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Overview of IAEA Safety Guide DS459: Management of Radioactive Residues from Uranium Production and other NORM Activities

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Outline

- Background
- Status of development of DS459
- Proposed safety framework for management of NORM residues
- Summary

Demand of a harmonized approach for NORM residues management

- There is worldwide existence but the awareness of the related risk is low
- It covers broad human activities. The activities covered are very dynamic, social and societal sensitive
- There is a need to develop a framework that protects people and the environment from harmful effects of ionizing radiation without unduly limiting the NORM activities

Statute of the IAEA

Article III: Functions

To establish or adopt, …, standards of safety for protection of health and minimization of danger to life and property …, and to provide for the application of these standards to its own operation as well as to the operations making use of materials, services, equipment, facilities, and information made available by the Agency … ; (Para A.6)

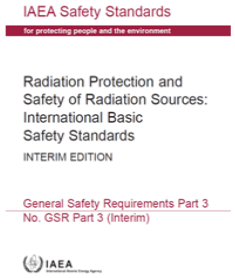
Background

IAEA SAFETY STANDARDS

Fundamentals →

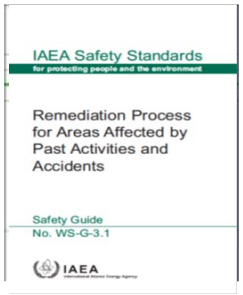
Underlying principles (aimed at politicians and regulatory bodies)

Requirements →



Specific obligations and responsibilities ("shall")

Guides →



Recommendations to support requirements ("should")

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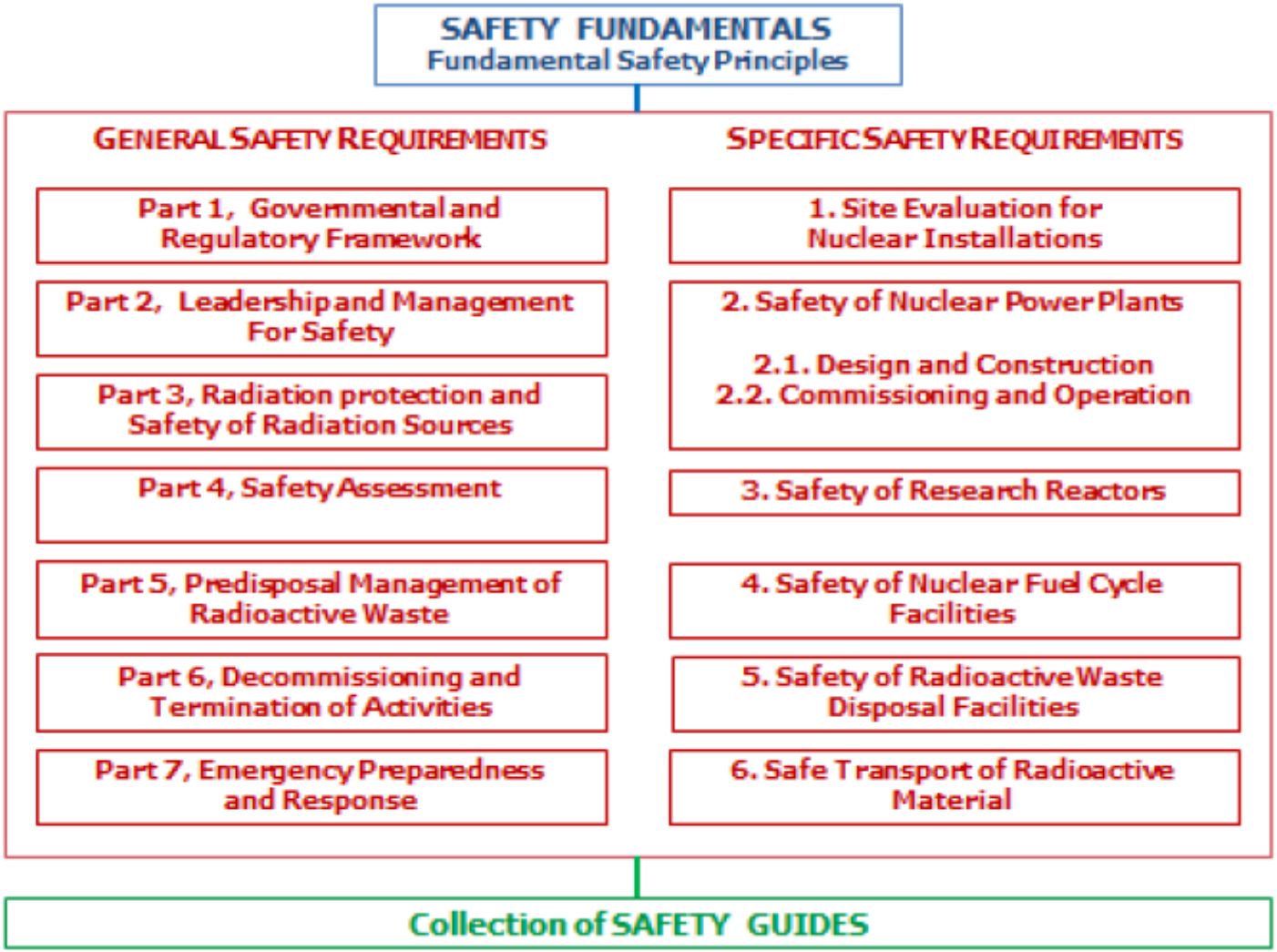

SAFETY FUNDAMENTALS
Fundamental Safety Principles
GENERAL SAFETY REQUIREMENTS
Part 1, Governmental and Regulatory Framework
Part 2, Leadership and Management For Safety
Part 3, Radiation protection and Safety of Radiation Sources
Part 4, Safety Assessment
Part 5, Predisposal Management of Radioactive Waste
Part 6, Decommissioning and Termination of Activities
Part 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

NORM Residues (GSR Part 3)

*3.1(f) the **mining and processing of raw materials** that involve exposure due to radioactive material;*

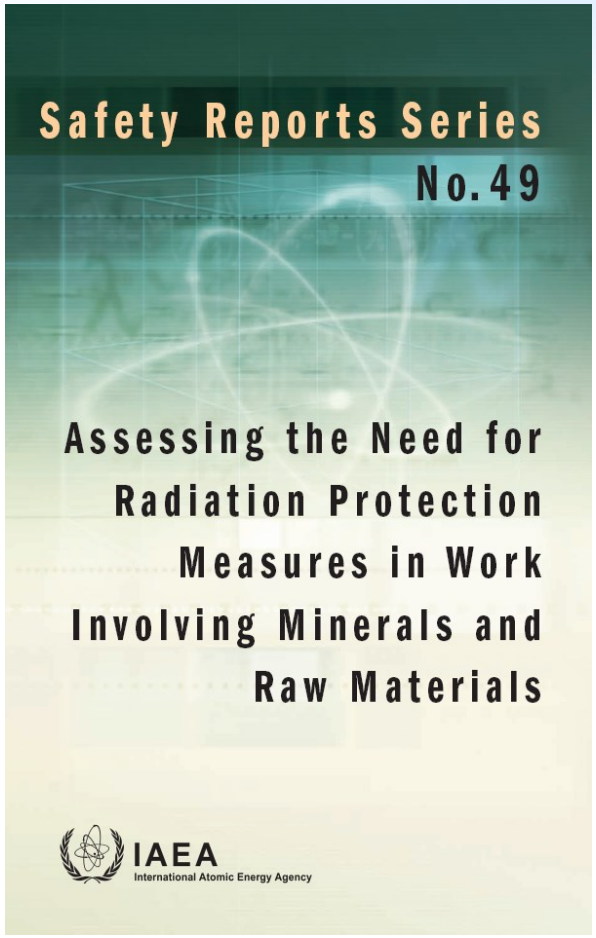
*3.4 (a) Exposure due to material in any practice specified in para.3.1 where the activity concentration in the material of **any radionuclide in the uranium or thorium decay chains is greater than 1 Bq/g or the activity concentration of 40 K is greater than 10 Bq/g**.*

3.4 (b) Public exposure delivered by discharges or in the management of radioactive waste arising from a practice involving material as specified in para. 3.4 (a)

*I-4. For radionuclides of natural origin, exemption of bulk amounts of material is necessary considered on a case by case basis by using **a dose criterion of the order of 1 mSv in a year**, commensurate with typical doses due to natural background levels of radiation.*

NORM Residues – Concerned sectors

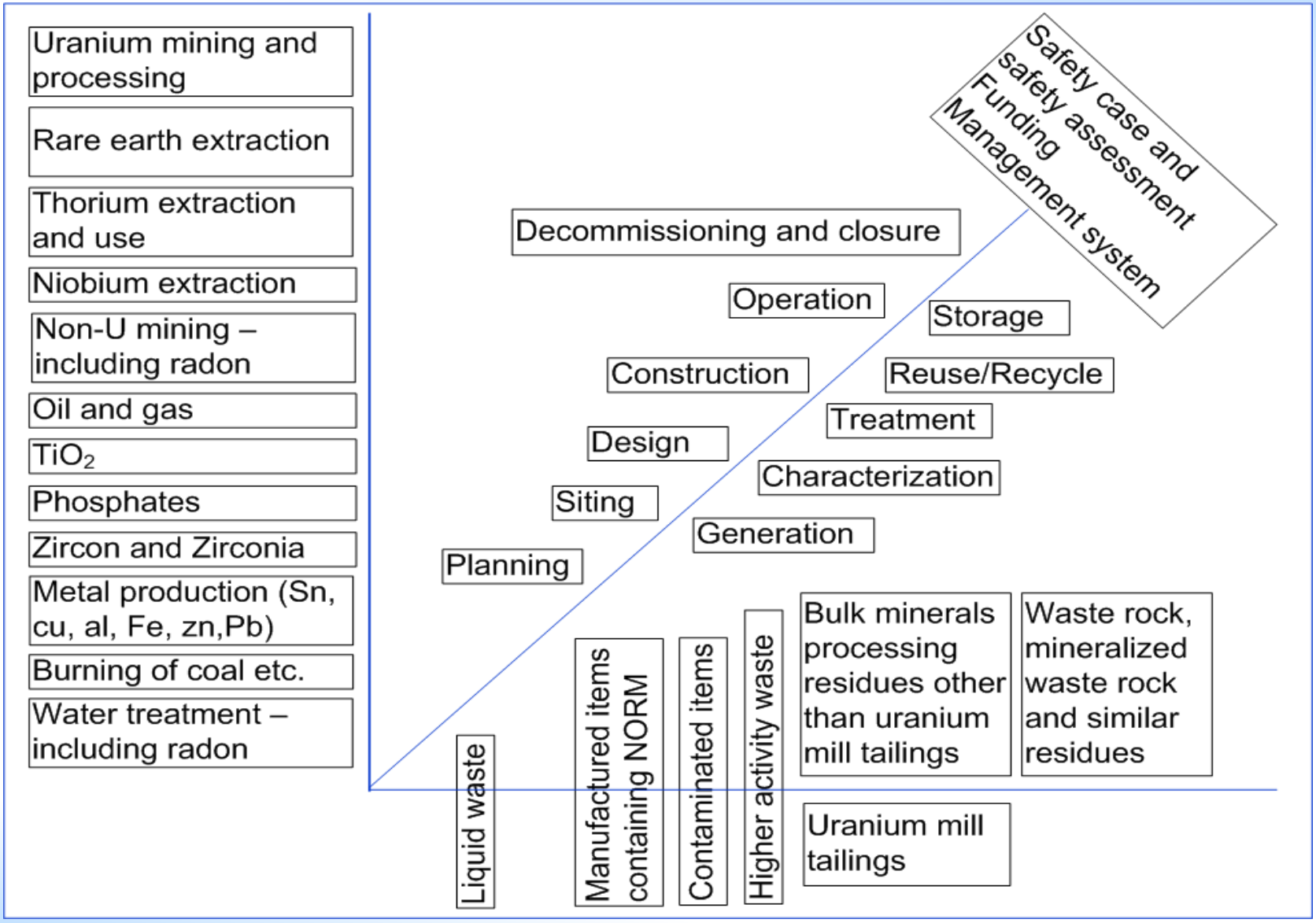
1. Uranium mining and processing
2. Rare earths extraction
3. Thorium extraction & use
4. Niobium extraction
5. Non-U mining – incl. radon
6. Oil and gas
7. TiO_2
8. Phosphates
9. Zircon & zirconia
10. Metals production (Sn, Cu, Al, Fe, Zn, Pb)
11. Burning of coal etc.
12. Water treatment – incl. radon



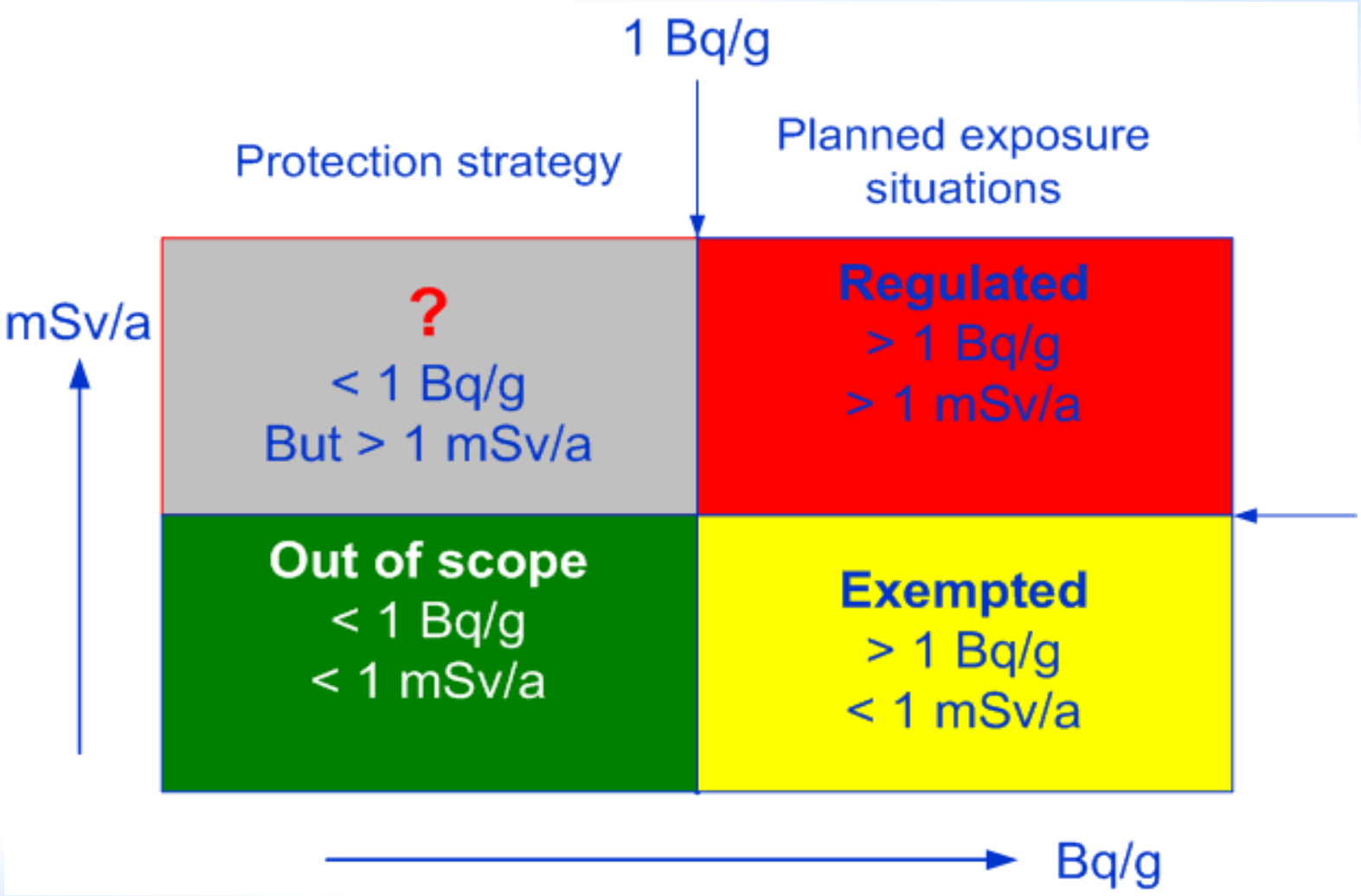
Background

- WS-G-1.2: Management of Radioactive Waste from the Mining and Milling of Ores (2002)
- WASSC 31 (June 2011) concluded WS-G-1.2 to be revised at the light of the new requirements and developments to cover residues from other industrial activities
- Working title: Management of Radioactive Residues from Uranium Production and Other NORM Activities

Scope covered



Management scheme for NORM residue



Structure of DS459

1. Introduction
2. Overview of NORM Residues
3. Governmental, legal and regulatory framework
4. Protection of people and the environment
5. System for regulatory control
6. Strategies for NORM residue management
7. The safety case and safety assessment for NORM residues management
8. Safety consideration for long term Management of NORM Residues

Appendix A. Special considerations of residues from uranium production

Appendix B. Residue management plan for uranium production

Appendix C. Decommissioning plan for uranium production facility

References

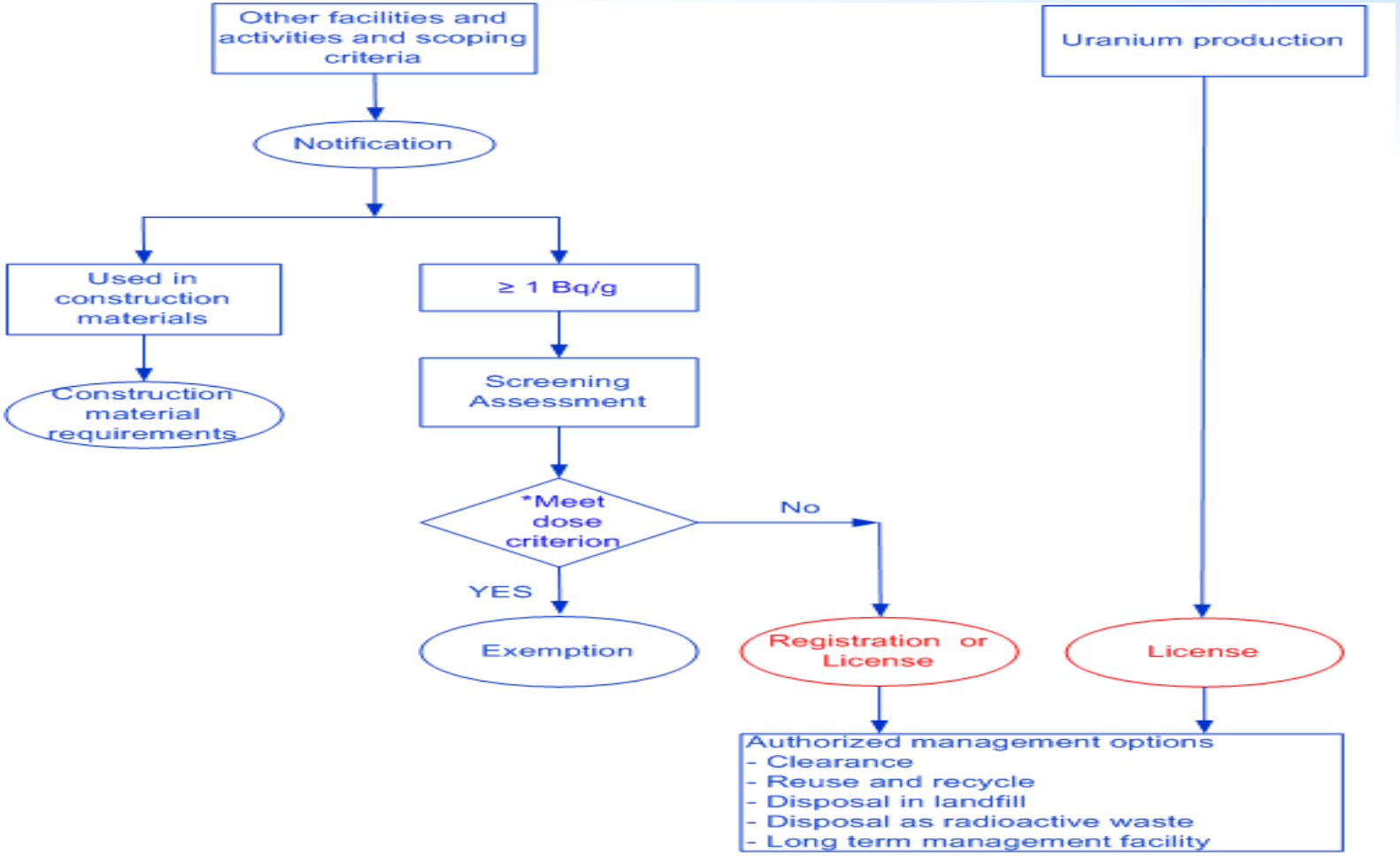
Annex I. Residue be assessed for possible regulatory control

Annex II. Reuse and Recycling of NORM Residues

Annex III. Sampling and determining radionuclide activity concentrations

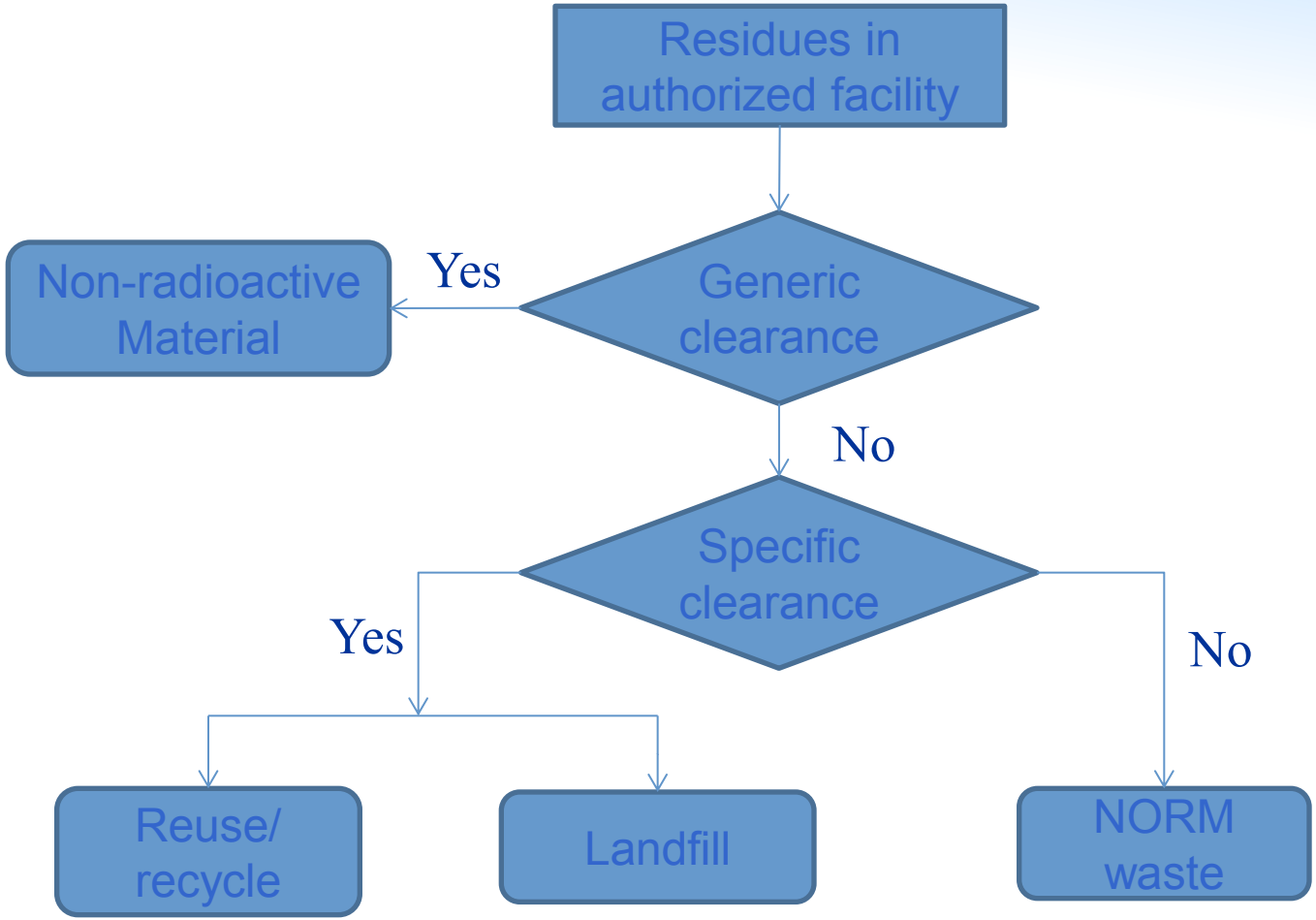
Annex IV. Bibliography

System for Regulatory Control



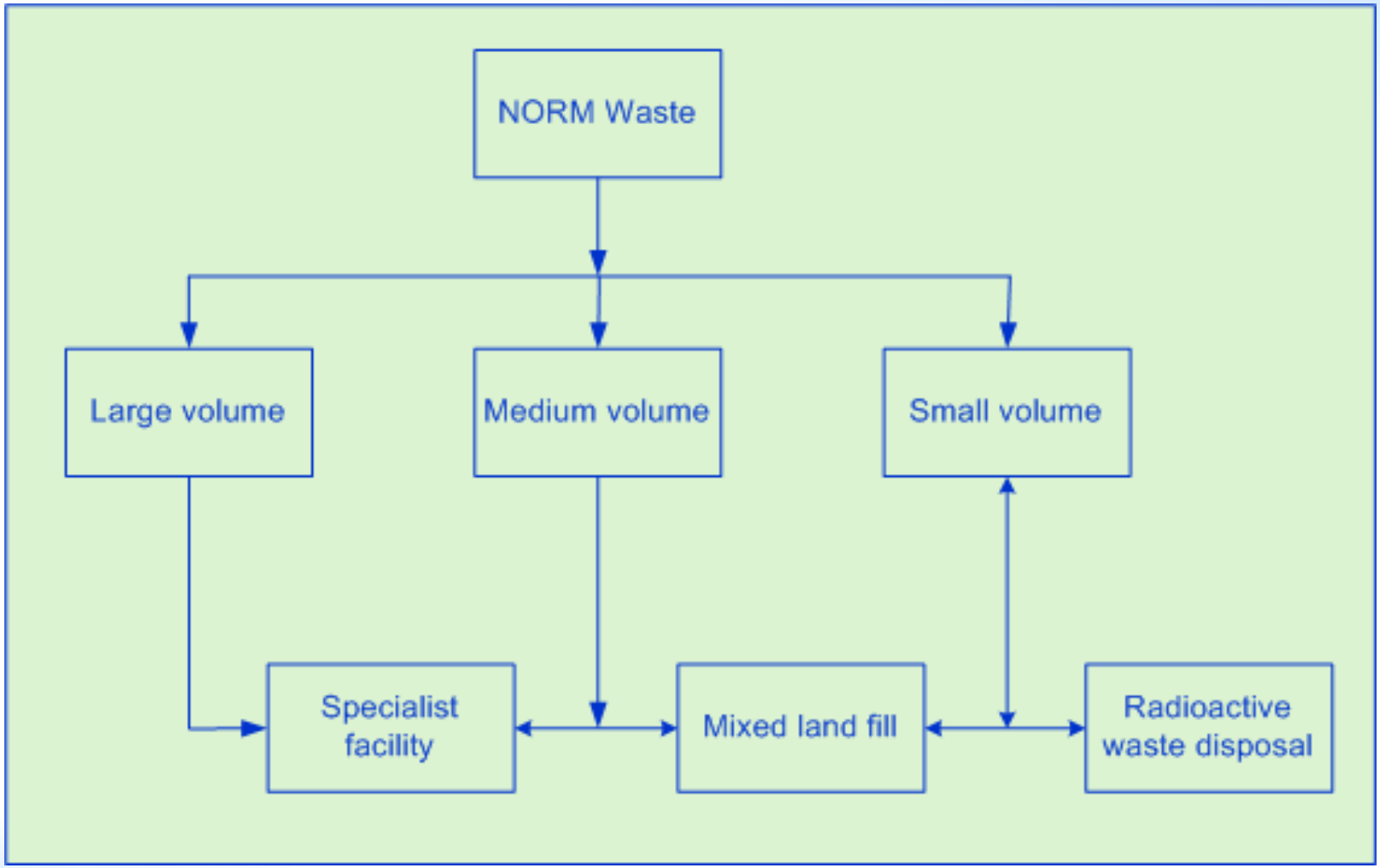
* Dose criterion can be in the order of 1 mSv/y or other that is defined by the regulatory body.

Management options for NORM residues under authorized activities



Remains under regulatory control

Options for long term management



Training materials developed for regulatory body

- Safety concerns of NORM
- Protection of workers and the public
- Regulatory Requirements
- Management of NORM Residues
- Measurement
- Environmental Monitoring and Surveillance
- Decommissioning and Closure
- Past Activity and Remediation

Summary

- Good progress has been made in development of IAEA Safety Standards for management of NORM residues
- The Draft DS459 is now open for Member States comments until 7 December 2016
- All questions, comments and suggestions, please send to:

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Thank you!