



INTERNATIONAL SOURCE SUPPLIERS
AND PRODUCERS ASSOCIATION

SAFE AND SECURE AT THE SOURCE



Manufacturers' Role in Long Term Management of Disused Radioactive Sources

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ISSPA Background



- Founded several years ago to address many international and national initiatives to improve source safety and security
- Members agree to a Code of Good Practice which includes excellent regulatory compliance, QA and responsibility for management of sealed sources and devices
- Received acceptance by IAEA and participate in policy and guidance discussions
- Global impact of the individual companies and need for one voice

ISSPA Membership



- ❑ Seventeen members in 9 countries
 - ❑ Represents more than 95% of radioactive sources produced/distributed globally
- Alpha Omega Services
 - Berthold Technologies GmbH & Co. KG
 - Best Theratronics Ltd
 - Dioxitek - Comisión Nacional de Energia Atómica
 - Eckert & Ziegler nuclitech GmbH
 - Elekta Instrument AB
 - Endress + Hauser GmbH + Co. KG
 - Gamma-Service Recycling GmbH
 - General Electric Hitachi
 - Institute of Isotopes, Co. Ltd.
 - International Isotopes Inc.
 - MASEP Infini
 - Nordion Inc.
 - NTP Radioisotopes
 - QSA Global Inc
 - Reviss Services UK Ltd.
 - Varian Brachytherapy

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ISSPA Mission



- ❑ To ensure that the beneficial use of radioactive sources continues to be regarded by the public, the media, legislators, and regulators as a safe, secure, viable technology for medical, industrial, and research applications.
- Radioactive sources are used worldwide in a wide range of beneficial applications that support the infrastructure of our daily lives
- Vital applications, such as cancer treatment, oil exploration , process control, industrial radiography and security screening make extensive use of radioactive sources.
- Roughly 45% of the world's medical disposable products are sterilized using cobalt-60.

Strategies - Long Term Management of DSRS



Recycle



Long Term
Storage



Disposal

Recycle – Reutilization of Resources



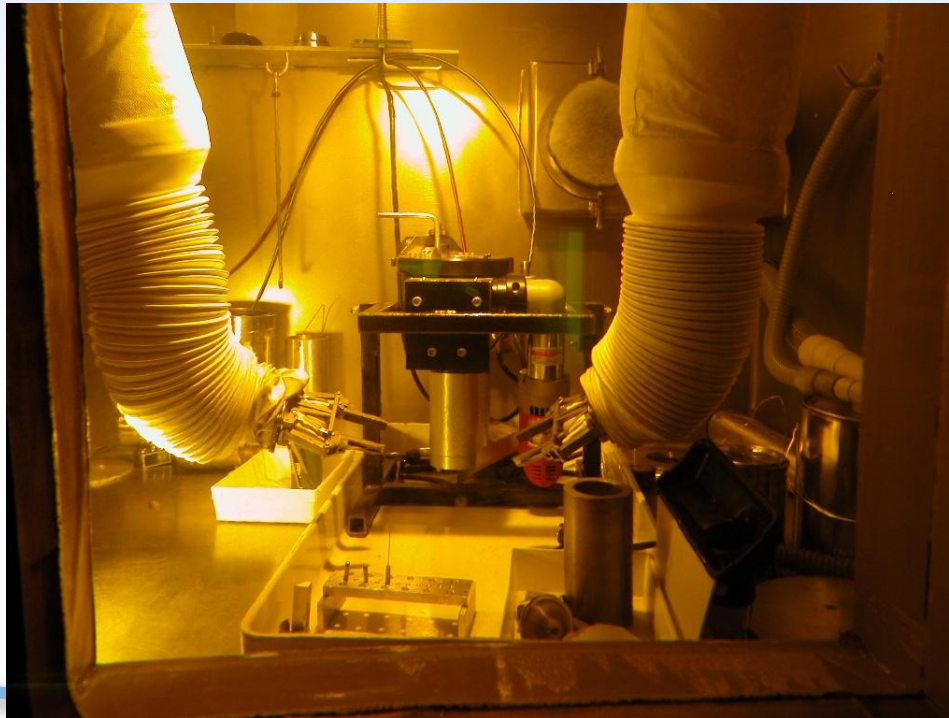
Industry's Preferred Option

- Reduces the amount of radioactive material that needs to be produced.
- Must be cost effective and technically feasible for a commercial entity
- Various methods available

Recycle – Recover Material



- Source must be disassembled
- Specialized equipment & qualified technicians
- Recover material used as is or blended – Co60, AmBe



Recycle – “Re-Life” the Source

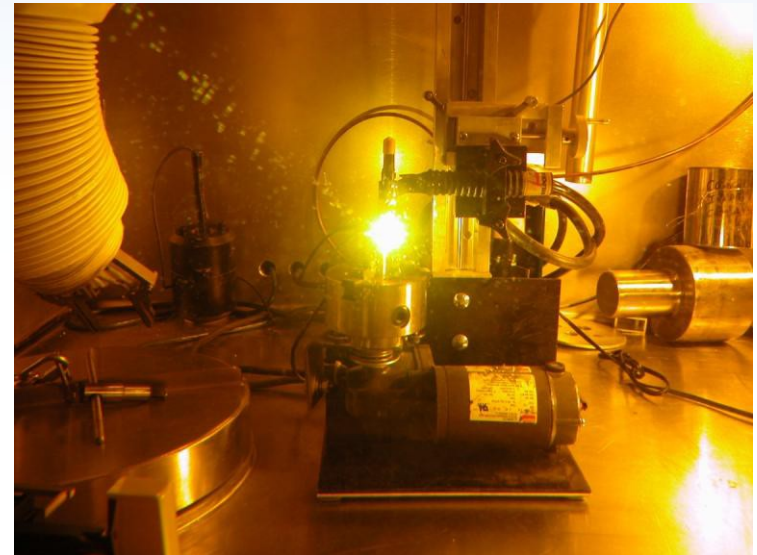


- Reutilize the source “as-is”
 - Inspection and Testing
 - Extend working-life
- Over encapsulation
 - Replace outer encapsulation
 - Over encapsulate entire source, use for new application.

Recycle – “Re-life the Source”



Original design parameters, weld integrity, environmental conditions of use and potential gas build up must be considered.



Long Term Storage of DSRS



Less Preferred Option

- Source manufacturers have robust security controls so LTS at the source manufacturer facility is feasible. Must consider:
 - Liability issues associated with quantities possessed.
 - Financial responsibility of eventual disposal
 - Ultimate disposal path must be available (if there is no chance for recycling-the sources will become waste)

Disposal



Source manufacturer can usually not offer the service to take back DSRS as waste

- Source manufacturers are usually not licensed to operate as waste manager
- Licensing and regulatory restrictions would greatly limit this.
- Disposal site availability may also be limited by legislatively imposed restrictions, i.e. waste generator or country of origin restrictions.

DSRS should not be declared as waste as long as a LTS or disposal way is not defined and available

Challenges



Regardless of which end of life management option is selected a big challenge that we all face is simply getting a DSRS from Country A to Country B.

- Source Pedigree
- Container Availability
- Transportation Costs and Logistics.

Challenges – Source Pedigree



Return to a Manufacturer

- It is industry's position that a sealed source could and should be returned to any willing source manufacturer capable of safely handling and managing it.
- This position also addresses issues that arise when the original source manufacturer is no longer in business or authorized to possess the source.
- One-for-One Source exchange is a common industry practice that limits the number of disused sources that may otherwise be abandoned.

Challenges – Source Pedigree



Country of Origin – difficult to ascertain

- Sources may contain components from multiple countries.
- Some companies have manufacturing facilities in several countries, the source design/certificate may be held by a single division of the company further complicates the meaning of country of origin.

Challenges – Source Pedigree



Source pedigree barriers are political.

Does it make sense to complicate end of life management practices when a DSRS can be safely and effectively managed by a source manufacturer willing to do so?

Challenges – Container Availability



Lack of containers does result in an increase in transportation costs but the limited availability has far reaching consequences that introduce additional barriers in the over all scheme of DSRS management.

Challenges – Container Availability



- **Device Specific Containers:**

- The Container is no longer certified (the device is obsolete).
- The cost associated with developing and approval a container to transport the device just to move DSRS is not commercially viable.

- **Containers - Authorized Contents:**

- Most containers dedicated for transporting sealed sources are limited to Special Form.
- A good portion of DSRSs have lost their special form certification or just can be identified to be linked to a special form certification.

Challenges – Container Availability



Type B(U) Packages meeting radioactive materials transport regulations not accepted for international use

National approvals (often associated with a full validation) is time consuming and expensive

(Welcome initiative: US and Canada developed a joint guide for Approval of Type B(U) and Fissile Material Transportation Packages - The guide is designed to facilitate the validation of Competent Authority approvals for export/import purposes and limit redundant technical reviews.

This type of cooperation between Competent Authorities is worth expanding.)

Challenges – Transportation



Consider two general aspects associated with the transportation of radioactive sources that must be dealt with when discussing end of life management strategies for DSRS.

(1) Cost and (2) Logistics

Logistical barriers can usually be addressed through communication channels, may result in Denials & Delays of shipments but that lengthy discussion is for another conference.

Lets focus on the costs.

Challenges – Transportation



What can we do as Industry and as the Regulatory Authority to address this issue?

- One-for-One exchanges – cost effective way of getting a disused source returned to the manufacturer.
- Limited Supply Chain – On the surface this is a logistical issue – but the result is an increase in cost.
- Security enhancements – Industry appreciates the need for transport security- can enhancements be implemented more efficiently? – graded approach, harmonization!

What are we doing now?



There are different approaches to handling sources that may be considered “disused”

- Recycling – recovering material or resourcing
- Modifying device to utilize in order to use lower activity sources
- Retesting a source for a different application

Conclusions



- Ultimate disposal of disused sources needs to be addressed.
- Sealed sources should not be considered a waste until it goes to its final disposal repository
- One-for-one source exchanges and recycling initiatives should be encouraged
- Seamless revalidations of Type B(U) Package Certificates supports the movement of new and disused sources.
- Transport security requirements should be harmonized and risk based.



Thank you for your attention!