IAEA 60 Years
Atoms for Peace and Development

Nuclear Security

TOOLS

Mobile Hot Cell Contributes to the Safety of Disused Sealed Radioactive Sources

Why is this important?

Sealed radioactive sources (SRSs) are used widely in medicine and industry, from radiotherapy machines for treating cancer to industrial tools for sterilizing disposable medical supplies. The vast majority of sources are used in well-regulated environments. The proper management of SRSs, once they have reached the end of their useful life, has become a worldwide problem.

In many countries, there is lack of proper management due to poor or absent accounting infrastructures. Some countries do not have legislation in place to regulate the control over disused sources. These problems exist in both developing and developed countries. The safety and security of radioactive sources are not new topics — for a number of years, the IAEA has been making efforts to improve the safety and security of SRSs. Given the current global situation, there is a move toward strengthening control, accounting and physical protection against theft, sabotage or unauthorized use of SRSs.

What do I need to know?

The most common sealed sources have low levels of radioactivity or a short half-life, meaning they will remain radioactive for only a few months to a few hundred years. Before disposal, all sources are treated and repackaged through a process called conditioning. High activity SRSs, used for diagnosing and treating medical patients, sterilizing blood and medical appliances, or protecting stored crops, are among those that must be sustainably managed once they become disused.

Through IAEA regional projects, successful conditioning operations for low activity SRSs were carried out in a number of African States in 1997. Using lessons learned from these operations, the concept of a mobile hot cell (MHC) for the conditioning of high activity disused sealed radioactive sources (DSRSs) was conceived by the IAEA in 2003. An MHC is a shielded radiation chamber that facilitates the direct recovery, manipulation and conditioning of high-activity DSRSs. The first MHC was designed, manufactured and tested by an IAEA contractor in March 2007. The MHC has been used in the Philippines, Thailand, the United Republic of Tanzania and other Member States.

Upon request from a State:

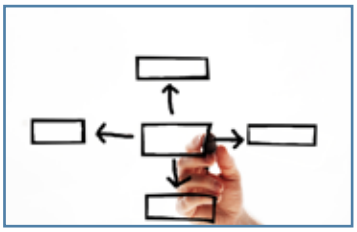
- The MHC and its associated equipment are shipped to the requesting State.
- The MHC is assembled on a site adjacent to the location of the designated DSRSs.
- Trained operators use remote manipulators to remove sources from their working shields and insert them into a capsule, which is then welded closed.
- The capsules containing the sources are placed in a drawer and inserted into the long term storage shield (LTSS).

What actions are recommended?

Member States interested in MHC services should send a request to **NuclearSecurity@iaea.org**

Member States should consult with the IAEA to develop an Integrated Nuclear Security Support Plan (INSSP) for building a sustainable nuclear security framework.

Member States interested in more information on the MHC project can contact **NuclearSecurity@iaea.org.**



For a list of IAEA security training courses and workshops, check the current online IAEA Meeting Schedule.

Other Important Information

MHC operations are conducted upon request. The main output from an MHC operation is that the security risk posed by high activity DSRSs is significantly reduced or eliminated entirely. In States that lack the resources and infrastructure for adequate control of their DSRSs, removal from the State is often the most sustainable solution, and this can be done with the assistance of the MHC. When this is not possible, the sources can be conditioned into capsules using the MHC and stored in the LTSSs. This improves the security situation, as the LTSSs are designed with many security features built in. Another benefit of the MHC is that the sources within the capsules are once again certified as 'special form', which is important for allowing easier transport of the sources.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

IAEA Learning Management System portal. elearning.iaea.org/m2/

***Email*: NuclearSecurity@iaea.org**
***Visit*: the IAEA Nuclear Security Information Portal (NUSEC) at https://nusec.iaea.org**

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