

**Africa Regional Workshop on the Implementation of the Code of Conduct  
on the Safety and Security of Radioactive Sources – Guidance on the Management  
of the Disused Radioactive Sources**

**11 – 15 March 2019, Lusaka, Zambia**

**Report of the Chairperson**

1. A regional workshop on the Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources - Guidance on the Management of Disused Radioactive Sources took place in Lusaka, Zambia under the chairmanship of Mr. Boster Dearson SIWILA (Zambia).
2. 38 experts from 27 Member States (Angola, Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Cote d'Ivoire, Chad, Egypt, Ethiopia, Gabon, Ghana, Kenya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Niger, Nigeria, Senegal, Sudan, Togo, United Republic of Tanzania, Zambia and Zimbabwe) attended the meeting. The Scientific Secretary for the meeting was Ms. O. MAKAROVSKA (IAEA Division of Radiation, Transport and Waste Safety). Two IAEA experts took part in the workshop: Mr. R. SCHLEE (IAEA Division of Nuclear Security) and Ms. C. ROUGHAN (IAEA Division of Nuclear Fuel Cycle and Waste Technology). The workshop took place in English to facilitate the fullest contribution of all participants.
3. Mr. Boster Dearson SIWILA, Head of Radiation Protection Authority (Zambia), opened the meeting and briefed participants on the Radiation Protection Authority as the technical arm of Ministry of Health, charged with the responsibility of ensuring that the workers, the members of the public and the environment are protected from the hazards arising from the use of ionising radiation. The Honourable Minister of Health Dr. Chitalu CHILUFYA welcomed all the IAEA delegates and participants from various countries. The Honourable Minister outlined the importance of the workshop and mentioned that this meeting is a forum for the participating countries to share their national experiences on the management of disused radioactive sources. He thanked the International Atomic Energy Agency for strengthening Radiation Protection Authority's capacity to protect the workers, the public and the environment from the potential harmful effect of ionising radiation.
4. The purpose of the meeting was to enable and foster safe and secure management of the disused radioactive sources in accordance with the Code of Conduct on the Safety and Security of Radioactive Sources (Code) and its Supplementary Guidance on the Management of the Disused Radioactive Sources (Guidance). Another purpose of the meeting was to obtain an overview of the current status of

participating Member States' national infrastructures for safety and security of disused sources management in the context of Code and its supplementary Guidance, and to provide a platform for exchanging experience, lessons learned, successes and challenges.

5. Ms. O. MAKAROVSKA provided several presentations that covered the following provisions of the Guidance on the Management of Disused Radioactive Sources: national policy and strategy, legislation and regulations, regulatory body roles and responsibilities, storage and disposal, reuse and recycling, return to the supplier.
6. Participants from 21 Countries provided the IAEA with 29 papers, outlining Implementation Practices that described different specific national good practices, implementing the guidance. The Implementation practices papers were disseminated to all participants before the meeting. In addition, Ms. O. MAKAROVSKA provided an overview presentation, summarizing the different implementation practice papers.
7. Ms. Cathleen ROUGHAN delivered an overview of the IAEA standards and guidance documentation supporting the management of disused radioactive sealed sources (DSRS), focusing on the technologies available. This included a summary of NE series NW-T-1.3 "Management of DSRS" and several Technical Documents on specific management practices for various types of radioactive sources and devices. Specific information on the assistance and the availability of specialized tools and technologies such as: Mobile Tool Kit Facility, Type B(U) certified transport container to support MS in the safe and secure management of DSRS was presented.
8. Mr. René SCHLEE presented an overview of security considerations and applicable IAEA guidance on the security of DSRS. This included a review of assigning security levels, based on the approach outlined in Nuclear Security Series No. 11; security consideration for the transport of DSRS and an overview on IAEA Guidance with regard to develop a national strategy for regaining control over orphan sources and improving control over vulnerable sources.
9. All workshop materials, including presentations, national presentations, implementation practices papers and useful references were made available for all participants.
10. One day was dedicated to Member State presentations about their current DSRS management infrastructure and about the status of the implementation of the Guidance in their State. The remaining sessions included discussions in 3 groups on implementing the Code of Conduct and Guidance, including building common approaches to the implementation of disused sources safe and secure management. Participants also discussed challenges and successes in Guidance provisions implementing and prepared recommendations for the IAEA Secretariat.

11. The following paragraphs summarise the main issues identified from the presentations and group discussions.

#### 11.1 Political Support

Sudan, Cote d'Ivoire and Nigeria have made political commitment on the Guidance implementation. Several Countries reported that the letter of political support is under preparation.

*Countries are encouraged to provide the political support the new Guidance on the Management of the Disused Radioactive Sources.*

#### 11.2 National policy and strategy

Few Countries reported that national policy and strategy is already approved as part of the Law or a separate Governmental document. Several Countries have already drafted national policy and strategy for the disused sources management.

Countries advised that it will be useful to draft national policy and strategy working group/committee that includes regulatory body, operators and other stakeholders.

IAEA assistance in the national policy and strategy is available and useful both in the review of the draft and expert missions to support drafting.

During the group discussions it was stressed that state policy shall include long-term Government commitment for the safety and security of disused sources. Important structural element of the policy is: allocation of responsibilities, provision of resources, safety and security, waste minimization, export and import of DSRS and radioactive waste, management of radioactive waste and DSRS, public information and participation. National strategy should set the means and mechanism on how to implement the national policy including provision of financial resources for management of DSRS.

The following benefits of having the national policy and strategy for DSRS management in place were underlined: it provides good management regime of disused radioactive sources; it enables the State to address all the provisions and undertaken actions in harmonized and coherent manner; it gives the users of disused radioactive sources understanding of regulatory framework of management of disused radioactive sources; it makes the State efficient in management of disused radioactive sources; it strengthens the synergy between stakeholders (Regulatory Body, Users, Suppliers, etc), it identifies the gap if any in the implementation of management of disused radioactive sources.

Countries agreed that the State in its Policy & Strategy must ensure availability of fund for management of DSRS using different mechanisms for the different types

of DSRS: for newly acquired radioactive sources and previously authorized radioactive sources or orphan sources.

It was emphasized that each State should identify the competent authorities that should be involved in the management of DSRS and assign specific role to each authority, promote adequate safety & security culture in their implementation of the policy and strategy and that the regulatory body may be coordinating the team of different national agencies that implement national policy and strategy.

*All Countries recognize the importance of the establishment of the policy and strategy for the management of disused sources and most of the Countries have in place plans for the development of national policy and strategy for the management of disused sources.*

### **11.3 Laws – Regulations**

Only few Countries reported that specific regulations on the radioactive waste and disused sources safe management are issued. Several Countries have specific regulations drafted.

*Development of the specific regulations on the radioactive waste and disused sources safe management remains the area where further actions by the Countries are needed.*

### **11.4 Regulatory Body (RB) Roles and responsibilities**

Most of the countries have the RB with the core regulatory responsibilities; regulations establishment, authorization, inspection and enforcement. However, in some Countries specific responsibilities that are important for the disused sources safety and security regulation are not assigned to the RB by national legislation.

In some Countries RBs have potential conflict of interest as they operate disused sources storage facilities. Countries discussed the situation of the potential conflict of interest when RB is operator of the DSRS storage facility. Countries agreed that in some specific cases that was the only possible decision to move forward with the national storage establishment. However, regulating and operating of the same facility is not in the compliance with international safety standards and security guidance. Countries concluded that the main challenge is lack of enforcement actions in this case, potentially compromising safety and security. Countries agreed that Governments should be informed on the potential conflict of interest and plans to mitigate such situation should be in place. These plans may start with the administrative separation of the regulatory department and radioactive waste operation department in the RB and finally provide separation of the RB into the 2 separate agencies: one for the operation and one for regulatory activities or transference of the operation activities to the other legal entity in the country. Updating/reviewing of the legislation framework to ensure effective independence of RB and enhancing of the competency of the operator of the radioactive waste management facility should integral part of these plans.

Countries discussed specific roles and responsibilities of RB in the area of DSRS: RB power to establish specific arrangements for safe and secure management of the RS once it becomes disused; RB responsibility to establish requirements and assess adequacy of financial provisions to cover cost of management once the source becomes disused; RB responsibility to require and verify prompt notification by the user to the RB once the RS becomes disused; RB power and practical examples of the modification of the license to ensure DSRS safety and security; RB responsibilities when the end user is bankrupt and/or the source is abandoned and other unforeseen circumstances; RB responsibilities for inspections of disused sources; RB access to the necessary competencies including review and assessment of the plans and arrangements for the management of DS, including financial provisions.

Groups discussed the decision-making process for designating DSRS as radioactive waste management. The Group has proposed the following steps: the user informs the RB of its inability to return the DSRS to supplier or reuse and the intention to declare the DSRS as radioactive waste; RB agrees/disagrees; official record is done and kept by RB.

Countries decided that for DSRS inspection program should be the same or even more rigorous than for the sources in use.

*Empowerment of the national RBs with all necessary roles and responsibilities as advised by the Guidance is the area of improvement id the area of improvements for the most Countries. Measures to minimize the conflict of interest when RB operates the disused sources storage facility are necessary.*

### **11.5 Disused sources inventory**

Most of the countries have disused sources inventory and few countries are in the process of inventory conducting. All Countries agreed that full and regularly updated disused sources inventory is pre-condition of the national strategy of disused sources implementation.

In particular, Countries have mentioned such important actions of the inventory establishment and keeping: sensitization of users through workshop or medias, contacting all the users by letters, emails or phone calls to declare all their radioactive sources in use or disused; physical inspection by RB to different facilities; input of different types of sources in use, disused or orphan into the database; regular update to the inventory should through regular inspections and user notifications.

*All Countries agreed that full and regularly updated disused sources inventory is pre-condition of the national strategy of disused sources implementation.*

### **11.6 Short-term storage**

All Countries recognize that short-term storage is not an option for the disused sources management but may be interim step before the management options are implemented. Some countries do not have interim storage facility and have short-term storage only at the users' facilities/sites. However, all countries recognize the necessity to construct and operate centralized storage facility. Several countries use authorization and/or enforcement measures to minimize cases and time of the storage at the users' facilities/sites, in particular, fees and fines for the users are used to limit duration of the temporary storage of the disused sources at the users' facilities/sites.

*Countries agreed that interim national storage facility is an important step to provide safety and security of disused sources.*

### **11.7 Storage and disposal**

Some countries reported that the centralized storages are the national centers for disused sources conditioning and long-term storage (tens of years). Countries agreed that long-term storage facility is needed for conditioning and preparation for disposal of DS. Countries stated that long-term storage cannot be a permanent solution because of safety and security consideration, land, human and financial resources needed.

Countries also discussed requirement to store DSRS to facilitate future handling and processing, records of the DS in the long-term storage facility, requirement to condition DSRS, acceptance criteria.

Only 2 Countries reported disposal programs' implementation using bore-hole concept. It was noticed that site characterization is a long and demanding process and requirements and resources shall be in place to ensure that the disposal program is subject to safety and security assessment prior to authorization by the RB following site characterization, design, construction, operation and closure: to ensure that the DS to be disposed of are conditioned as required by the RB and comply with the waste acceptance criteria; to ensure that the inventory for disposal is updated

*Lack of disposal route remains a big challenge in the region.*

### **11.8 Transport and transit of disused sources**

Countries noticed that the operator should ensure that the appropriate type of packaging is used, for high activity sources, such as, categories 1&2 the escort should be provided, information regarding security detail for the source in transit should be treated as classified, the integrity for the source should be verified. Countries mentioned as challenges lack of: willingness of the carrier, lack of

qualified carriers; transport companies for radioactive material; certified transport packages.

Some Countries stressed the need in improvement of the regional cooperation for radioactive sources (including disused sources) transit. Lack of certified transport containers is one of the challenges.

#### **11.9 Disused sources reuse and recycling**

Many of the Countries had no experience or regulatory provisions for addressing the reuse and/or recycling of DSRS and would welcome additional support and guidance on this management option. The concept of establishing a clearinghouse at the radioactive waste operator or storage facility to hold an inventory of DSRS for potential reuse or recycling was presented.

#### **11.10 Return to the Supplier**

“Return to the supplier” option for the management of the disused sources is used as by the all Countries. Most of the Countries have “return to the supplier” requirement in national legislation. However, most of the Countries do not have in the legislation requirement for the end user to provide financial guarantees before the acquisition of the source. Countries agreed that requirements for the return to the supplier should be part of national legislation together with the requirements on the financial provisions using graded approach (e.g. for 1st and 2nd category sources).

Countries agreed that legislation should incorporate requirements that agreement/contract between the supplier and user includes:

- Supplier’s obligation to take the disused source within a specified time period (e.g. in one of the countries this is not more than 1 year from the request for return);
- Arrangements for transport and associated conditioning of the disused source in connection with its return;
- The initial estimation, periodic revision, if needed, and allocation of the costs of return

Countries noticed that RB should be notified once the sources becomes disused.

When there was no contract obligation to return of the source the State should encourage the user to identify another supplier to manage and to establish an agreement to accept the DSRS. In case the supplier is not able to take the DSRS the state might contribute to the costs of return. The RB may also consider repatriation before long- term storage.

Countries discussed the following challenges: high cost of the return, no another supplier willing to take the DSRS, no long term storage, the future costs of the return may be wrongly estimated, lack of competence for cost estimation, lengthy

and complicated process to amend the legislation to include the provision for return of disused source to supplier and financial provisions requirements, agreements with chain of suppliers as some suppliers in the chain may become bankrupt and be non-existent at the time of return of the disused source.

#### **11.11 Repatriation**

Most of the countries benefit from repatriation projects for the DSRS that were purchased before the regulatory framework was established. However, most of the countries do not consider repatriation as part of their national strategies for DSRS management and recognize that repatriation can be used in exceptional circumstances when no available option of the DSRS management exist in the country, in particular, there is no authorised user or no agreement with the supplier to return the source.

#### **11.12 Orphan Sources**

Most of the countries conducted campaigns for the search and securing of orphan sources or plan to do so using international cooperation. Only few countries have strategies for orphan sources recovery strategies and do search and recovery on the systematic basis (2 countries reported search campaigns once per year). Few countries reported that absence of the interim storage does not allow to start the orphan sources search.

- 12.** Participants were informed on the forthcoming international Open-ended Meeting of Technical and Legal Experts to Share Information on States' Implementation of the Code of Conduct, 27-31 May 2019, Vienna, Austria. Participants agreed that States should be encouraged to nominate for this meeting participants of the regional Code and Guidance meetings.


#### **13. Recommendations for the IAEA Secretariat**

- IAEA should continue conducting regional meetings on the Code, Guidance on the Import and Export of Radioactive Sources and Guidance on the Management of Disused Radioactive Sources implementation;
- IAEA should make available through the safety platforms, e.g. Code Platform the technical documents (when finalised) on the reuse and recycling of DSRS and Decision Aiding Methodology for End of Life Management Options for DSRS;
- IAEA should continue providing technical assistance in the form of expert assistance and missions, trainings, equipment procurement, review of the regulations' and law drafts in the areas where further improvements of the Guidance on the Management of the Disused Radioactive Sources are necessary: development of the national policies and strategies for the management of the disused radioactive sources, laws and regulation on the safety and security of DSRS; national infrastructure of the management of



disused sources establishment: reuse and recycling, storage, transport; long-term storage (including characterization and conditioning), disposal (including site characterization, development of the Safety Case), repatriation in exertional circumstances, orphan sources search and recovery.

**Chairperson**  
**Boster Dearson SIWILA**

  
25/03/19