

## **Africa Regional Workshop on the Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources**

**3 – 7 September 2018, Kampala, Uganda**

### **Report of the Chairperson**

1. A regional workshop on the Code of Conduct on the Safety and Security of Radioactive Sources and its Supplementary Guidance on the Import and Export of Radioactive Sources and on the Management of Disused Radioactive Sources took place in Kampala, Uganda under the chairmanship of Mr. D. LUWALIRA (Uganda).
2. 32 experts from 28 Member States (Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Egypt, Gabon, Kenya, Lesotho, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sudan, Togo, United Republic of Tanzania and Zambia) and 7 participants from Uganda 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. E. SNYMAN (South Africa). The workshop took place in the English language, to facilitate the fullest contribution of all participants.
3. Mr. D. LUWALIRA, Head of Atomic Energy Council (Uganda), opened the meeting and talked about implementation of the Code of Conduct on the Safety and Security of Radioactive Sources (mentioned hereafter as the Code) and supplementary Guidance on the Import and Export of Radioactive Sources and Guidance on the Management of the Disused Radioactive Sources and the importance of sharing experience and good practice between all Member States. Mr. H. MALINGA, Acting Director of the Directorate of Petroleum of the Ministry of Energy and Mineral Development (Uganda) welcomed participants and stressed the importance of regional cooperation and support in the Code and Guidance implementation.
4. The purpose of the meeting was to enable and foster safe and secure use of radioactive sources in accordance with the Code and its Supplementary Guidance on the Import and Export of Radioactive Sources and on the Management of the Disused Radioactive Sources. Another purpose of the meeting was to obtain an overview of the current status of participating Member States' national infrastructures for safety and security 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 an update on the current status of the Code and presented the provisions of the Code. This presentation was followed by all participating Countries' self-assessment exercise on implementation Code provisions on governmental and regulatory body responsibilities. This self-assessment informed following group discussions. Ms. O. MAKAROVSKA delivered overview of the basic provisions of the new Guidance on the Management of the Disused Radioactive Sources. Participants were provided with the presentation on the results of the 2017 international Code meeting on the financial provisions for the radioactive sources, once they have become disused and new approaches to the Code Implementation Practices collection and dissemination.
6. Participants provided IAEA with 24 Implementation Practices papers that covered different specific national good practices of the Code and Guidance implementation: how to enforce Law in the absence of regulations that are still in draft; national inventories and Registers; protection of individuals; import-export of radioactive sources; graded approach in the regulatory activities; management of disused sources, including "return to the supplier" management option; search and secure of the orphan sources; training in safety and security. Implementation practices papers were disseminated and overview presentation was provided.
7. Ms. Emma SNYMAN delivered an overview of the Guidance on the Import and Export of Radioactive Sources and emphasized the importance of the exchange of information between Countries (including requests for and answer to the request for consent and notifications prior to the shipment). Ms. Emma SNYMAN also reported participants on the results of international meeting on the Guidance on the Export and Import of Radioactive Sources 2017, 11-13 June stressing that Guidance provisions should be implemented through the national regulations and internal procedures of the regulatory bodies.
8. Mr. Rene SCHLEE presented two lectures, first, about the threats and risks of radioactive sources out of regulatory control and IAEA guidance for the development of a national detection architecture; and second, on security of radioactive sources in use and storage and provided further guidance on how to implement these.
9. The remaining sessions included discussions in 3 groups on implementing the Code of Conduct and Guidance, including building common approaches to the implementation of import/export controls. Participants also discussed challenges and successes in implementing Code and its supplementary Guidance and prepared recommendations for the IAEA Secretariat.

10. All workshop materials, including presentations, national presentations, implementation practices papers and useful references are available for all participants to download from the IAEA protected shared space.

11. Two and a half days were dedicated to Member State presentations about their current regulatory frameworks and about the status of the implementation of the Code and Guidance in their Member State. The following paragraphs summarise the main issues identified from the presentations and group discussions.

11.1 **Political Support.** All Countries except 3 have pledged support to the Code and all countries except 4 - to the Guidance on the Import and Export of Radioactive Sources. Sudan is the first country that expressed support for the Guidance on the Safe Management of Disused Radioactive Sources.

*Countries are encouraged to provide the political support the new Guidance on the Management of the Disused Radioactive Sources. Few Countries that have not yet provided political support to the Code and Guidance on the Import and Export of Radioactive Sources are encourages to do so.*

11.2 **Laws – Regulation.** Most Countries have enacted laws on the radiation safety (Laws) and have safety regulations in force. Few Countries established radioactive sources security regulations. Many Countries have in their plans establishment of or have already drafted security regulations. One Country reported the use of IAEA Model Regulations as the basis for national ones. Few Countries have started implementation of graded approach in the regulations establishment by issuing practice specific regulatory requirements (e.g. for teletherapy, radiography, etc.).

However, there are still several Countries that have laws in draft and put main efforts into the law establishment.

*Development of security regulations and safety practice specific regulations and guides remains the area where further development is necessary.*

11.3 **Regulatory Body.** Most Countries had established regulatory bodies (RB) and these appeared to be invested with the powers required to regulate safety and security of radioactive sources. Effective independence and conflict of interest were not specifically discussed, however, some Countries reported that RBs provide services to the users of the sources and are part of other Agencies. It was mentioned that such situation needs special arrangements to avoid the conflict of interest and preserve effective independence. Few Countries that did not have a Law in force have temporary arrangements for the carrying out regulatory responsibilities and plan to establish RB and several Countries do not have fully operating RB. Many Countries reported lack of the human and financial resources. Few Countries reported low capacity or absence of capacity to take appropriate enforcement actions.

*Providing of sufficient resources to the RBs to fulfill their statutory obligations remains the area where improvements are necessary.*

- 11.4 **National Registers of Radiation Sources.** Most Countries reported having established a national register of at least for Category 1 and 2 radioactive sources (RS), but many of them have in the Register all categories of the sources. Few Countries are in the early stages of national inventories. Many Countries put efforts into the regular updating of the Register and have plans to achieve comprehensive registration of all sources on their territory. One Country reported that all sources are labelled with RB's barcodes. Nobody reported tracking registration system that provides constantly updated information on sources location and status. Many participating Countries said they use the IAEA's RAIS software.

*Completing, systematic updating of National Registers and establishing radioactive sources tracking registration remains the area where improvements can be done.*

- 11.5 **Graded Approach<sup>1</sup>.** Establishment of graded approach to core regulatory activities (regulations and guides, safety review and assessment, authorization, inspection and enforcement) is generally understood, but not implemented or not fully applied in many Countries. All Countries that apply graded approach report that they use IAEA categorization of the radioactive sources<sup>2</sup>.

**Graded approach in authorization and inspection:**

- Several Countries use notification only for lowest risk sources, registration for low risk sources and licensing for higher risk sources;
- One country reported that for highest risk sources 2 stage authorization is required: first for commissioning and then for the operation of the facility;
- Several Countries reported graded approach in the licensing requirements and procedures such as scope of applicant's submittals, if safety assessment is required or not, scope of radiation protection program, if pre-licensing inspections are required or not, duration of authorization procedure, etc.;
- Several Countries have risk-informed inspection program, in particular, inspection frequencies according to the sources category;

*Countries are encouraged to introduce the graded approach as integral part of regulatory activities for control over RS, in particular:*

- ✓ *Establishing safety and security regulatory requirements;*
- ✓ *Authorization, review and assessment;*
- ✓ *Inspection and enforcement.*

---

<sup>1</sup> Graded approach: A process or method in which the stringency of the control measures and conditions to be applied is commensurate, to the extent practicable, with the likelihood and possible consequences of, and the level of risk associated with, a loss of control.

<sup>2</sup> Categorization: IAEA Categorization of Radioactive Sources, RS-G-1.9

11.6 **Training on Safety and Security – Sustainability.** As it appeared from national presentations many Countries rely upon the IAEA and international safety-security initiatives for training of staff rather than develop their own sustainable national training system/courses. However, two Countries reported a training & education strategy for national staff. One of these countries reported that governmental agencies staff is trained by RB free of charge, while for the users of radioactive sources RB accredited courses that are provided by other entity and should be paid for. Countries agreed that they need to build sustainable training systems that include as minimum the following elements that should be established in the order of priority:

- National strategy for training on safety and security;
- Regulatory requirements on training (training procedure, accreditation of courses and training centers, etc.);
- Training program/plan for each stakeholder identified (licensees, regulators, law enforcers, frontline officers, emergency responders, etc.);
- Training requirements for each stakeholder group;
- Training materials (syllabus, modules, content, plan, etc.);
- Provision of the training resources (human and financial);
- Train the trainers program;
- Running training program;
- Evaluation and feedback of the training program.

One working group proposed and did in practice the simple self-assessment based on Code requirements for training. This self-assessment can lead to the development of the action plan for training improvement. The elements of self-assessment are: national strategy; is the training required by law; implementation of training; is the training provided by IAEA or other international body or national designated entity; do the country have an accredited company that carry out the training; is training given to RB, first responders, police, customs; training the trainer.

Participants were assured that IAEA assistance is available in the establishment of all these elements. Participants proposed some additional areas for the IAEA assistance, such as to sending experts to the countries that lack expertise to train local stakeholders; conduct train-the-trainer programs on safety and security; assistance in review of national policy documents on education and training; supporting Countries with equipment for training purposes.

*Countries agreed that they need to build sustainable training systems in the area of safety and security with all necessary elements starting from national strategy for training.*

11.7 **Export/Import.** Some Countries reported that they used the IAEA Forms for Notification and Consent that are provided on the IAEA website. Not all Countries receive or send notification and consent forms. Although, most Countries reported that import/export authorizations are in place, only 4

Countries reported that their import-export procedures strictly follow the Guidance, including notification prior with to shipment and request and answer to the request for consent. Agreement of the recipient of the source to receive it is routinely required. Most Countries do not report a system of notification and request for consent as mandatory interactions between the importer, the exporter and the RB. Nobody reported assessment/evaluation procedures and nobody reported systematic review and revision of the information:

- on the National Points of Contact on the Import and Export<sup>3</sup>;
- answers to the Importing and Exporting States Questionnaire (ANNEX I of the Guidance)

Moreover, many Countries still have at the IAEA secured site<sup>4</sup> answers to the 2004 Guidance questionnaire instead of the answers to the more detailed 2012 Guidance edition questionnaire.

*Countries are strongly encouraged to regularly check and update, if necessary, the information on Points of Contact and answers to the Importing and Exporting States Questionnaire. Countries that implement Guidance provisions in practice but have not yet established regulatory requirements or guidance or written procedures for consent, notification, assessment/evaluation are encouraged to do so.*

- 11.8 **Orphan Sources.** Few Countries have a documented national strategy for orphan source search and recovery. Campaigns for the search of orphan sources take place on an ad hoc basis, but often national financial resources are limited or uncertain. One country presented a comprehensive orphan source search and recovery programme. The other Country shared experience of the Amnesty Recovery program (no penalty & no fee) for disused and orphan sources.

*Countries will benefit from comprehensive and systematic search and recovery programs for orphan sources. Appropriate resources should be allocated by Government for this purpose.*

**Monitoring.** Most Countries report radiation monitoring at the border. However, many of them report that border is not fully monitored due to lack of equipment and qualified staff. Most of the RBs interact formally or informally with their customs agencies.

*Countries are interested in the international assistance in establishment of comprehensive monitoring of the borders, including equipment procurement and commissioning, procedures establishment and staff training.*

## 11.9 Disused Sealed Radioactive Sources (DSRS)

<sup>3</sup> <https://www-ns.iaea.org/downloads/rw/imp-export/import-export-contact-points.pdf>

<sup>4</sup> <https://www-ns.iaea.org/tech-areas/radiation-safety/code-login.asp>

### *Policy and strategy*

Countries do not have a policy and strategy pertaining to the management of DSRS, however some of them have development of such policy and strategy in their responsibilities and/or plan to develop it. One Country has DSRS management plan in place.

### *Reuse and recycling*

Only one Country mentioned that they encourage reuse of DSRS and they have found the local supplier who arranges reuse of the DSRS abroad.

### *Short term storage*

Countries did not report time limits or any other limitations for the DSRS short term storage by the user (except one Country that has time limits). Moreover, in many Countries storage of the DSRSs at the users' sites for the prolonged period of time continues to be a common practice.

### *Long term storage and disposal*

There are no long-term storage facilities in many Countries. However, all Countries that have not yet established such facilities recognize that centralized storage facility is necessary and have construction of such facilities in their plans. One country proposed the step by step approach that included construction of the temporary interim secured storage (ISO container) that was followed by commissioning of the long-term storage facility with the appropriate equipment for DSRS conditioning and storage. Some Countries reported problems in public acceptance when selecting site for the radioactive waste and disused sources storage facility.

There are no disposal routes available and one Country reported that they consider bore-hole facility as potential option for disposal.

### *Return to supplier*

Most Countries reported the requirement for the return agreement with the supplier at least for the 1st category of the sources. However, nobody reported that contracts are required to include such major elements:

- Supplier takes the disused source within a specified time period;
- Arrangements for transport and associated conditioning of the disused source in connection with its return (transport package certified, maintenance of special form certificate);
- The initial estimation, periodic revision, if needed, and allocation of the costs of return.

Most Countries have difficulties with the return to the supplier radioactive sources that were purchased before such a requirement came into force. In these cases, Countries look for the assistance of the other Countries that comes in the form of "repatriation"<sup>5</sup> projects. Countries were informed on the ISSPA (International Source Suppliers and Producers Association) capabilities to take back the sources for the recycling/reuse. List of these capabilities (companies' names and contact

---

<sup>5</sup> The repatriation of disused sealed radioactive sources (DSRS) was often mentioned. Repatriation is, however, effectively, a rescue operation by the donor Member State and if relied upon too frequently, can build a dependence that means that the State waiting to have a source to be repatriated does not build its own capacity to manage its DSRS.

persons, types of sources that can be recycled/reused) was provided to the participants.

#### *Licensing conditions*

Most of the Countries require applicants to provide a plan for the safe management of the DSRS. Usually, return to supplier contractual agreement is considered as sufficient measure. Moreover, usually, there is no backup option in the case when return is not possible. Only few Countries reported that in the case when return to the supplier is not possible the second option (long-term storage at the centralized storage facility) is available.

#### *Financial provisions*

Countries do not have financial provisions for radioactive sources once they have become disused. One Country reported that they financial provisions requirement is in the drafted Law amendment.

*Countries indicated the following areas for improvement:*

- *National policy and strategy for DSRS management establishment;*
- *System of financial provisions/securities to ensure the safe management of DSRS including requirement for financial and technical arrangements in the contracts for the return to the supplier;*
- *Promoting DSRS reuse;*
- *Active search for the routes to return sources to the authorized supplier if return the original supplier is not possible;*
- *Long-term storage facility availability;*
- *Disposal options analysis and disposal program availability.*

### **11.10 Bilateral Agreements and Arrangements<sup>6</sup>**

Some Countries reported bilateral agreements and arrangements with the neighbouring Countries on different safety issues including transport, transit and transshipment of radioactive sources. Nobody reported bilateral arrangements with supplying Countries on the import/export of radioactive sources. However, all Countries recognize benefits of having such agreements and arrangements.

*Countries agreed that bilateral agreements and arrangements with the neighbouring Countries and with supplying Countries should be promoted.*

### **11.11 Security**

Only one country has introduced regulatory requirements for the security of radioactive sources. Although few Countries (four) are in an advanced drafting stage, the majority of participating Countries are either currently in the process of drafting or still in the planning stage. It was noted in this regard that many Countries benefit from the existing IAEA project '**Regional Project on**

---

<sup>6</sup> Agreement mean binding document, arrangements - nonbinding



**Regulatory Infrastructure Africa Region' to develop nuclear security regulations.**

Joint responsibility for both safety-security authorizations & inspections appear to be the rule rather than the exception, albeit only practiced in few Countries so far (four). One country reported difficulties to distinguish between different types of events such as nuclear security events, safety events and emergency events and mentioned a need for more clarity in IAEA guidance.

Some conflicting information was reported in presentations from participants, for example:

- Conduct of authorizations & inspections for both safety and security in the absence of security regulations;
- Conduct of security inspections take place without security-related training for (safety) inspectors

Many Countries highlighted the beneficial role of Integrated Nuclear Security Support Plans (INSSPs) in their respective national stakeholder involvement. Many Countries reported the establishment of a nuclear security coordination committee as a direct result of these meetings. These coordination committees would serve as a driver for establishing a legislative & regulatory framework for the security of radioactive sources as well as conduct of a national threat assessment for the security of radioactive sources.

On the third day, three working groups discussed the following issues:

- Threat assessment for the security of radioactive sources;
- Regulating radioactive sources for security purposes

Following the groups' respective presentation, the meeting discussed implementation of security regulations.

Some of group discussions are summarized below:

*Threat assessment:*

Some Countries reported to have conducted a threat assessment. All Countries reported that the national regulatory body either has been or would be in a coordinating role and leading this exercise.

Those Countries that had not completed a national threat assessment reported challenges with regard to required expertise of RB staff and the need for additional training as well as expert assistance on how to conduct a national threat assessment.

*Security regulations:*

As stated above, only one country reported to have successfully established nuclear security regulations with an additional four Countries in the mature drafting stage.

Those Countries that had not established security regulations reported the practice of adding security requirements as part of an authorized party's safety-license conditions.

Many Countries noted the need for additional training on how to conduct nuclear security authorizations and inspections.

*Implementing security:* Countries with existing security regulations noted the importance of an effective nuclear security culture as a decisive factor in terms of the effectiveness of a facility's security system.

Few Countries that had received international assistance in upgrading high activity radioactive source facilities' security systems reported that sustainability of the systems was a particular challenge. It was noted in this regard that sustainability should be considered already at the design phase of establishing security systems, in contrast to existing practices where sustainability is often treated as an after-thought following the installation of security measures. In this regard, particular thought should be given to the appropriate choice of security measures (e.g. electronic intrusion detection system vs. security guards) to seek an optimal balance between effectiveness and efficiency, depending on national circumstances.

**12. 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 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 Code and Guidance implementation are necessary: regulatory safety and security infrastructure development, establishment of national capabilities for safety and security training; conduct of a national threat assessment; orphan sources search and recovery, management of the disused sources including training for collection and conditioning of disused sources;
- IAEA should continue to offer above-mentioned assistance on a national basis to allow more national staff to participate and benefit from IAEA assistance.



**Chairperson**  
**Deogratias LUWALIRA**

---