

# **Safety Standards and Associated Assistance Programs Relevant to DSRS management**

## **International Workshop on Sustainable Management of Disused Sealed Radioactive Sources**

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**IAEA**

International Atomic Energy Agency

# Radioactive Waste and Spent Fuel Management Unit

- Support to Member States in establishing proper safety framework (regime) for management of spent fuel and radioactive waste:
  - Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management
  - Development of Safety Standards
  - Provisions for use and application of Safety Standards

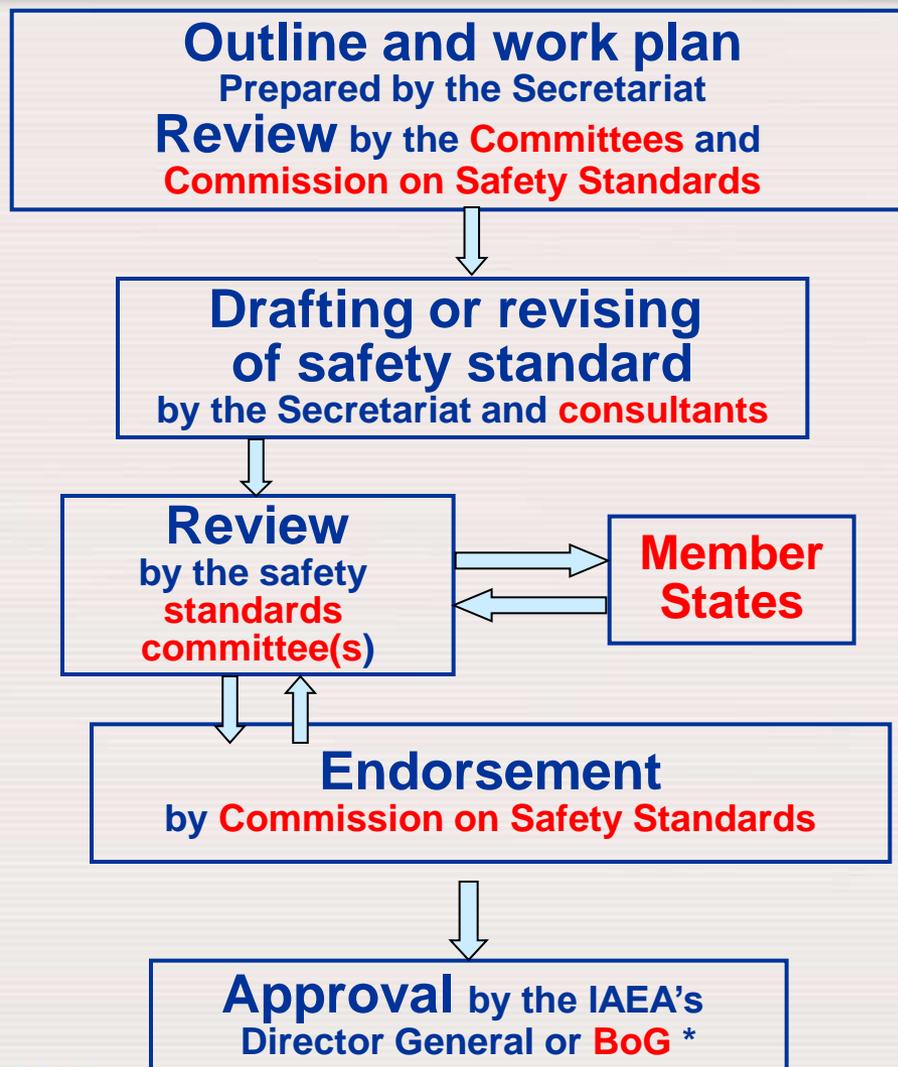
# Status of Safety Standards

- 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



**YOU**

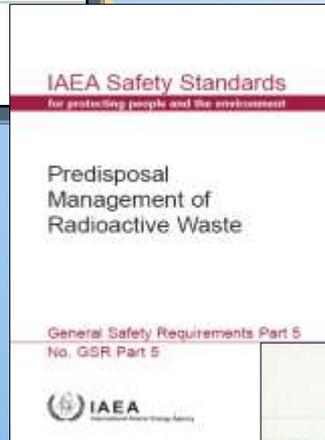
# Commission & Committees



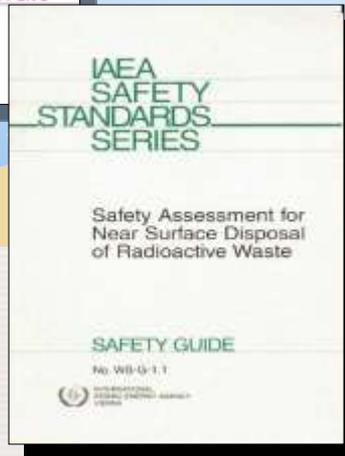
# Safety Standards Hierarchy



**Fundamental Safety Principles**



**Requirements – Legal, Technical, & Procedural Safety Imperatives**



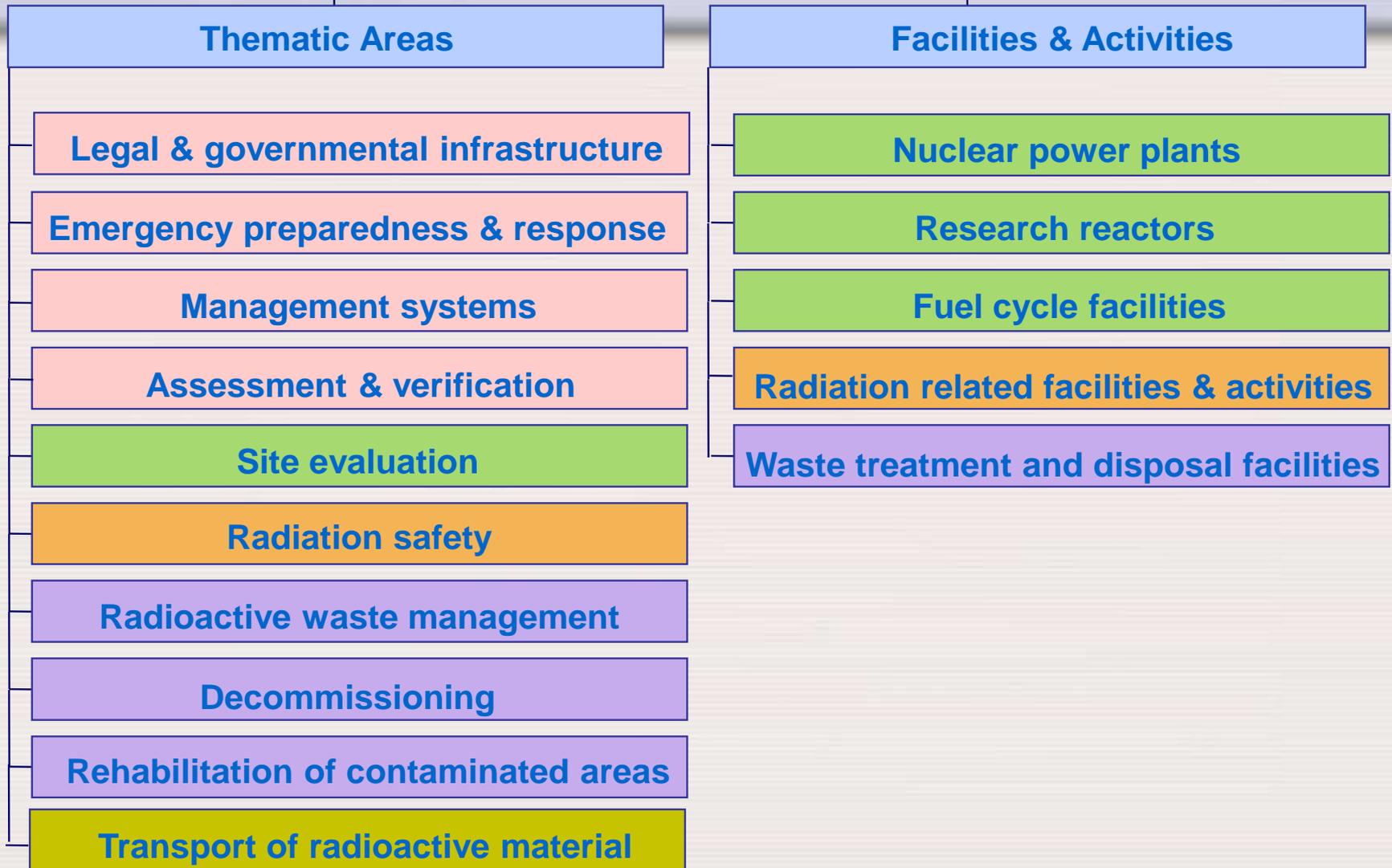
**Guidance on Best Practice to Meet Requirements**

**Safety Fundamentals**

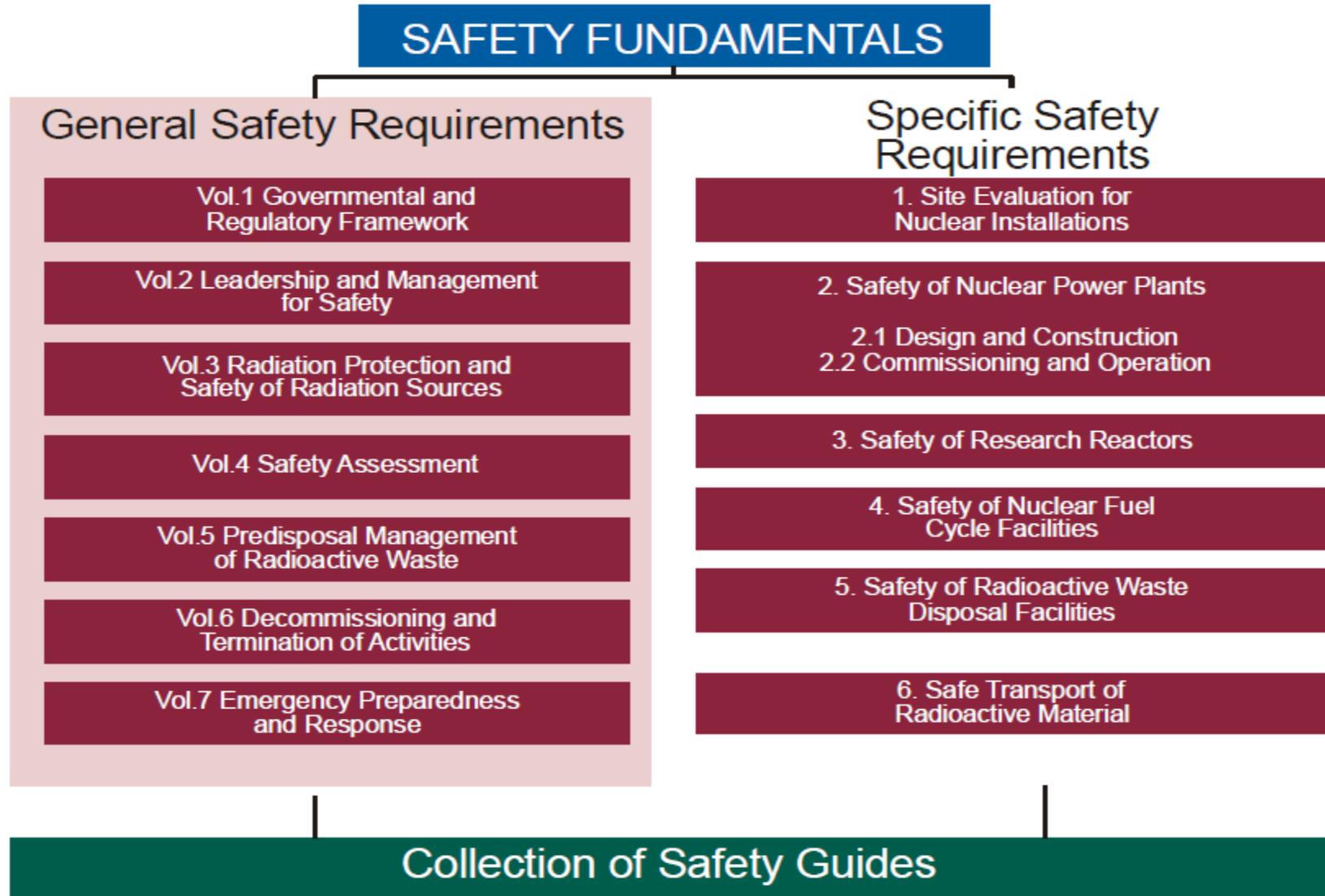
**Safety Requirements**

**Safety Guides**

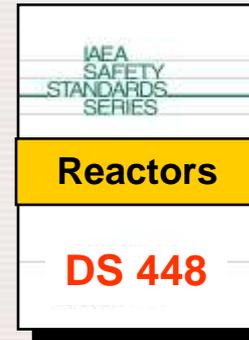
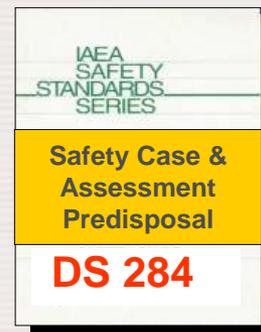
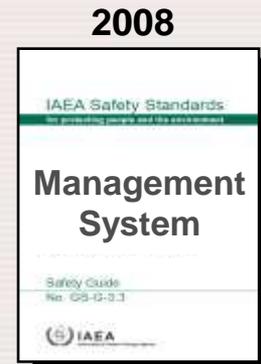
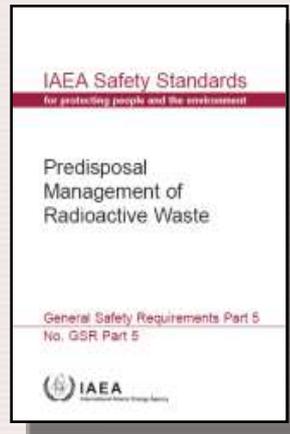
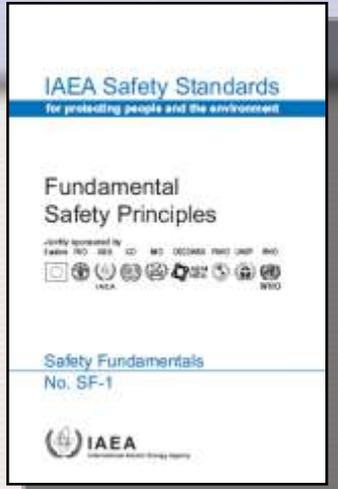
# Safety Fundamentals: Current Structure



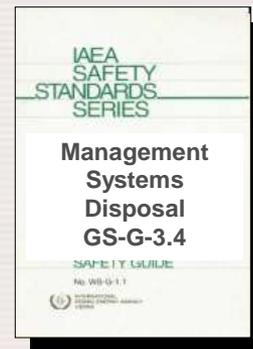
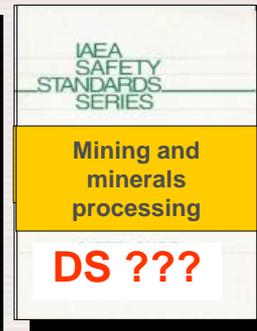
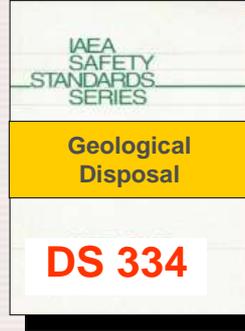
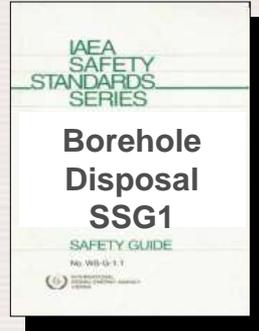
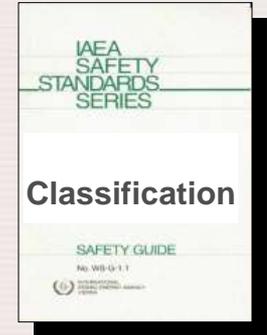
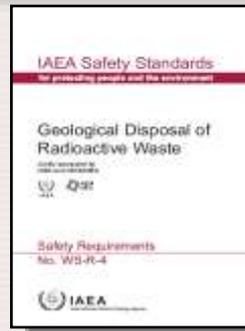
# Hierarchy of Safety Standards...evolving...



# Safety Standards: Predisposal

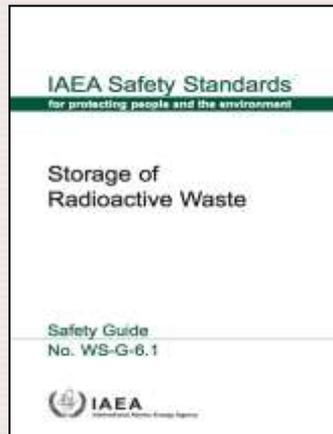


# Safety Standards: Disposal

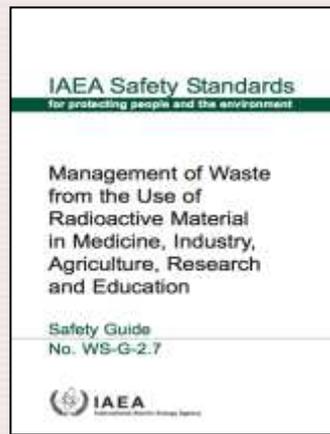


# Safety Standards relevant to DSRS

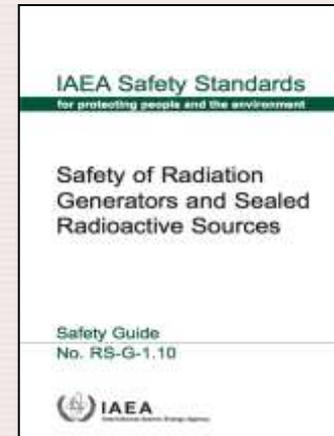
(2006)



(2005)



(2006)



## RS-G-1.10: Safety of Radiation Generators and Sealed Radioactive Sources

Figure 1: Lifetime of a radiation source.

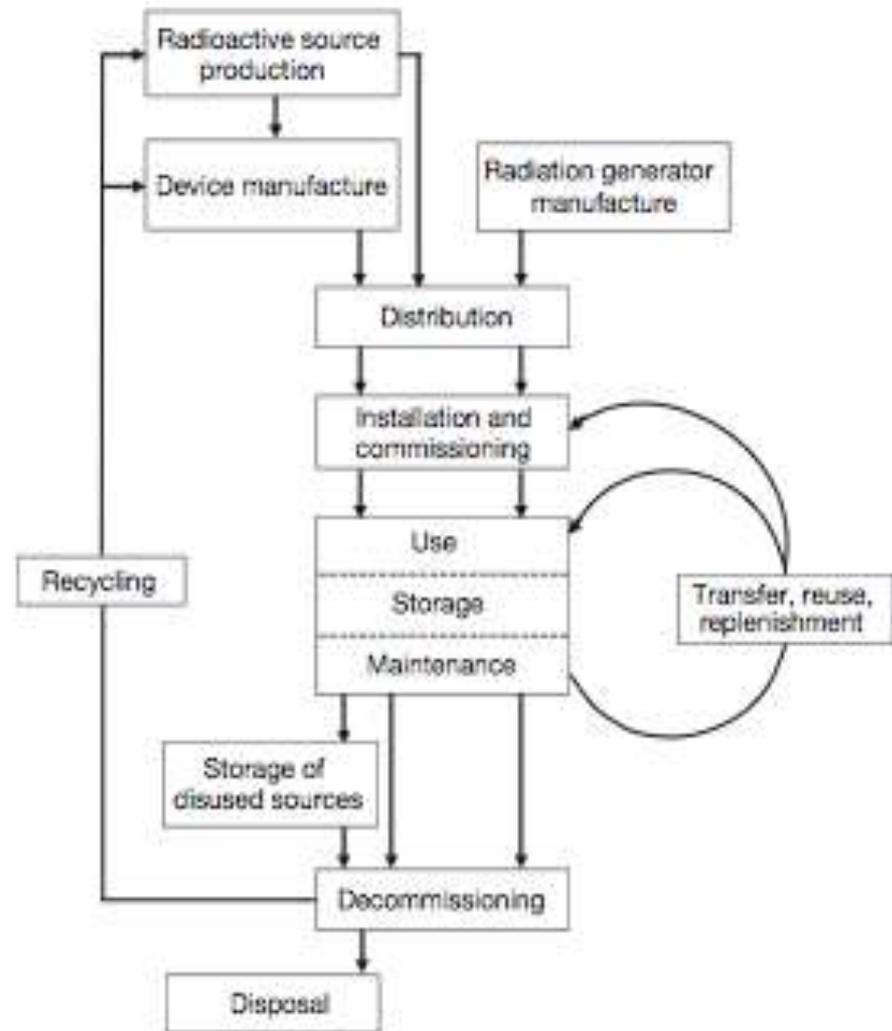


FIG. 1. Lifetime of a radiation source. Distribution may involve import and export.

# RS-G-1.10: Safety of Radiation Generators and Sealed Radioactive Sources

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].***

## WS-G-6.1, Storage of Radioactive Waste

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

## WS-G-6.1, Storage of Radioactive Waste

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.

[23] *Management for the Prevention of Accidents from Disused Sealed Radioactive Sources*, IAEA-TECDOC-1205 (2001).

# IAEA Activities

- IAEA Statute:

- **Develop safety standards**



Nuclear safety  
Radiation Safety  
Waste Safety  
Transport Safety

- **Provisions for their application and guidance on good practices**



Peer reviews  
Technical cooperation  
Research and development  
Training  
Exchange of information (networks)

# Supporting TC Projects for protection of the public

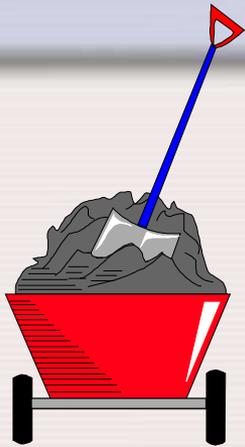
**NSRW provides support to TC Projects related to TSA 4,  
for example:**

- **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

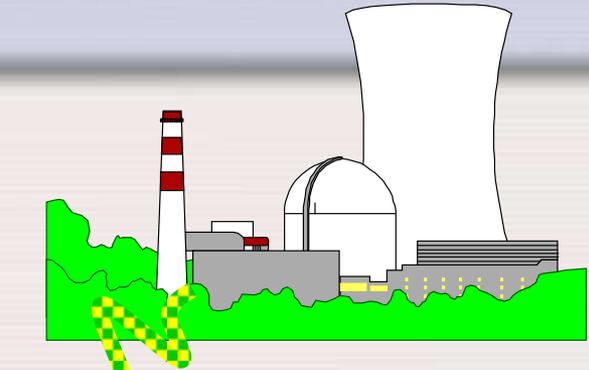
# Thematic Safety Area

- 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**



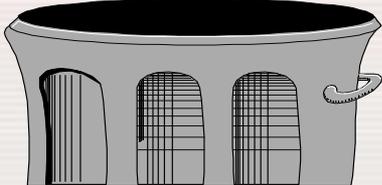
**Nuclear power**



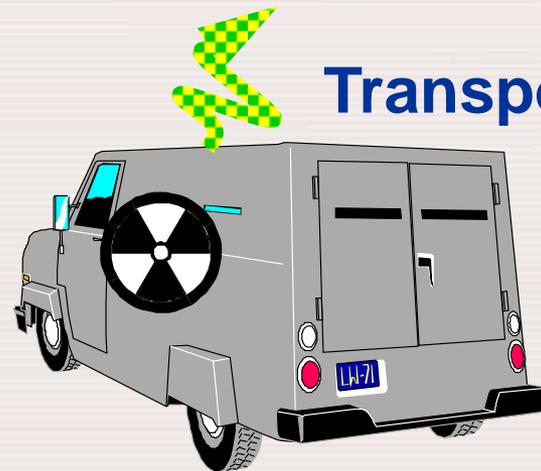
**Transport**



**Industry**



**Waste**



# 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.

# The Joint Convention

## 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!**