

# Workshop on end-of-life management in support of radiological security and technology transition



28<sup>TH</sup> MARCH - 30<sup>TH</sup> MARCH 2023



AIX EN PROVENCE, FRANCE

## BACKGROUND/RATIONALE

The development of a comprehensive and sustainable approach to radiological security requires the proper management of radioactive sources and their protection by adequate security arrangements throughout their entire lifecycle.

One way to reduce the radiological security risk is to encourage the adoption of technologies that do not contain radioactive material, but which achieve the same beneficial results – often called “alternative technologies”. If properly implemented, the transition towards alternative technologies can have a significant impact on improving radiological security, since these technologies are far less attractive for malicious use. Radiological security benefits will only be realised if proper security arrangements are implemented during the transition process, in particular during the transport and end-of-life management of the disused sources.

Each year, thousands of radioactive sources become disused worldwide. Many are exchanged for new ones to continue operation (e.g., industrial radiography and medical teletherapy). Some other disused sources are covered by agreements to return to their original supplier. However, many users cease operations or have no more use for their sources and are not fully aware of options for the adequate or affordable long-term storage or disposal of disused sources.

For instance, many users are unaware of the costs associated with the management of radioactive sources when they become disused, for example, during the transition to alternative technologies. They are unaware that the transportation and disposal costs might be comparable to the purchasing price of the source itself. When confronted with these costly options, some users may opt to not declare their sources as disused and

instead store them for extended period of time under substandard circumstances. Poor management of disused high activity radioactive sources has led to significant incidents, which have caused severe damages, including human casualties.

In addition, availability of authorised transport packages, lack of documentation and necessary certificates for sources and devices, insufficient storage capabilities, complex import/export processes, legislative and regulatory constraints from the countries of origin, and the absence of disposal pathways are examples of remaining challenges to an effective management of disused radioactive sources. Finally, in some instances, countries adopting alternative technologies count on international organisations or programmes to help manage disused sources.

Therefore, WINS and the co-chairs of the Ad Hoc Working Group on Alternatives to High-Activity Radioactive Sources (France, Germany and USA) have agreed to co-host a 3-day workshop for countries from Europe aimed at reviewing case studies of effective end-of-life management for radioactive sources; bringing together government representatives, users, industry, and funding organisations regarding disused source management options and considerations; identifying security issues related to the management of disused sources; and addressing the barriers to entry in the adoption of machine-based ionising radiation technologies.

The workshop will support the implementation of INFCIRC/910 on Strengthening the Security of High Activity Sealed Radioactive Sources. It will also complement the efforts of the ad hoc working group aimed at facilitating the adoption of alternative technologies.

The workshop will be conducted at the Aquabella Hotel in Aix en Provence, France

## OBJECTIVES

This workshop will review the latest information on the various options to manage disused radioactive sources and how it impacts radiological security globally. It will also address the necessary requirements of an effective end-of-life management pathway as a prerequisite to successful risk reduction through the replacement of radioactive sources with non-radioisotopic alternative technologies. Lastly, it will strengthen communication channels between users, industry, and funding organisations regarding disused source management options and considerations.

The workshop will focus on sealed high activity radioactive sources (Cat. 1, 2 and 3) and will provide participants with the opportunity:

- To develop a common terminology and a better understanding of the usual challenges associated with the management of disused sources;
- To review the international recommendations for end-of-life management of radioactive sources and identify and discuss each step of a comprehensive strategy for an effective management of disused sources;
- To share good practices for the secure management of disused sources and identify and promote synergies between safety and security programmes;
- To interact with source suppliers that manage disused sources, and institutions that can contribute funding to disused source management projects;
- To discuss specific issues and viable solutions including but not limited to return to supplier, financial assurances, low-cost storage solutions, process for designating a source as a waste, and long-term storage and disposal opportunities;
- To identify areas where further work is needed and to propose solutions for an effective improvement of security and safety at any step of the management of high activity disused sealed radioactive sources.
- To address end-of-life management-based barriers to entry (and potential solutions to these barriers to entry) to the transition to non-radioisotopic alternative technologies.



National strategies may vary from country to country, and the industrial and commercial approaches may differ for each supplier. Therefore, the workshop will be designed around the primary process for designing and implementing an effective end of life management strategy. These steps may include onsite storage of sources or transport for reuse or recycle, return to a supplier/manufacturer, repatriation of legacy sources, consolidation at a storage facility, and disposal as waste. For each step, participants will identify the key stakeholders and the challenges they may encounter and will explore pathways to overcome those challenges.

Expert speakers from participating countries will be invited to share their experiences and lessons learned from implementing disused sources management strategies and practices. Industry will be invited to speak about management options offered, and their respective planning process. International donors to disused source management and alternative technology projects also will be invited to speak about available funding mechanisms for participants to explore. Participants will be encouraged to identify immediate steps that can be taken to strengthen radiological security and the management of disused sources in their organisations and countries.

As an outcome from this workshop, WINS will revise its International Best Practices Guide 5.5 *Security Management of Disused Radioactive Sources*.

## EVENT PROCESS

In line with WINS' innovative approach to best practice workshops, this event will be interactive and professionally facilitated. The workshop will be built around a number of presentations from invited expert speakers, as well as breakout sessions that enable participants to further explore the topic and share their experience and lessons learned.

A visit of selected disused radioactive sources management facilities located on the CEA site of Cadarache will be organised on 30 March 2023.

An online voting system will allow participants to provide their views on questions put to the workshop by anonymously registering their opinions.

The workshop will be held in English. As with all WINS events, the discussions will be unclassified but subject to Chatham House rules (what was said can be reported, but not attributed).

## TARGET AUDIENCE

The workshop will be open to a group of around 40 participants from Europe. Targeted countries include:

	Belgium		Italy
	Bulgaria		Latvia
	Croatia		Lithuania
	Cyprus		Poland
	Estonia		Portugal
	France		Romania
	Germany		Slovakia
	Greece		Spain
	Hungary		UK

This event will target representatives from:

- Organisations that use high activity radioactive sources (medical, academic and industry);
- Producers and suppliers of radioactive sources and alternative technologies
- Transport operators;
- Waste management agencies;
- Regulatory authorities and technical support organisations;
- Law enforcement agencies;
- Security vendors;
- Organisations and programmes supporting the adoption of alternative technologies;
- International organisations, such as the IAEA.

The workshop will be by invitation only and will be limited to 40 participants.

Participants will be expected to meet their own costs for travel and accommodation. Travel assistance is available but limited and based on need.

Female practitioners will be strongly encouraged to apply. At least 40% has been set up as target for female speakers and female participants.



## REGISTRATION

If you wish to register or to obtain more information on this workshop please visit [www.wins.org/events](http://www.wins.org/events) or contact Pierre Legoux at [pierre.legoux@wins.org](mailto:pierre.legoux@wins.org).

## EVENT OUTLINE

### DAY 1: ALTERNATIVE TECHNOLOGIES AND DISUSED SOURCES

SESSION 1	Alternative technologies and disused sources management: Understanding the need	<p>KEY ISSUES:</p> <ul style="list-style-type: none"> <li>What are the security concerns related to disused radioactive sources?</li> <li>What is the impact of alternative technologies on the use of radioactive sources?</li> <li>What roles do DSRS management and alternative technologies have in a comprehensive radiological security program or strategy?</li> </ul>
SESSION 2	Effective management of disused sources in support of technology transition	<p>KEY ISSUES:</p> <ul style="list-style-type: none"> <li>Why proper management of disused sources is an essential element of converting to alternative technologies?</li> <li>How the lack of proper management approaches to disused sources management can constitute a barrier to successful conversion and radiological security risk reduction?</li> <li>How can the international community better support DSRS management when transitioning to alternative technologies?</li> </ul>
SESSION 3	A comprehensive approach to the management of disused sources	<p>KEY ISSUES:</p> <ul style="list-style-type: none"> <li>What are the different options for funding and organizing the management of disused radioactive sources?</li> <li>What are the main elements of a national strategy? What are the roles and responsibilities of various stakeholders? What are we good at? What remains challenging?</li> <li>What is the role of each stakeholder (e.g., supplier, licensee, regulator, etc.) in anticipating and addressing the need for managing DSRS?</li> </ul>

### DAY 2: GOOD PRACTICES FOR THE EFFECTIVE MANAGEMENT OF DISUSED SOURCES

SESSION 4	Returning disused sources to the suppliers	<p>KEY ISSUES:</p> <ul style="list-style-type: none"> <li>What are the current practices and challenges for returning sources to suppliers or producers? Which stakeholders are involved in this process?</li> <li>What should source licensees expect and plan for when arranging for the return of a source to a supplier?</li> <li>What are the responsibilities of countries using the sources and of countries that have originally supplied sources to other countries?</li> <li>What is the role of international assistance programmes in supporting the return or repatriation of disused radioactive sources?</li> </ul>
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## SESSION 5

Management of disused sources from interim storage to final disposal

### KEY ISSUES:

- What are possible interim storage options? What are the long-term storage options?
- What can we learn from people who are designing and operating such storages? How is ownership transferred and security taken into account?
- What are the existing or future options for final disposal of disused radioactive sources? What are the associated costs and remaining technical, regulatory or political barriers?
- How can evolutions in technologies facilitate the management of DSRS? Is final disposal the only and ultimate response to the security risk?

## SESSION 6

Transport challenges including import/export requirements

### KEY ISSUES:

- What are the challenges and costs associated with the domestic/international transportation of disused sources? What could be options to reduce these costs and address challenges?
- What legal and technical infrastructure is needed in the country where the source is located? What can be done when an adequate infrastructure is not in place?
- Is the import/export framework adequate? Are the transport requirements consistent all over the world? What are the possible liability issues and how are they covered by insurance?
- How are security aspects during transport addressed?

## CONCLUSION

### KEY ISSUES:

- What have we learnt? What are we doing well? What remains more challenging?
- How can we sustain achievements?
- What actions still need to be taken to fully integrate effective DSRS management in alternative technology conversion plans?

## DAY 3: VISIT OF DSRS MANAGEMENT FACILITIES AT THE CADARACHE NUCLEAR SITE

### SITE VISIT

### KEY OBJECTIVES:

- Access to state-of-the-art technologies and processes
- Sharing of operational experience
- Networking between participants