Safety Standards and Associated Assistance Programs Relevant to DSRS management

International Workshop on Sustainable Management of Disused Sealed Radioactive Sources

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- Support to Member States in establishing proper safety framework (regime) for management of spent fuel and radioactive waste:
  - Development of Safety Standards
  - Provisions for use and application of Safety Standards
Status of Safety Standards

• IAEA Safety standards are
  • Binding for IAEA’s own activities
  • Not binding on the Member States (but may be adopted by them) EXCEPT in relation to operations assisted by the IAEA:
    • Integrated Regulatory Review Service
    • Technical Cooperation Fund work
    • States wishing to enter into project agreements with the IAEA
International Safety Standards

• IAEA develops safety standards related to management of RW
  • Management of all types of radioactive waste
  • Release of sites and materials from regulatory control
  • Safety assessment
  • Management of contaminated scrap metal

• Safety Standards reflect international consensus on the safety level needed to protect people and the environment from the ionizing radiation

• IAEA Safety Standards are revised on regular basis to incorporate new knowledge, experiences and good practices
Development of Safety Standards

Outline and work plan
Prepared by the Secretariat

Review by the Committees and
Commission on Safety Standards

Drafting or revising
of safety standard
by the Secretariat and consultants

Review by the safety standards committee(s)

Endorsement by Commission on Safety Standards

Approval by the IAEA’s Director General or BoG *

* SF and SRs approved by BoG
* SGs approved by DG
Commission & Committees

Commission on Safety Standards (CSS)

- Nuclear Safety Standards Committee (NUSSC)
- Radiation Safety Standards Committee (RASSC)
- Waste Safety Standards Committee (WASSC)
- Transport Safety Standards Committee (TRANSSC)
Safety Standards Hierarchy

- Fundamental Safety Principles
- Requirements – Legal, Technical, & Procedural Safety Imperatives
- Guidance on Best Practice to Meet Requirements
Hierarchy of Safety Standards...evolving...

**SAFETY FUNDAMENTALS**

**General Safety Requirements**
- Vol.1 Governmental and Regulatory Framework
- Vol.2 Leadership and Management for Safety
- Vol.3 Radiation Protection and Safety of Radiation Sources
- Vol.4 Safety Assessment
- Vol.5 Predisposal Management of Radioactive Waste
- Vol.6 Decommissioning and Termination of Activities
- Vol.7 Emergency Preparedness and Response

**Specific Safety Requirements**
- 1. Site Evaluation for Nuclear Installations
- 2. Safety of Nuclear Power Plants
  - 2.1 Design and Construction
  - 2.2 Commissioning and Operation
- 3. Safety of Research Reactors
- 4. Safety of Nuclear Fuel Cycle Facilities
- 5. Safety of Radioactive Waste Disposal Facilities
- 6. Safe Transport of Radioactive Material

**Collection of Safety Guides**
Safety Standards: Disposal

- DS 354: Waste Disposal
- DS 356: Near Surface Disposal
- DS 334: Borehole Disposal SSG1
- DS ???: Mining and minerals processing
- DS 355: Safety Case & Assessment Disposal
- DS 357: Monitoring and Surveillance
Safety Standards relevant to DSRS

- Management of Waste from the Use of Radioactive Material in Medicine, Industry, Agriculture, Research and Education (2005)
- Safety of Radiation Generators and Sealed Radioactive Sources (2006)
- Borehole Disposal (SSG-1)
- Classification (GSG-1)
Figure 1: Lifetime of a radiation source.
5.2. There have been many instances in recent years of serious accidents, injuries and loss of life occurring as a result of failure to organize the prompt and formal decommissioning and disposal of devices containing sealed sources. The Code of Conduct on the Safety and Security of Radioactive Sources expects that every State should ensure that sealed sources are not stored for extended periods of time in facilities that have not been designed for the purpose of such storage [19].
4.18. Disused sealed sources should be segregated and stored separately because of their high hazard potential. Although they may not have been declared as waste, disused sealed sources awaiting reuse or recycle are commonly placed in storage facilities for radioactive waste. The safety and security of disused sources are discussed in Refs [21, 22].

[21] The Code of Conduct
[22] IAEA TECDOC-1355, Security of Radioactive Sources
4.19. Disused sealed sources may require conditioning or encapsulation before placement in a storage facility [23]. Conditioning methods should be subject to approval by the regulatory body. Disused sealed sources that are kept in storage for extended periods of time should be checked for leakage at regular intervals.

IAEA Activities

• IAEA Statute:

  • Develop safety standards

  • Provisions for their application and guidance on good practices

Nuclear safety
Radiation Safety
Waste Safety
Transport Safety

Peer reviews
Technical cooperation
Research and development
Training
Exchange of information (networks)
Supporting TC Projects for protection of the public

NSRW provides support to TC Projects related to TSA 4, for example:

- **RAF/9/037; Africa;**
  Strengthening Nat. Infrastructure for Control of Public Exposure with Emphasis on Safety in Mgmt. of Radioactive Waste

- **RER/9/094; Europe;**
  Upgrading National Capabilities in Controlling Public Exposure

- **RAS/9/048; Asia and the Pacific;**
  Strengthening National Capabilities for Public Exposure Control

- **RLA/9/055; Latin America;**
  Strengthening the National Infrastructure and Regulatory Framework for the Safe Management of Radioactive Waste in Latin American Member States
Thematic Safety Area

- All thematic areas of Radiation/Waste Safety are covered by these functions

- TSA 1: Regulatory Infrastructure for Radiation Safety
- TSA 2: Radiological Protection in Occupational Exposure
- TSA 3: Patients & Medical Exposure Control
- TSA 4: Public & Environmental Exposure Control
- TSA 5: Emergency Preparedness and Response
- TSA 6: Education and Training
TSA 4: Public Radiological Protection

- Mining
- Nuclear power
- Waste
- Industry
- Transport
Objectives of the Regional Projects on TSA 4

To establish, develop and consolidate an adequate national systems for public exposure control including:

• sustainable regulatory control at design, operation and decommissioning stages of facilities, monitoring of public exposure,
• control of discharges, source and environmental monitoring, control of foodstuffs and selected commodities,
• control of exposure as a result of past practices and accidents, remediation,
• control of exposure to radon and other natural sources,
• control of materials for recycling, safe transport of radioactive material, radioactive waste and management and decommissioning.
ARTICLE 28. DISUSED SEALED SOURCES

1. Each Contracting Party shall, in the framework of its national law, take the appropriate steps to ensure that the possession, remanufacturing or disposal of disused sealed sources takes place in a safe manner.

2. A Contracting Party shall allow for reentry into its territory of disused sealed sources if, in the framework of its national law, it has accepted that they be returned to a manufacturer qualified to receive and possess the disused sealed sources.
Summary

- **Predisposal**: the safety standards offer little guidance specific to storage of DSRS. They usually defer to the Code of Conduct and a few specialized TECDOCs.

- **Disposal**: specific guidance is provided for one form of disposal – disposal in small diameter boreholes. Otherwise, general disposal guidance applies.

- **Joint Convention**: include provisions for the management of DSRS, but emphasis is on NPP waste.
Thank you!