

# **The global nuclear safety regime to control and manage inadvertent radioactive material in scrap metal**

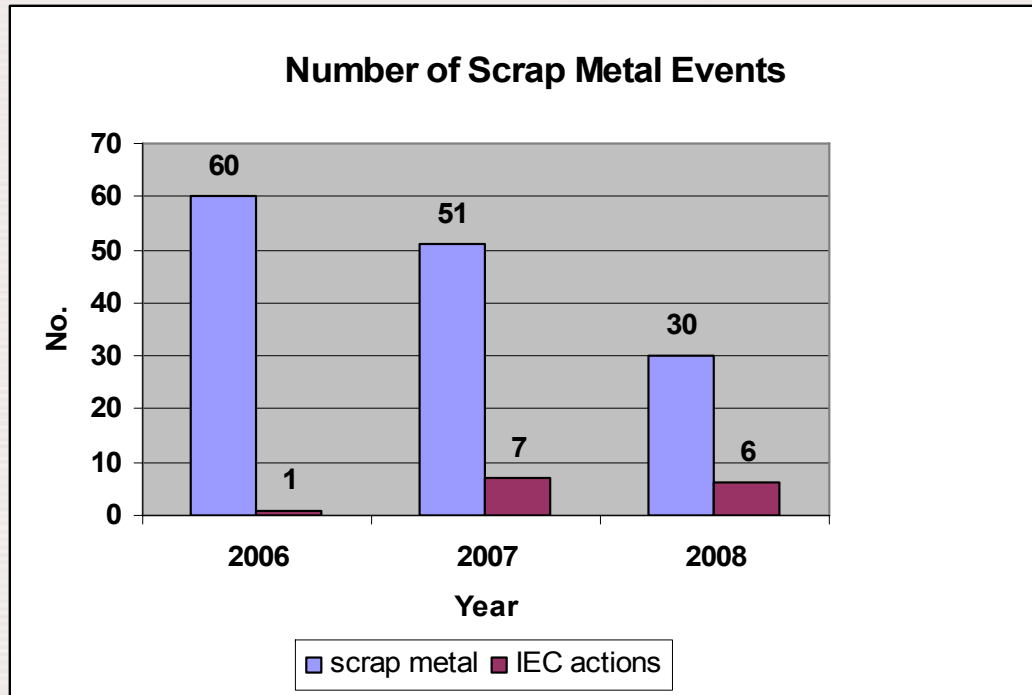
**Didier LOUVAT**



**IAEA**

International Atomic Energy Agency

# The present situation

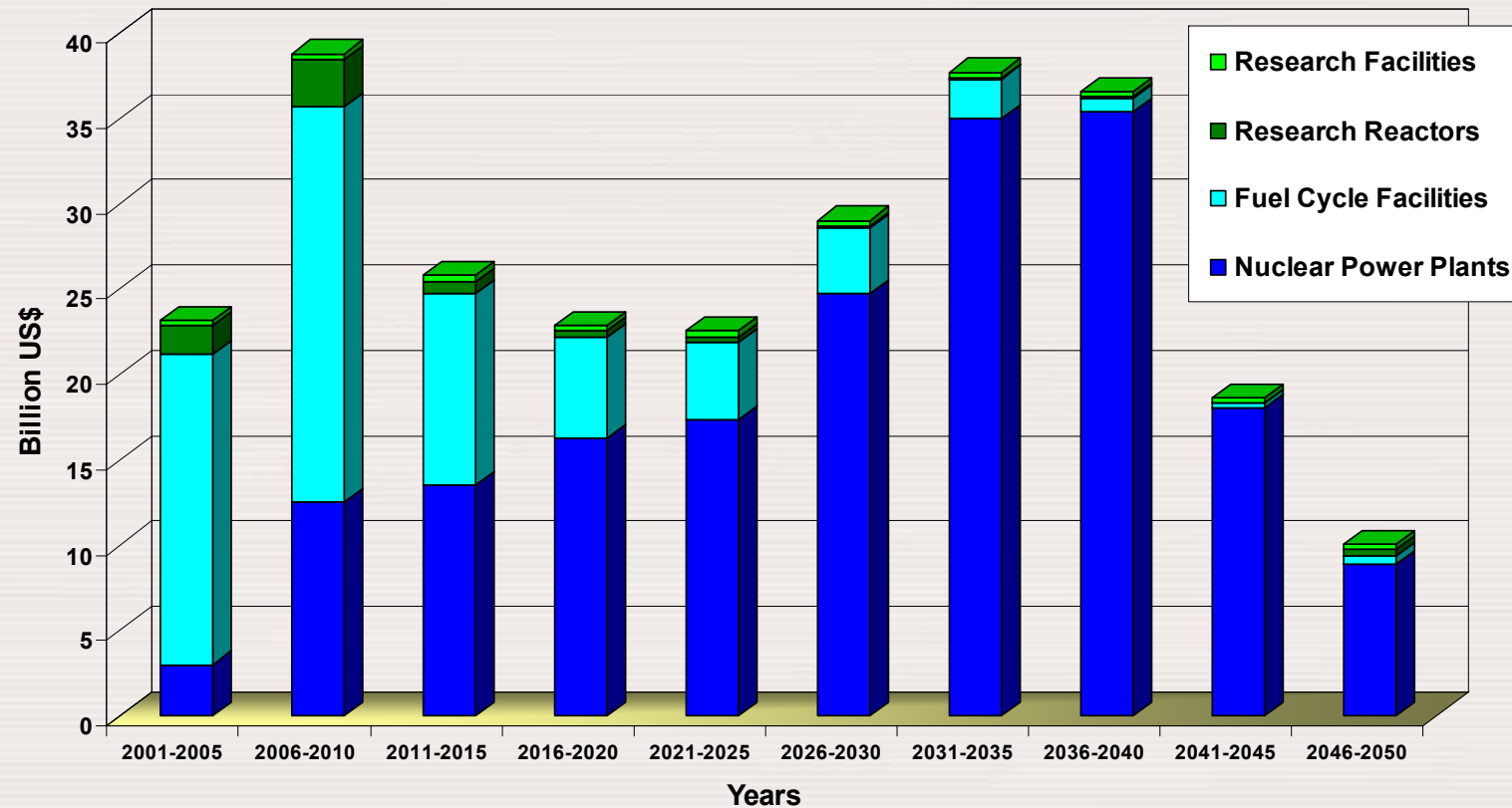


# INES Rating

## Nuclear and Radiological Events

Event	Rating
<u>Chernobyl (1986)</u>	7
Kyshtym (1957)	6
Windscale (1957)	5
<u>Goiania (1987)</u>	5
<u>Three mile island (1979)</u>	5
Tokaimura (1999)	4
Vandellos (1989)	3
<u>Industrial radiographer worker overexposure</u>	2

# Decommissioning evolution over time



# The Nuclear Safety Regime applied to Radioactive Waste Management

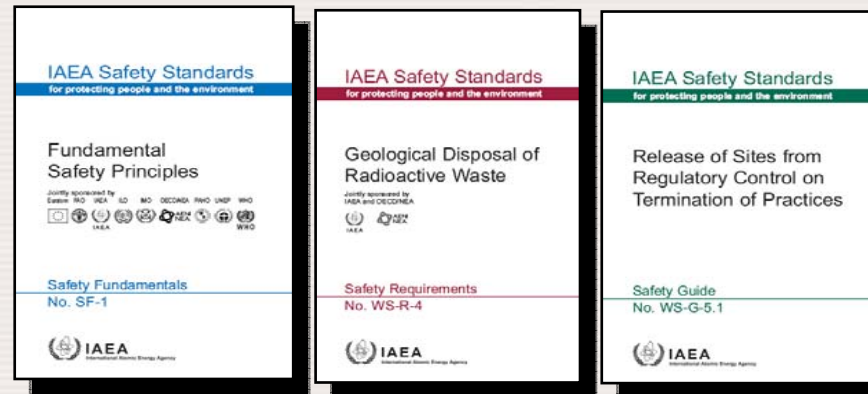


The Joint Convention

The CoC



International Safety Standards



National Policy and Strategy



National Regulatory Control

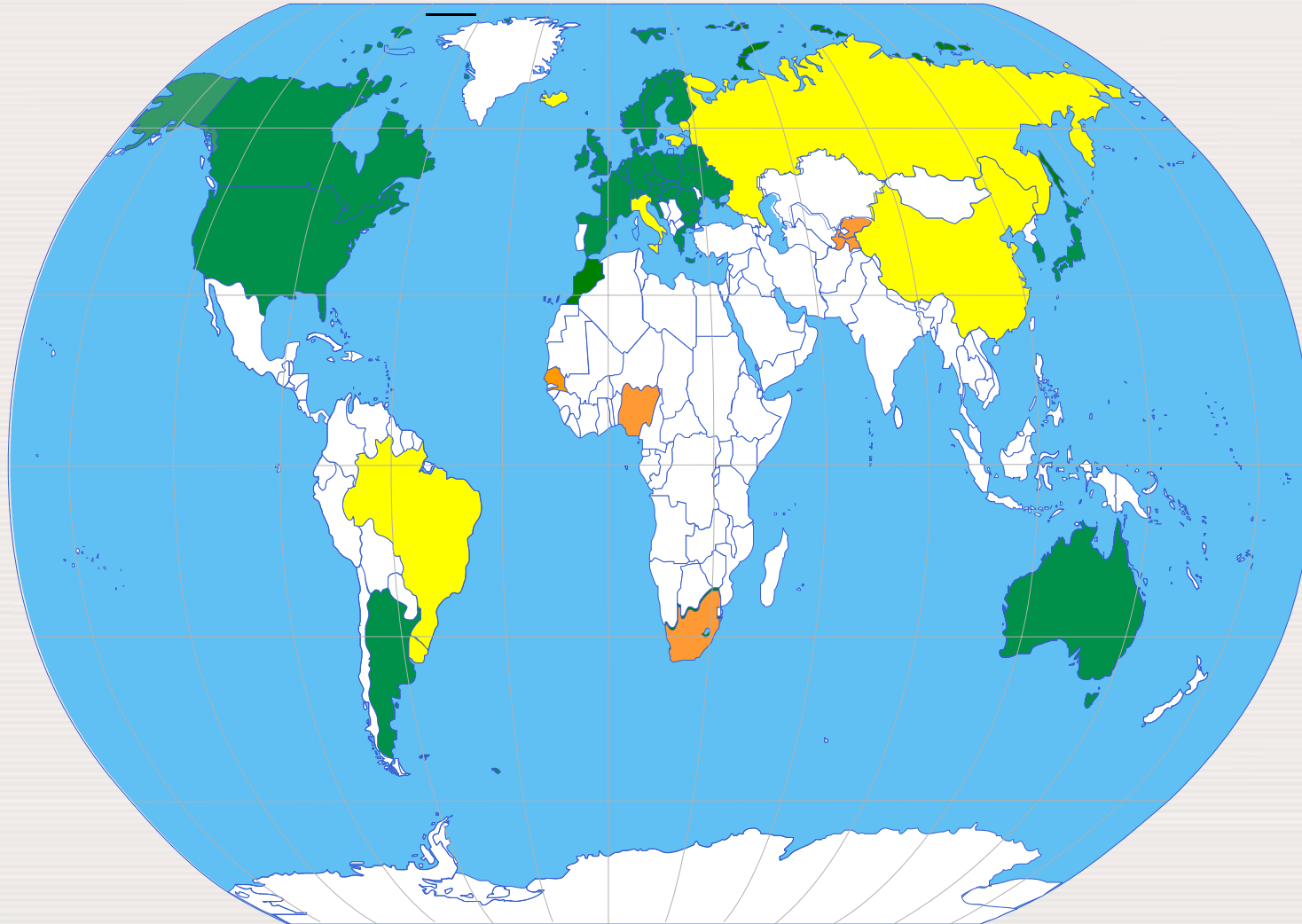


# The Joint Convention

- The first legal instrument to address on a global scale safety issues concerning the management of spent fuel and radioactive waste.
- Its scope concerns not only those States with major nuclear power programmes but also those that use radiation sources only in medicine and industry.



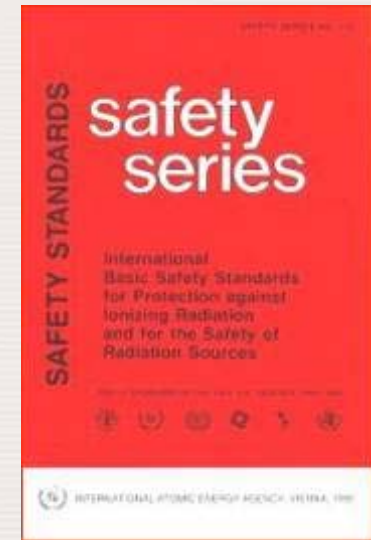
# Joint Convention 48 Contracting Parties in 2009



# Code of Conduct on the Safety and Security of Radioactive Sources



Non-binding international  
instrument based on  
International Standards



Provides recommendations to  
States on:



Legislation  
Regulations  
Regulatory body  
Import/export controls





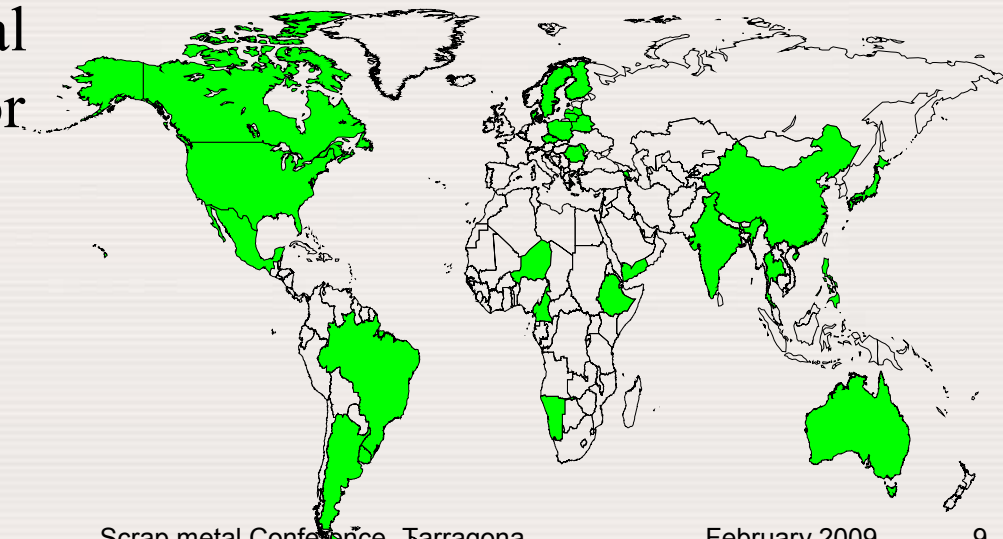
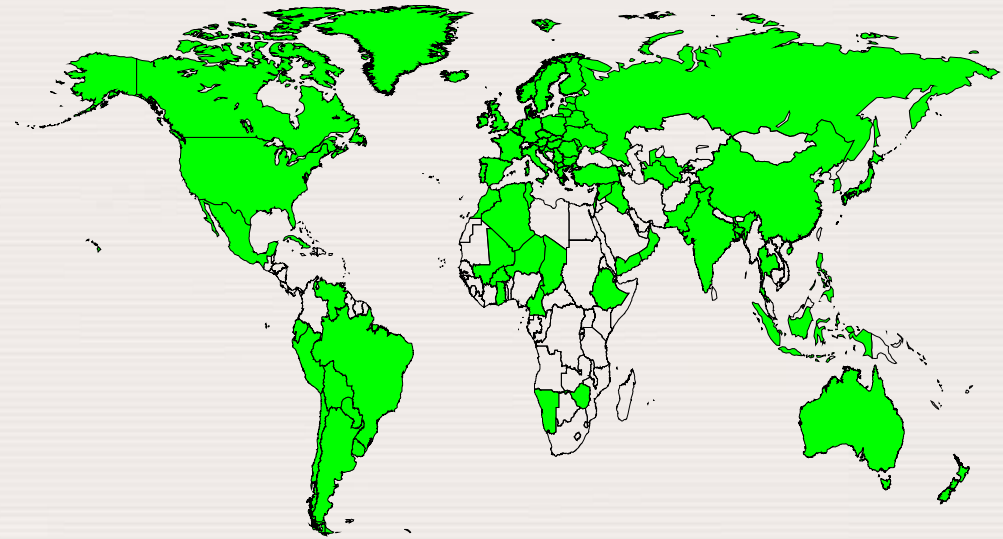
# Political support - June 2006



**Code of Conduct:**  
83 States have provided written political support



**Guidance:** 30 States have made the additional political commitment for its harmonised implementation



# The IAEA Safety Standards

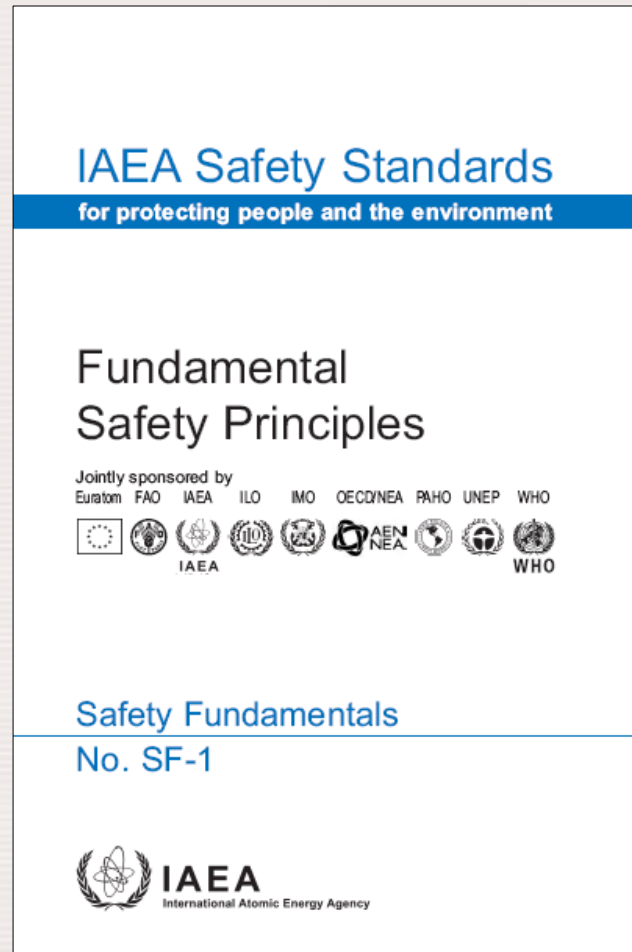
- The safety standards series comprises three levels of documents:

- Safety Fundamentals
  - Safety Requirements
  - Safety Guides
- 
- Cf. Supporting documents
    - Safety Reports
    - Technical Reports
    - TECDOCs



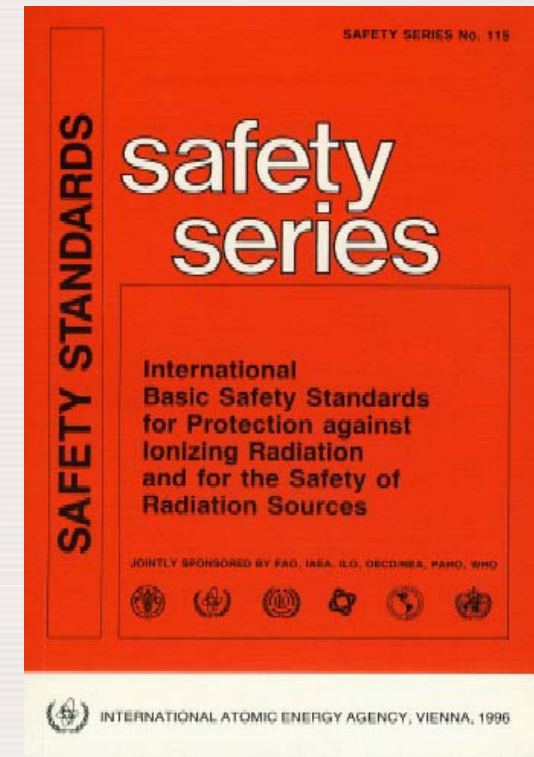
# Fundamental Safety Principles

- 1 Responsibility for safety
- 2 Role of government
- 3 Leadership and management for safety
- 4 Justification of facilities and activities
- 5 Optimisation of protection
- 6 Limitation of risks to individuals
- 7 Protection of present and future generations
- 8 Prevention of accidents
- 9 Emergency preparedness and response
- 10 Protective actions to reduce the existing on unregulated risks



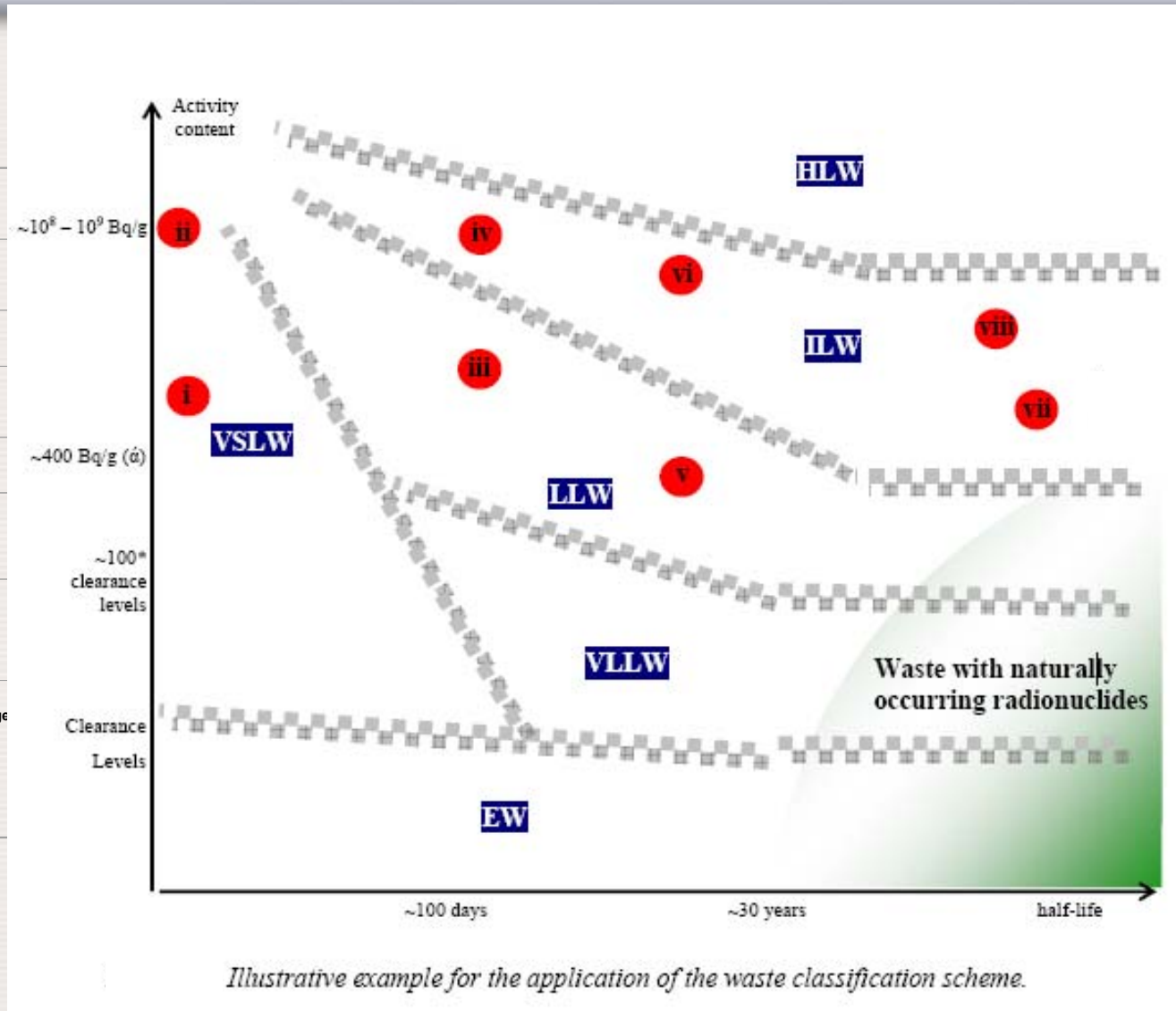
# The International Basic Safety Standards

- Cosponsored by FAO, IAEA, ILO, OECD/NEA, PAHO, WHO
- General requirements for protection against exposures to both **natural** and **artificial** radionuclides
- Covers **practices** and **interventions**



# The new classification application to DSRS and NORM

WASTE TYPE	HALF LIFE	ACTIVITY	VOLUME
i	<100d	100 MBq	Small
ii		5 TBq	Small
iii	< 15 y	< 10 MBq	Small
iv		< 100 TBq	Small
v	< 30 y	< MBq	Small
vi		< PBq	Small
vii	> 30 y	< 40 MBq	Small, but may be large numbers
vii		< 10 GBq	



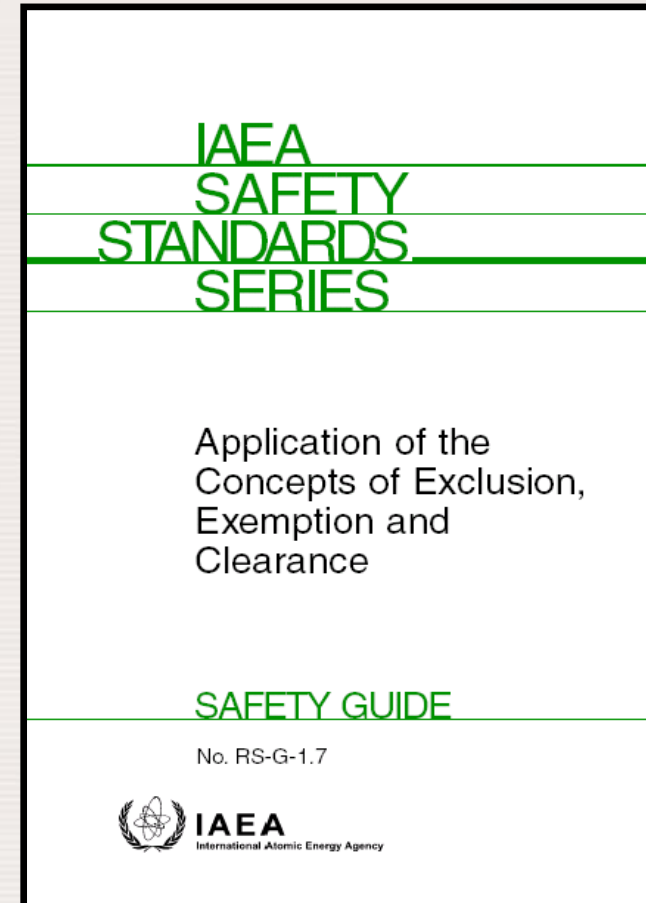
Illustrative example for the application of the waste classification scheme.



# Safety Guide RS-G-1.7

## Exclusion, exemption, clearance

- Applies to both natural and artificial radionuclides
- Activity concentrations in materials for defining the scope of regulatory control including **clearance** of materials



# Safety Standards on Emergency and remediation of contaminated sites


**IAEA  
SAFETY  
STANDARDS  
SERIES**

**Preparedness and  
Response for a  
Nuclear or Radiological  
Emergency**

JOINTLY SPONSORED BY  
FAO, IAEA, ILO, OECD/NEA, PAHO, OCHA, WHO

**SAFETY REQUIREMENTS**

**No. GS-R-2**




**IAEA**  
International Atomic Energy Agency

**IAEA  
SAFETY  
STANDARDS  
SERIES**

Remediation of  
Areas Contaminated by  
Past Activities and Accidents

**SAFETY REQUIREMENTS**

No. WS-R-3




**IAEA**  
International Atomic Energy Agency

**IAEA Safety Standards**  
for protecting people and the environment

Remediation Process  
for Areas Affected by  
Past Activities and  
Accidents

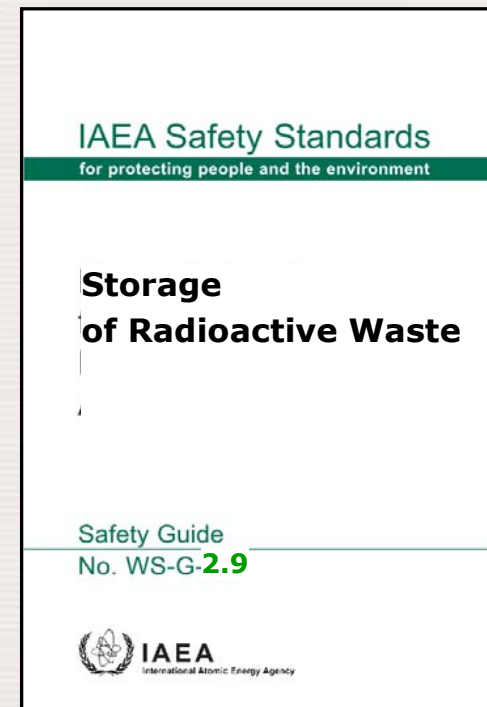
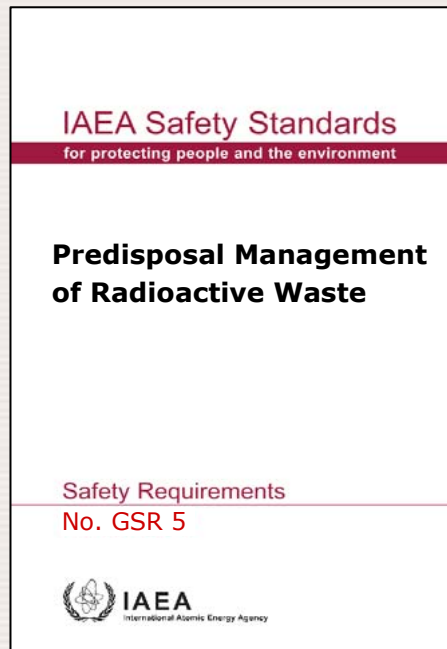
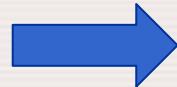
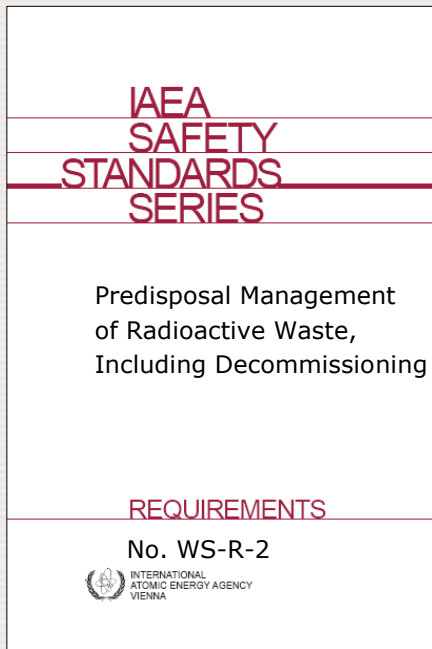
**Safety Guide**  
No. WS-G-3.1



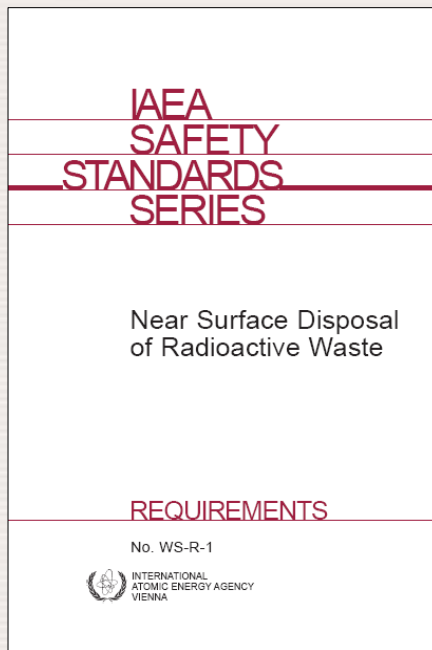
**IAEA**  
International Atomic Energy Agency



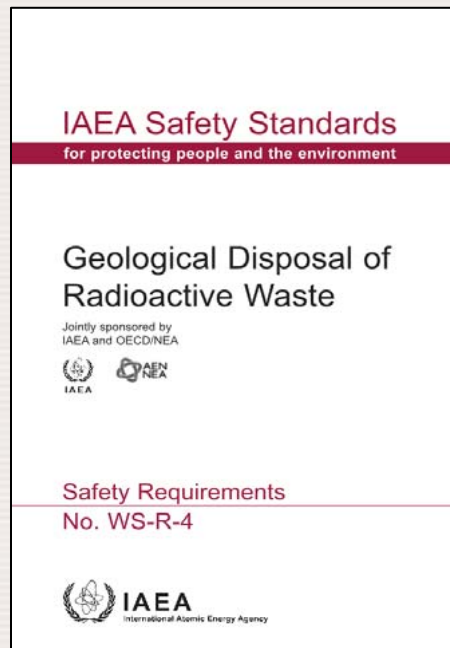
# Safety Standards for Predisposal



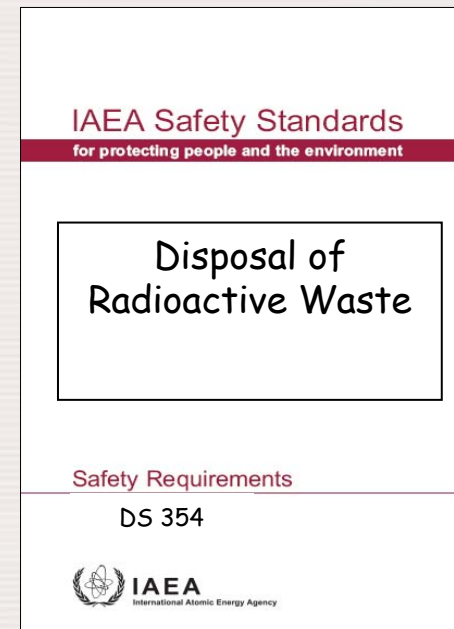
# Requirements for Disposal



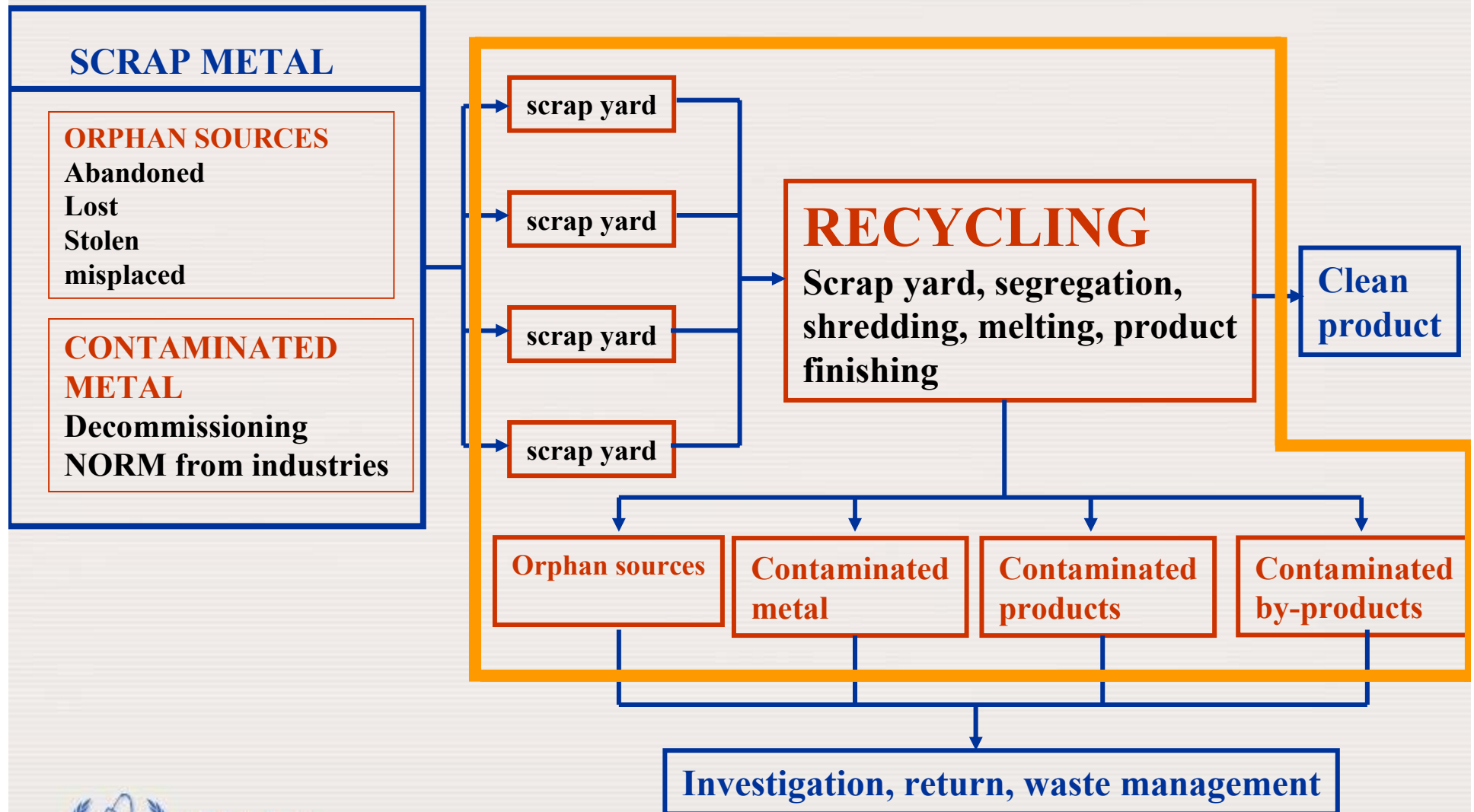
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# Safety Guide on orphan sources and contaminated material in the metal recycling industry





# Conclusions

- Problems recognized
- Metal recycling facilities sensitized
- Elements of the global nuclear safety regime in place to control and manage inadvertent radioactive material in scrap metal
- Need for better application at the national/regional level
- Bridge between decommissioning industry and steel industry to enlarge

