to identify the thematic topics for the country group discussion sessions on Day 2 of the meeting and that the overall results would be included in the global results and presented at the August 2021 Open-ended Meeting of Technical and Legal Experts on Implementation of the Guidance on the Management of Disused Radioactive Sources.
9. The Secretariat (Ms M. Assi, IEC) provided an overview of the International Emergency Centre (IEC) assistance and support to Member States in preparedness and response to the events with disused sources: Assistance in Preparedness and Response. Ms Assi provided guidance on the appropriate IAEA safety standards and other publications; advised States how to request IAEA assistance in the case of the emergency with disused sources and how to use RANET that is operational tool to implement the Assistance Convention and for provision of international assistance upon request. Ms Assi also provided an overview of the ConvEx-2c exercise that occurred in 2015 for a radiological emergency with transboundary and transnational impact to highlight the importance of effectively managing radioactive sources throughout their life-cycle.

10. The Secretariat (Mr A. Lagumdzija, NSRW), presented an update on ongoing and new IAEA initiatives for the safety regulation of management of disused radioactive sources. Mr Lagumdzija noted that support to the Member States in improving safety and security of disused sealed radioactive sources has a long-term goal for Member States to have the capability to safely and securely manage DSRS independently. He noted that support is provided by the development & implementation of international Safety Standards and supporting documents (list of newly published was provided), by executing Secretariat functions for the Joint Convention on the Safety of Spent Fuel and on the Safety of Radioactive Waste Management & for the Code of Conduct on the Safety and Security of Radioactive Sources, by supporting States in the development of National policies and strategies and safety regulations for management of disused sources, assistance at all steps² in the management and regulation of disused sources, assistance in conducting safety assessments, safety cases and peer reviews of facilities and activities involving disused sources. This support is provided through the technical cooperation projects, events, training, procurement and support of the Regulatory Authority Information system (RAIS) & other forms of assistance. Mr Lagumdzija provided examples of the different projects in conditioning, storage and disposal safety assessment.
11. The Secretariat (Mr J. Carlos Benitez-Navarro and Mr W. Stewart, NEFW) provided an update on the management options for the disused radioactive source (DSRS), including recovery and repatriation efforts. Mr Stewart and Mr Benitez-Navarro highlighted the Guidance from the viewpoint of each responsible party as the requirements impact the different roles distinctly. Management issues with DSRS were highlighted to demonstrate common issues faced by all Member States. Responsibilities for end user/licensee were highlighted stepping through the Guidance and focusing on the management options. Examples of projects from the Americas region were also presented to highlight management options in the Guidance and reinforce specific points to consider while making the decision regarding each step of the source life cycle (when DSRS become disused, reuse, recycling collection, conditioning, storage, disposal). After covering all the technical management options a brief history of IAEA projects demonstrating management options from the Guidance were presented.
12. The Secretariat (Mr T.G. Hailu, NSRW) familiarized participants with the developed by IAEA “Scrap Metal Tool Kit”. Mr Hailu noted that the “Scrap Metal Tool Kit” is a collaboration and information platform for developing capabilities and knowledge sharing in activities related to the control of radioactive material inadvertently incorporated into scrap metal or semi-finished products of the metal recycling industries. In his presentation, Mr Hailu provided an overview of the information that is available in the platform which includes a database of sources, publications, case studies and reference to relevant E-Learning courses. Mr Hailu informed the participants that the “Scrap Metal Tool Kit” is continually being developed and encouraged users to provide input and feedback.

² Search (administrative and physical) and recovery; transport and handling, conditioning, storage, removal, disposal

Summary on the Presentations on Implementation of the Guidance

13. Mr H. Briso from the Chilean Nuclear Energy Commission presented Chile's approach to implementation of the Guidance. In the presentation Mr. Briso covered the regulatory system, scope, framework and National Policy and Strategy for the management of disused radioactive sources. With respect to the National Policy and Strategy, Mr Briso highlighted that many of the policies stem from the national nuclear safety law with the licensee being fully responsible for the safety and security of the radioactive source throughout its lifecycle and that the owner must also include the provision of resources for the management of the source at the end of its lifecycle. Mr Briso also reported on the IAEA Multi-Regional Project on Sustainable Management of Disused Radioactive Sources supported by the Government of Canada which has the objective of strengthening regulatory frameworks and developing strategies for the management of disused radioactive sources.
14. Mr Wassenaar, representing the International Source suppliers and Producers Association (ISSPA) and Nordion Inc., presented the role of suppliers in the management of disused radioactive sources. Mr Wassenaar reviewed the structure and 17 members of ISSPA. Mr Wassenaar highlighted that disused sources are still radioactive sources and should be treated in the same manner and noted that the term 'disused radioactive sources' does not necessarily reflect that these sources may still be reused or recycled. For the members of ISSPA, it was presented that the management of disused radioactive sources begins at the start of the radioactive source lifecycle. Suppliers only supply radioactive sources to end-users that are licensed to possess, use and store the radioactive source for the identified end-use. Once the source is received by the end-user, Mr Wassenaar stressed that the end-user legally becomes the owner of the radioactive source and management of the source throughout its authorized lifecycle is the responsibility of the licensee.

To facilitate the return of sources to the supplier, Mr Wassenaar indicated that ISSPA members maintain approved containers for shipments and also has the ability to ship legacy sources such as the C-188 Co-60 radioactive source that were first used in the 1960's. Mr Wassenaar informed the participants that ISSPA members have the capability to take these sources back.

Mr Wassenaar also discussed agreements to facilitate the return of sources to the supplier and highlighted several challenges from the industry perspective. One of the key challenges presented was that despite the Guidance providing key provisions to include in agreements, there is no single template that will fit all sources due to the varying half-life of radioactive sources and length of time they may be in use. Mr Wassenaar did indicate that the agreements to return sources to the supplier at the end of their lifecycle could also be part of the overall service agreement many end-users enter. Because the service agreement requires ongoing use over the lifecycle of the source there would be frequent review of the return the supplier provisions of the agreement and therefore assisting to ensure the key provisions of the Guidance are maintained within the agreement. To conclude, Mr Wassenaar stressed that having an accurate national registry of radioactive sources is key for ensuring all radioactive sources remain under regulatory control and to ensure the State is aware of all sources on its territory.

15. Ms Tremblay presented Canada's experience in management of disused sources. Ms Tremblay did a brief overview of the Canadian Nuclear Safety Commission (CNSC) regulatory framework for radioactive sources and practical case study of source recovery. The following important aspects of regulatory regime for disused sources are covered: CNSC authorizes a licence revocation only when all inventory disposed of or transferred; records of transfers, receipts, disposal or abandonment must be kept; licensees are responsible for the safe recovery of lost and stolen sources; CNSC takes action when the sealed source owner cannot be identified or the entity cannot be held responsible; sealed source tracking system, national registry and annual inventory compliance. Ms Tremblay described continuous Guidance implementation improvement roadmap: national policy and strategy on the management of disused sources establishment; time limits for short-term storage of disused sources establishment; regulatory process for designating a disused source as radioactive waste development; assessment of importing state's capacity to manage disused sources. The following special challenges of the disused sources management were stressed for licensees with large number of storage locations; licensees with large number of sources not in use; licensees that are not fully cognizant of their regulatory obligations.

Ms Tremblay described financial guarantees in the format of contributory insurance policy that came into force in 2015. It allows licensees to use low-cost insurance to fulfil the requirement to have a financial guarantee. Insurance policy is between the CNSC and an insurance company and CNSC is the sole insured party. Insurance covers only the costs incurred by the CNSC, should the CNSC have to intervene. A financial guarantee does not change the licensee's obligation for the safe and secure termination of licensed activities and facilities. However, the financial guarantee assists in the planning for future obligations and avoiding transferring liability to the taxpayers or other non-nuclear related entities. Ms Tremblay concluded that CNSC remains committed to continuous improvements according the Guidance on the Management of Disused Radioactive Sources.

16. Mr A. Cortes from the Nuclear Safety and Safeguards National Commission (CNSNS) of Mexico provided an overview of an event that occurred in 2013 in Mexico involving the loss of control of a disused Category 1 Co-60 radioactive source. The event described by Mr Cortes was the result of a vehicle theft that was transporting a disused Category 1 Co-60 source. Mr Cortes provided a summary of the event including calculated dose to the population and first responders. Mr Cortes also reviewed the global media attention that the event attracted. To conclude, Mr Cortes reviewed the extensive efforts required to search for and secure the disused radioactive source.
17. Mr E. Thompson from the U.S. Department of Energy (DOE), Office of Radiological Security (ORS) provided an overview of US international efforts to search and secure radioactive sources. Mr Thompson presented that ORS implements the removal of sources to long-term storage or disposal in order to reduce the risk of misuse. It was also presented that ORS assists to build capacity, assisting countries to develop domestic capabilities to locate and secure orphan and disused radioactive sources. ORS also assists by providing training of partners on aspects of source removal and by investing in technologies that enhance capabilities of ORS, partners, and the IAEA to remove sources, so that sources are removed in a timely manner. Mr Thompson also highlighted that ORS works to promote IAEA

guidance in international fora and within their international partnerships and encourage their partners to commit to these documents and align their policies and practices. Mr Thompson's presentation also covered the development of new storage solutions that ORS is developing and also the development of a new modular mobile hot cell which would be transported in ISO storage containers and could be assembled for use in a couple of days.

18. Following the presentations, discussion sessions were held.

Country group Session

19. Prior to the meeting, participants were divided into three Country Groups that worked in parallel virtual sessions on 29 June 2021 to discuss 3 topics. These topics were identified in the results of the regional survey: Group A Topic – Short-term and long-term storage of disused radioactive sources; chaired by: Ms M. Villatoro of Guatemala, Group B Topic – Legislation, regulations and regulatory body functions for the safety and security of disused radioactive sources; chaired by Ms A. Guillen of Cuba and Group C Topic – Return to supplier option and agreements. Country Groups were chaired by: Mr A. Facure of Brazil. Group Chairs were supported by IAEA staff Mr R. Pacheco, Mr T. Hayes, Ms A. Betancourt Hernandez, Mr F Andrada Contardi and Mr W. Stewart.

Following the country group sessions, the three groups met in plenary to discuss the overall findings as presented by respective country group chairs. A wide range and depth of information and experiences were shared amongst participants. A summary of key issues as presented by the chairs on the basis of reports made in country groups is provided below.

Group A discussed “**Short-term and long-term storage of disused radioactive sources discussions**” summary is as follows:

20. The States observed that there is a great diversity of nuclear applications in which radioactive sources are used in the region, ranging from nuclear reactors, sources for industrial use to medical applications, which leads to a varying degree of complexity in waste management.

21. Regarding short-term storage:

21.1. The participants noted, based on; experiences; shared opinions and statistics obtained by surveys, the regional tendency to consider short-term storage as a desirable management option.

21.2. Some States noted that there is no set time limit for short-term storage and this may be due to the fact that there are no other available management options resulting in short-term storage without any defined time limits. Some States considered that this may be due to provision in current regulations, the lack of technological and financial resources for the regulatory bodies to provide an efficient solution to the problem.

Participants recognized that this produces vulnerabilities in the management of disused radioactive sources and possible radiological risks for the public and the environment.

- 21.3. Some States explained that they have experience in managing disused sources as short-term storage with positive results: each of this country uses different criteria to do so. These States reported that they have regulatory provisions in force and comply with the provisions of the Guidance.

22. Regarding long term storage:

- 22.1. Most States tend to use the long-term storage as a management option. The Group reported that in the region there are several long-term storages facilities.
- 22.2. Some States expressed that they count with proper installations according to international standards to minimize radiological risks for long-term storage.

23. One State is planning the construction of a disposal facility in the future.

Group B discussed “**Legislation, regulations and regulatory body functions for the safety and security of disused radioactive sources**” summary is as follows:

24. Some States noted that regulations in their legal framework establishes obligation for the user to decide final management option of the disused sources, either in interim storage facilities or return to supplier.
25. Most States reported having an appropriate regulatory infrastructure for control of radioactive sources including the functions of Authorization, Inspections and Enforcement.
26. One State reported that there is a regulation that establishes the requirement for the importation of a radioactive source with the supplier's endorsement to receive it back. In addition, the user is required 25% of the value of the source to integrate a fund under the supervision of the Ministry of Health dedicated to the management of disused sources.
27. Most States reported that the financial cost for managing radioactive disused sources are covered by the user and some States reported that there is a governmental contribution.
28. Some States established mandatory conditions in the authorization for the management of radioactive disused sources. Some States require the return of sources at the end of the life-cycle of the source.
29. Some States have established regulations or strategies to regain control over orphan source. Some States has included this regulatory activity in the National Plan for preparedness and response to radiological incidents or nuclear emergencies.
30. Some States established criteria on the decision-making process to designate a source as a disused radioactive source or as a radioactive waste; However, many states consider that these concepts should be established in the legislation clearly and specifically in relation to

when a source is declared as a disused source and when a disused source is considered radioactive waste.

Group C discussed “**Return to Supplier Option and User’s Agreement with the Supplier**” summary is as follows:

31. Few States reported having agreements in place for the return of disused radioactive sources to the supplier as a regulatory requirement.
32. No States reported using the provisions of the Guidance to model their agreements, however, many States reported that the lack of a regulatory framework or the fact that they have just reached this milestone prevents them from being able to require agreements for return of sources.
33. Only a couple of States with an established regulatory framework reported the use of financial guarantees to facilitate the return of sources to supplier instead of the use of agreements for return to supplier
34. While return to supplier is an important management option for States that do not have their own capacity to manage disused radioactive sources (e.g., Small Island States), several States noted that reuse of sources could a better option for these States and further recommended the establishment of regional networks for the reuse of radioactive sources.
35. Some States reported barriers beyond the agreement that prevent radioactive sources from being returned to the supplier.
 - 35.1. While the Guidance recommends the establishment of agreements between the end-user and supplier for the return of disused sources, it was discussed that barriers beyond the agreements may be preventing sources to return to supplier.
36. Most participating States indicated that the licensee is ultimately responsible for the establishment of a return to supplier agreement but most noted that the establishment of a financial agreement under the regulatory framework is key to ensuring the management of disused radioactive sources.
 - 36.1. It was recognized that financial guarantees should be part of the National Policy and Strategy for the management of disused radioactive sources.

37. Conclusions

A number of high-level conclusions were identified by the Chair:

38. There is widespread regional support for the Guidance. States that have not yet made a political commitment to the Guidance were encouraged to do so.

39. The discussions highlighted the inputs available from the IAEA for addressing the challenges associated with managing DSRS. These inputs include guidance on developing and maintaining an inventory; access to information on effective conditioning of DSRS for more efficient storage; increasing the physical protection of storage facilities; and providing solutions for the disposal of radioactive disused sources.
40. The implementation of the Guidance by States and the Agency's technical assistance programme and bilateral assistance programmes produce significant improvements in regulatory infrastructure and capability in relation to the safe and secure management of radioactive disused sources.
41. The importance of sustainability of implementation of all areas of the Guidance was emphasised. Such sustainability requires the development of national legal and regulatory framework, within all States, and ongoing international, multilateral and bilateral support and cooperation.
42. The Meeting achieved the objective of facilitating the exchange of information and experiences between States. States generally recognized the value of sharing good practices and lessons learned in the Country Group sessions. Participants appreciated the open nature of the discussions, the possibility that in the groups of countries discussions are exchanged in the same language and looked forward to future information exchange meetings, as well as to regional meetings and to intersessional topical meetings.

The main challenges or areas for improvement highlighted by this meeting are:

- Key responsibilities for the safety and security of radioactive sources at the State level, in particular those relating to national coordination among competent authorities as well as regional and international coordination. Establishment and responsibilities of the regulatory body;
- Requirements for the safety and security of radioactive sources that are contained in relevant national legislation and regulations;
- Implementation of arrangements and procedures, for the management of radioactive disused sources. In particular, their safe and secure storage and disposal;
- Recognising that interim storage is not a permanent solution for long-lived DSRS, the States should consider to develop strategies to evaluate and compare options for DSRS disposition, combining a full range of factors, such as safety and security, costs, public acceptance and political support to indicate the preferred option;
- Provision of training and capacity building for the various management options allow the member States to meet this challenge; and

- National perspective on developing regulations and/or licensing requirements governing financing of disused source management.

Recommendations

Considering the presentations made in plenary session, the results of the survey submitted prior to the meeting, the national presentations made during the meeting and the discussions that have taken place in the meeting, the following notes for IAEA Secretariat are made about the areas where more guidance/assistance is needed:

- a) further promotion of implementation of the Guidance, in particular with countries that have not yet expressed political support, and to facilitate the organisation of regional and international meetings;
- b) continued efforts to assist States in capacity building for the various management options;
- c) barriers of return to supplier and consider providing additional guidance on the return to supplier management option;
- d) reuse and recycling of radioactive sources;
- e) establishing regulatory requirements for financial guarantees to assist in the end of life management of radioactive sources; and
- f) establishment of a National Policy and Strategy for the management of disused radioactive sources.



Cristina Dominguez, Chairperson
30 June 2021