

Regional Workshop on 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 Management of the Disused Radioactive Sources

7 - 11 May 2018, Bucharest, Romania

Report of the Chairman

1. An IAEA 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 the Disused Radioactive Sources took place in Bucharest, Romania, under the chairmanship of Mr. R. PACI (Albania).
2. Twenty-three experts attended the meeting from 18 Member States (Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, Georgia, Kazakhstan, Montenegro, Poland, Republic of Moldova, Romania, Russian Federation, Serbia, The Former Yugoslav Republic of Macedonia and Ukraine). The Scientific Secretary for the meeting was Ms. Olga Makarovska of the IAEA Division of Radiation, Transport and Waste Safety. Also contributing to the workshop were Mr. René Schlee of the IAEA's Division of Nuclear Security and Mr. Robert Irwin, a consultant from Canada. The workshop took place in the English language.
3. Mr. Rodin TRAIUCU, President of CNCAN (Romania) opened the meeting and talked about the implementation of the Code of Conduct (mentioned hereafter as the Code) and the Supplementary Guidance on the Import and Export of Radioactive Sources (hereafter – the Guidance) and the importance of sharing experience and good practices between all countries.
4. The purpose of the meeting was to discuss and share ways to enable and foster the safe and secure use of radioactive sources in accordance with the Code and the Guidance and to describe and discuss the recently issued new guidance document on the Management of Disused Radioactive Sources. The meeting also discussed the safe management of radioactive material inadvertently incorporated into scrap metal and semi-finished products of the metal recycling industries. Another purpose of the meeting was to obtain an overview of the status of participating countries' national infrastructures for safety and security in the context of the Code and the Guidance and to provide a platform for exchanging experience, lessons learned, successes and challenges.
5. During the opening session Ms. Makarovska provided an update on the number of countries that have made a political commitment to the Code and the Guidance. She also provided information about dedicated points of contact for import and export purposes and she described the IAEA's efforts to increase the number of countries making a political commitment to the new Guidance on Management of Disused Radioactive Sources (new Guidance). Ms. Makarovska delivered an overview of the basic provisions

of the Code and new Guidance. She reported to the participants the results of the 2017 international Code meeting on financial provisions for radioactive sources once they have become disused. She also described approaches to the Code implementation practices pertaining to the collection and dissemination of information. In the framework of this new initiative participants of the workshop provided the IAEA with 19 Implementation Practices papers that covered different specific topics of the Code and Guidance.

6. Mr. Irwin delivered an overview of the Guidance on the Import and Export of Radioactive Sources and emphasized the importance of the exchange of information in making the implementation of the Guidance a success. In a second lecture, Mr. Irwin reviewed the IAEA's efforts toward the development of a Code of Conduct on the Transboundary Movement of Radioactive Material Inadvertently Incorporated into Scrap Metal and Semi-finished Products of the Metal Recycling Industries (Metal Recycling Code). First drafted in a consultancy in 2010, this Metal Recycling Code was completed over a series of three open-ended meetings of technical and legal experts from 2011 to 2013, but it did not achieve a final consensus. In September 2013, in Resolution GC(57)/RES/9, the IAEA General Conference encouraged the Secretariat to publish a document describing the results of these meetings thereby making them available to Member States.

7. Mr. Schlee presented two lectures, first, about the risk of radioactive material out of regulatory control and IAEA guidance for the development of a national detection architecture; and second, on nuclear security related Code provisions and further IAEA guidance on how to implement these.

8. The remaining sessions included discussions about multinational initiatives on implementing the Code and about building common approaches to the implementation of import/export controls. Participants also discussed challenges and successes in implementing the Code and Guidance. In discussions the participants identified current best practices and opportunities for improvement in implementing security-related Code provisions as well as recommendations for the IAEA on how to further assist countries in the implementation of Code provisions, particularly with an emphasis of safety-security interface issues.

9. Mr. Irwin presented a lecture about metal recycling and scrap metal safety regulation and described both the voluntary approach and the regulatory approach to the control of the inadvertent presence of radioactive sources in the industry. In a short briefing, he also showed some of the technical and detection aspects of the progressive layers of radiation detection that are employed by some scrap metal recyclers to detect and remove radiation sources from the scrap metal stream before they are melted. The Romanian regulatory body, CNCAN then described its approach to the regulation of the scrap metal industry in Romania. As prearranged, the participants then made a site-visit to "RomRecycling", a private metal scrap recycling company in Bucharest, where they observed a radiation detection and source recovery exercise involving a Cs-137 source. The source was placed in a load of metal scrap in a truck in such a way that it triggered the portal monitor alarm when the truck entered the scrap metal facility. The load of

scrap was then isolated and with the help of a grapple, the load was then removed from the vehicle in successive scoops until the source was found.

10. The agenda and supporting materials for the workshop were made available for all participants at the IAEA shared website “2018 CoC Regional Workshop Europe”. All, on the first day, agreed to the workshop agenda.

11. Almost one full day was dedicated to countries’ presentations about their current regulatory frameworks and about the status of the implementation of the Code and Guidance in their respective countries. These presentations were referred to from time to time as the week progressed.

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

12.1 Laws – Regulation

Most countries had laws and/or regulations covering both safety and security. Implementation of these laws and regulations varied from country to country. Three countries reported that national legislation and regulations are based on the Code. Participants indicated that continuous improvement of legislation and regulations using the Code and Guidance is a matter that requires more attention.

12.2 Regulatory Body

All countries had established Regulatory Bodies (RB) and these appeared to be invested with the powers required to regulate the safety and security of radioactive sources. All of the RBs appeared to be effectively independent, however some countries reported that effective independence might be challenged, for example, when the RB is established as part of a Ministry such as the Ministry of Health or the Ministry of the Environment. Some countries reported that their RBs did not have sufficient human and financial resources. Some countries reported that the RB is supported by other ministries or by specialized agencies for specific practices areas or areas of expertise (e.g. the Ministry of Health for radiation therapy or the Ministry of the Interior for security authorizations & inspections). All RBs in all Countries were authorized to:

- Establish regulations and issue guidance on safety & security;
- Require applicants to submit safety and security related documents;
- Obtain all relevant information for review and assessment prior to taking a decision about whether or not to issue an authorization;
- Issue, amend, suspend or revoke authorization;
- Inspect and enforce.

Participants thought important a need to strengthen the capacity to take appropriate enforcement actions.

12.3 National Registries of Radiation Sources

All countries reported having established a national register of at least Category 1 and 2 radioactive sources (RS), but most of them have in the register information about all categories of sources. Many participating countries said they use the IAEA's RAIS software. The ARIS software is also used for some national source registers. The national registers are mostly for internal (RB) use, but in some cases when law enforcement bodies such as the national police need information, they might be given access to the register. As an area for improvement it was considered important to harmonize the source register software with respect to the categorization of RS according to IAEA standards. Such harmonization would enable neighboring countries to exchange information about radioactive sources in Categories 1, 2 and 3 in a common format for export, import and transit purposes.

12.4 Sustainability

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

Many countries appeared to rely upon the IAEA for training of staff rather than develop their own training courses. However, two countries reported a training and education strategy for national RB staff or were in the process of transitioning from international to national training programmes.

National sustainability should be improved by establishing:

- A national policy and strategy/plan for the management of DSRS;
- A national plan for orphan source search and recovery;
- National training capacities.

12.5 Orphan Sources

Few countries had a documented national strategy for orphan source search and recovery. Campaigns to search for orphan sources take place on an ad hoc basis, but often, national financial resources are limited or uncertain. One country indicated that it was aware of a problem with orphan sources, for example some 700 lightning preventers, but had no legal authority to seize them for storage and eventual disposal. One country presented a comprehensive orphan source search and recovery programme.

The areas of improvement are (see also 12.4):

- A need to establish a national plan for orphan source search and recovery that includes financial arrangements for orphan source recovery and storage services;
- A need to organize interagency tabletop exercises and drills with "real" radioactive sources.

12.6 Disused Sealed Radioactive Sources

Policy and strategy

Some countries do not have a policy and strategy pertaining to the management of DSRS. Other countries have a radioactive waste management strategy or action plans that cover DSRS.

Reuse and recycling

Only a few countries practice the Code provision to reuse and recycle DSRS. One country reported a recycling programme. Financial arrangements regarding disused sources are often not considered.

Short-term storage

Some, but not all countries, set time limits for the DSRS short-term storage by the user.

Long-term storage and disposal

There are no long-term storage facilities in many countries. There are only general regulatory requirements for disposal in some countries, typically in those countries without nuclear power programmes.

Return to supplier

Most countries reported the requirement that there should be an agreement with the supplier for the return of RS to the supplier, at least for category 1 radioactive sealed sources.

Pre-licensing conditions

Most of the countries require applicants to provide a plan for the safe management of the DSRS as a condition for issuing an authorization. One country requires a plan for the disposal of the source after use and a bank warranty to ensure resources for disposal.

Financial provisions

Few countries reported financial provisions for radioactive sources once they have become disused. Countries indicated that the system of financial provisions/securities (such as a bank guarantee) is a good way to ensure the safe management of DSRS.

Further improvements are necessary in all of the above-mentioned areas.

12.7 Political Support

All countries participating in the workshop have pledged political support to the Code.

All countries participating in the workshop, except two, have pledged political support to the Guidance.

One country has pledged political support to all three of the Code, the Guidance and the new Guidance on the Management of Disused Radioactive Sources.

All countries plan to consider expressing support for the new Guidance on the Safe Management of Disused Radioactive Sources.

12.8 Radiation Monitoring

All countries report radiation monitoring at the border. Most of the RBs interact formally or informally with their customs agencies. One country reported a National Coordination Centre of border monitoring points with a central alarm station.

Participants have mentioned that a possible area for improvement is the broadening of radiation monitoring to the community waste processing facilities and landfills.

12.9 Metal Scrap and Recycling

Most of the countries report that metal scrap and recycling facilities perform radiation monitoring, but not all countries have this requirement in regulation. One country provides a “certificate” of non-radioactivity, measured by means of gamma spectroscopy and provided by a technical service organization. One country monitors all incoming

scrap at customs locations. One country reported following the Spanish protocol for the management of radioactive material inadvertently incorporated into scrap metal.

The participants had the opportunity to discuss, in their working groups, the response to radiation alarms in the scrap metal industry, the challenge of dealing with NORM in the industry, how to avoid 're-orphaning' of radioactive sources, the advantages and disadvantages of scrap metal regulation and the IAEA document described above: "Results of the Meetings Conducted to Develop a Draft Code of Conduct on the Transboundary Movement of Radioactive Material Inadvertently Incorporated into Scrap Metal and Semi-finished Products of the Metal Recycling Industries". Participants expressed the view that the contents of the document are useful and it is important to promote its provisions.

Some participants suggested a mixed approach to the control of radioactive materials in scrap metal, using a voluntary approach for small metal scrap dealers and regulation for large recycling industries.

The important role of experts or qualified experts in investigation and response to the discovery of radioactive material in scrap material was stressed.

NORM discovery needs specific and more detailed guidance to facilitate decision-making. To avoid the rejection or re-orphaning of radioactive sources and material inadvertently present in scrap metal, participants suggested the development and implementation of practices that motivate the person who discovers the radioactive sources and material to put it under regulatory control.

12.10 Export/Import

Some countries reported that they used the IAEA forms for Notification and Consent that are provided on the IAEA website. Among those countries that received or sent notification and consent forms, they were usually sent between the supplier and the user and not often through the RB. Although, most countries reported that import/export authorizations are in place, only 2 countries reported that they strictly followed the Guidance. An end user license is always required for imports and exports. Agreement with the recipient of the source to receive it is routinely required.

One country uses the on-line information system EXIM for import/export (a good practice identified during a recent IRRS Mission).

Most countries do not report a system of notification and request for consent as mandatory interactions between the importer, the exporter and the RB.

12.11 Graded Approach

A graded approach to regulation was generally understood, but not fully applied in many countries. Some countries reported, for example that they did not use the IAEA categorization of radioactive sources to risk-inform their regulatory programmes. Not all countries use notification only and registration as means of authorization. Not all countries have specific safety requirements for different practices such as teletherapy, brachytherapy, radiography, well-logging, gauges etc.

All mentioned issues are areas for future improvement.

Participants agreed that use by all countries of the IAEA categorization of RS provides a common basis for the implementation of the graded approach in their regulatory programmes. They encouraged all countries to incorporate the graded approach as an integral part of regulatory requirements for control over RS such as:

- ✓ Establishing the criteria for regulatory requirements
- ✓ Licensing
- ✓ Inspection
- ✓ Security
- ✓ Management with DSRS
- ✓ Export Import RS

Participants mentioned that they considered a risk-informed approach for planning and conducting inspections as further implementation of graded approach. Risk-informed inspections were indicated as one of the area where further support of IAEA is needed.

12.12 Security-related provisions

Many countries appear to have introduced regulatory requirements for the security of radioactive sources. Joint safety-security authorizations & inspections appear to be the rule rather than the exception. One country reported regulatory requirements related to information security. One country reported difficulties to distinguish between different types of events such as nuclear security events, safety events and emergency events. In this regard, the country identified a need for more detailed IAEA guidance.

However, countries reported some conflicting information.

- Authorizations and inspections related to security were conducted, but in the absence of regulatory requirements pertaining to security;
- Security inspections were conducted, but in the absence of security authorizations;
- Security inspections were conducted, but without any security-related training for the (safety) inspectors.

Countries noted the importance of establishing a plan, funded from the State budget, for securing found sources and for searching for missing sources and for intervention in the event of an accident (see also 12.5).

In most countries security requirements are implemented but with a few exceptions, such as the matter of assessing trustworthiness. This subject is not very well understood and so is established in a different fashion from country to country. In this regard, the request for background checks through the State Police was identified as one good practice.

On the third day, the meeting split into three working groups with a focus on the security related provisions in the Code and the Guidance. Some comments from the group discussions are summarized below:

- Legislation related to security issues is more or less established in the countries;
- During the development of regulations countries should take into account the national threat assessment to allow for more tailored requirements for authorized parties, adapted to the country's specific threat-environment. Such a threat assessment (both product and process) should be clear for stakeholders;

- Pre-inspection is an integral part of the authorization process for the use and storage and transport of category 1 and 2 sources; and, on a more general note, security consideration should be integrated into a country's regulatory control system;
- Security levels are defined clearly, specific rules and requirements are in place, the physical protection systems are installed in facilities and they provide appropriate security based on established security levels;
- In some small countries, responsibilities for safety and for security inspections are assigned to the same staff. Many countries noted the need for training in the conduct of security inspections to provide adequate professional standards for inspectors, predominantly trained on radiation safety;
- It is important to establish a training program for users and inspectors in the field of physical protection. However, training should not be limited to RB staff and source users, but should be provided to all stakeholders to foster nuclear security culture and to facilitate the sharing of experience with nuclear security among different stakeholders. Countries expressed the need for integrated inspectors' safety-security training material and E-learning modules for RBs. The participants recommended that IAEA develop the training material;
- Financial resources for orphan sources recovery shall be considered at the state level (see also 12.5); p
- Countries noted that the Regulatory Body can provide technical assistance to other institutions (such as police or customs) in the establishment of procedures on how to deal with orphan radioactive sources upon detection;
- It is important to establish clear national requirements regarding prevention, detection, delay and response for security events;
- A RB should develop a security plan template and make it available to source users. It was noted that the IAEA is currently developing guidance 'Technical Guide on Security Management and Security Plans for the Security of Radioactive Material in Use and Storage' (NST24) in this regard. A template and associated user's guidance will be part of the document's annex;
- The RB could develop checklists for inspectors on security issues to facilitate security inspections of radioactive sources. It was noted that the IAEA is currently developing a TECDOC on 'Notification, Authorization, Inspection and Enforcement for the Safety and Security of Radiation Sources' in this regard. A model inspection checklist (based on the regulatory requirements of the IAEA's Nuclear Security Series guidance of Implementing Guide No. 11 'Security of Radioactive Sources') will be part of the document's annex. The inspection checklist is already accessible as working material through the IAEA's NUSEC portal.
- National procedures (concept of operations) for different response to security events services should be developed and implemented. It was noted that the IAEA has developed guidance and provides expert assistance in this regard;
- A National plan to response to a nuclear security event has yet to be established in most countries;
- It was strongly encouraged that countries develop and implement effective instruments of exchange of information on incidents involving radioactive sources in the form of bilateral agreements with their neighboring countries. Such bilateral agreements would

be supplementary to countries' reporting to the IAEA's Incident and Trafficking Database (ITDB);

- There were some discussions that countries should establish memoranda of understanding between their different institutions responsible for security (customs, border police, intelligence, RB, etc.) with the aim of strengthening communication and establishing direct contact between responsible persons in different institutions;
- Countries that have well-developed nuclear forensics programmes should be prepared to help countries without well-developed nuclear forensics programmes in case of need;
- Countries noted and appreciated the continuous foreign support from donor countries and international organizations to improve the physical protection systems, develop the regulations, train the staff (regulators, users/operators, intelligence ...) (see also 12.4);
- IAEA, USA DoE, EU should coordinate their respective nuclear security assistance programmes, including training efforts, to avoid duplication. It was noted that the IAEA's Integrated Nuclear Security Support Plan (INSSP) initiative was developed with this objective in mind. IAEA staff reminded participants that it is the country's responsibility to make sure that the INSSP is updated on a regular basis in order to enhance coordination of international efforts, including provision of assistance.

12.13 Guidance on the Import and Export of Radioactive Sources

There were several proposals for improvements of the implementation of the Guidance that could be done with or without revision of the Guidance as a whole:

- Regular (at least once per year) review and revision, if necessary, of the list of Points of Contact;
- Regular (at least once per year) review and revision, if necessary, of the answers to the Questionnaire;
- Development of the assessment check-list based on the para VII, article 7 of the Guidance to provide assessment of the appropriate technical and administrative capability, resources and regulatory structure needed to ensure that the source will be managed in a manner consistent with the provisions of the Code.

12.14 IRRS missions

Several Countries mentioned that IAEA self-assessment tools and IRRS missions are very important for strengthening the regulatory regime and RB in the country

12.15 Communication

In general, it was considered important to:

- promote the awareness of safety culture and security culture in all countries;
- promote the awareness of the safety and security hazards;
- improve communication between RB and users, suppliers, designers, other involved persons;
- promote the supplementary Guidance;
- establish/increase communication system of front line responders and other involved governmental agencies;

12.16 Points of Contact

Some countries proposed to establish arrangements to update information about the contact point for all IAEA platforms such as the ITDB, USIE, Guidance, once per year using official channels.

12.17 Bilateral agreements

Participants stated that bilateral agreements (especially with neighboring countries) may provide for strengthened cooperation in such matters as orphan source searches, calibration services, information exchange about radioactive sources in transit and their import-export, and to assist in resolving problems with the radioactive sources and material discovered at the border.

13. Recommendations for the IAEA Secretariat

- To develop guidance on risk-informed inspections for radioactive sources;
- To develop guidance on a security plan for radioactive sources;
- To develop check-lists for inspectors on security issues to facilitate security inspections of radioactive sources;
- To provide guidance on distinguishing between different types of events such as nuclear security events, safety events and emergency events;
- Participants expressed the view that contents of the document “Results of the Meetings Conducted to Develop a Draft Code of Conduct on the Transboundary Movement of Radioactive Material Inadvertently Incorporated into Scrap Metal and Semi-finished Products of the Metal Recycling Industries” are useful and it is important to promote its provisions;
- To develop E-learning courses for RB staff as a pre-requisite to taking part in classroom events;
- To develop integrated safety-security training material for RB staff.

Chairman
Rustem PACI

Signed 21.05.2018