End-of-Life Management for Disused Sealed Sources –17343

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ABSTRACT

This presentation will examine the U.S. Department of Energy's Office of Radiological Security's efforts both domestically and internationally to facilitate proper end of life management strategies for disused sealed sources, as well as present day opportunities and challenges.

INTRODUCTION

The management of disused radioactive sealed sources is an intrinsic part of radiological security. Responsible radioactive source security should be understood to include responsibilities on the part of user communities and governments to ensure end-of-life management of sealed sources. End-of-life management can include reuse, recycling, or the disposal of the source at the end of its useful life. If sealed sources are not managed safely and securely once they become disused, they may leak, become abandoned or be lost or stolen, which increases the risk of malicious use by unauthorized persons. With proper planning and management, inherent risks to the public posed by disused sources can be mitigated.

PRESENT DAY CHALLENGES

Radioactive sources continue to play an important role in medical, research, and commercial facilities throughout the world. However, despite decades of utilizing radioactive sealed sources, many nations are still unable to properly manage disused sources. Sources continue to fall out of regulatory control, posing a risk to national security, public health, and safety. Currently, few nations have access to disposal facilities and many lack access to secure, long-term storage. Source repatriation, when viable, can be difficult, time consuming, cost prohibitive, and typically requires legal or contractual provisions that facilitate the return to supplier. Likewise, source recovery, packaging, and transportation requires resources and expertise, as well as certified shipping containers, which many nations lack. Without adequate resources or proper planning, these factors can pose a significant challenge to the implementation of responsible end-of-life management practices.

CAPACITY BUILDING: KEY TO DEVELOPING RESPONSIBLE END-OF-LIFE MANAGEMENT PRACTICES

To address these challenges, ORS is supporting capacity building measures domestically, bilaterally, as well as through partnerships with the International Atomic Energy Agency (IAEA) that assist Member States in developing practical end-of-life management solutions. These capacity building efforts can include providing technical expertise, equipment, and training that augment existing resources or create new capabilities. These technical solutions are critical to

increasing the national and regional capability to safely and securely recover, store, or manage disused radioactive sources.

Domestically, ORS partners with radioactive source licensees and industry service providers to recover and dispose of disused high-activity Category 1-2 sealed sources through its Off-Site Source Recovery Project (OSRP) and Category 3-5 sources through a grant to the Conference of Radiation Control Program Directors (CRCPD). Additionally, ORS promotes technical solutions that increase both ORS' as well as commercial capacity to package and transport disused sources. This includes sponsoring the design, fabrication, and certification of two new Type B Containers and a shielded 380-B container. ORS plans to provide the design drawings for these containers to industry, augmenting their ability to recover additional disused sources. Similarly, ORS provides device disassembly training at the Southwest Research Institute to ensure a supply of qualified vendors capable of dismantling and packaging discuses sources and devices. Combined, these efforts help bridge a number of technical gaps, increasing U.S. capacity to responsibly manage its disused sources.

Bilaterally, ORS promotes technical solutions that facilitate in-country source recovery and consolidation. This includes providing Search and Secure training, which enables partners to search for, recover, package, and transport disused radioactive sources. ORS provides upgrades to existing physical protection systems at temporary or long-term storage facilities to reduce the risk of these sources falling out of regulatory control or being used maliciously. Where feasible, ORS also encourages source repatriation, providing technical expertise regarding packaging and transport in an effort to return sources to the manufacturer or the original supplier state.

As part of its long-standing technical collaboration with the IAEA, ORS continues to support a number of Technical Cooperation (TC) projects that promote responsible end-of-life management solutions, as well as cost-free-experts (CFE) in the IAEA's Division of Nuclear Fuel Cycle and Waste Technology. These CFEs provide invaluable technical expertise and hands-on knowledge regarding source recovery and end-of-life management options. ORS is also in the process of donating a new Type B container to NEFW to facilitate the removal of high activity sources as well as integrating the container into the IAEA Borehole Disposal System. This will increase the IAEA's capacity to support Member States recovery, transportation and disposal of disused sources.

In addition to developing technical solutions to address end-of-life challenges, ORS works with partners and collaboratively with the IAEA to promote the development of a strong regulatory framework, which will provide a foundation that encourages cradle-to-grave radioactive source security. A key step to establishing this foundation is the adoption of the draft supplementary guidance to the IAEA Code of Conduct on the Safety and Security of Radioactive Sources that pertains to the Management of Disused Sources. This draft guidance will provide Member States a holistic approach with steps to address end-of-life management challenges and

identify management options, including return to supplier, reuse or recycling, both short and long-term storage, and disposal.

CONCLUSION

Radioactive source security requires a variety of end-of-life management strategies that promote the safe and secure handling of disused radioactive sources. ORS is partnering with U.S. industry, bilaterally, and with the IAEA to develop technical and policy solutions to address many current end-of-life challenges. Combined, these capacity building measures augment existing resources and expertise, enabling partners to develop technical capabilities grounded in a strong regulatory framework that supports proper end-of-life management practices.