



**IAEA**

International Atomic Energy Agency  
*Atoms for Peace and Development*

# **Update on Development of IAEA Safety Standards for NORM Residues Management**

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# Outline

- IAEA Safety Standards Framework
- Chronicles
- Proposed framework
- Action for application
- Summary

# Statute of the IAEA

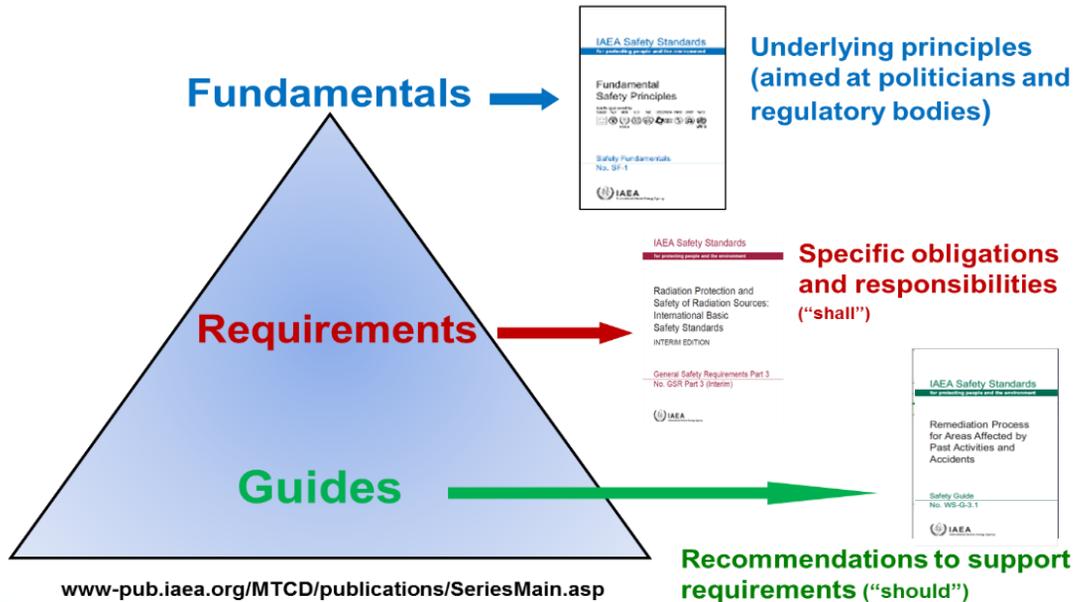
## Article III: Functions

*To make provision, in accordance with this Statute, for materials, services, equipment, and facilities to meet the needs of research on, and development and practical application of, atomic energy for peaceful purposes, including the production of electric power, with due consideration for the needs of the under-developed areas of the world; (Para A.2).*

*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)*

# IAEA Safety Standards Framework

## IAEA SAFETY STANDARDS



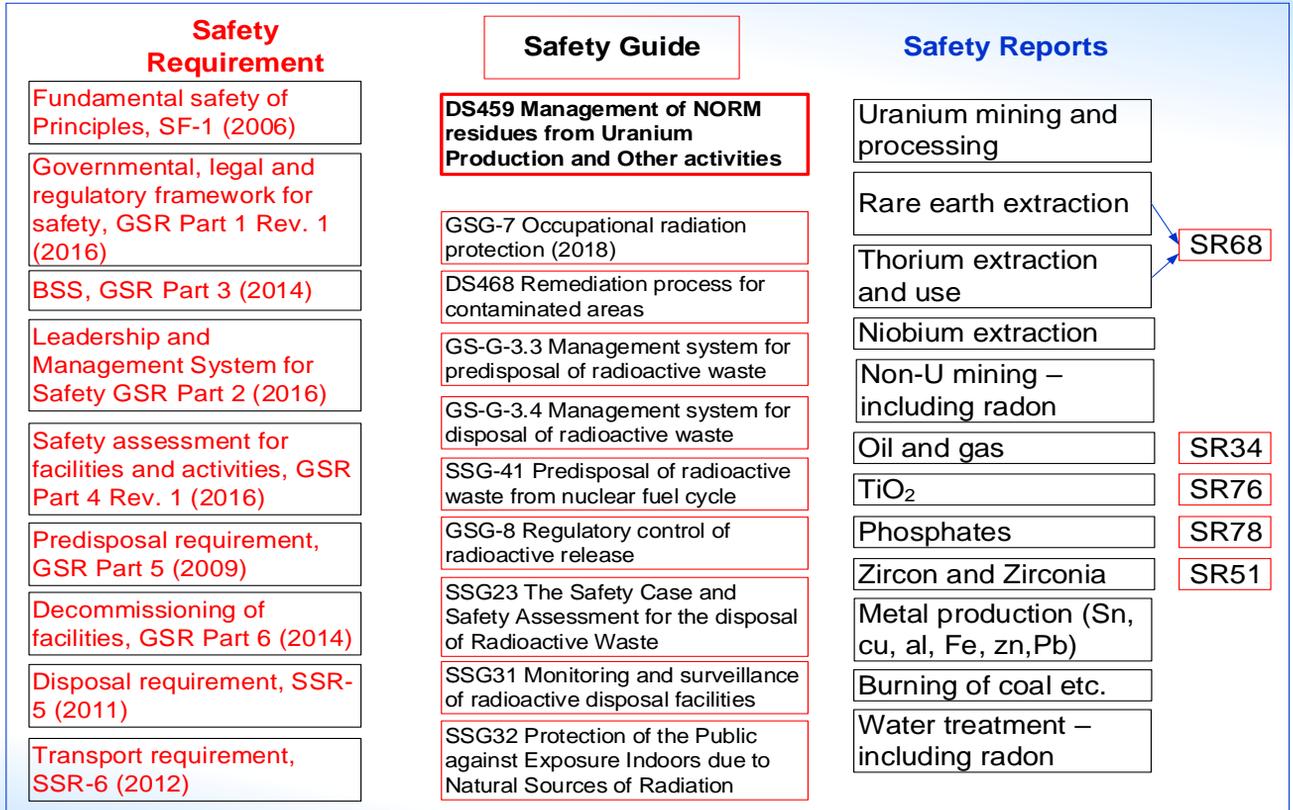
# IAEA Definition of NORM Residues



- **NORM (Naturally occurring radioactive material):** Radioactive material containing no significant amounts of radionuclides other than naturally occurring radionuclides. Significant amounts would be a regulatory decision
- **NORM Residues:** Material that remains from a process and comprises or is contaminated by naturally occurring radioactive material (NORM).
- **NORM waste:** Naturally occurring radioactive material (NORM) for which no further use is foreseen”.
- *A NORM residue therefore may or may not be waste.*

**- IAEA Safety Glossary 2018 Edition**

# IAEA Publications relevant to NORM residues



SR68

SR34

SR76

SR78

SR51

# Needs of IAEA safety standards for management of NORM

- Residues from uranium production has long been regulated. WS-G-1.2: Management of Radioactive Waste from the Mining and Milling of Ores (2002), focusing on mining and milling uranium and thorium ores
- Assistance were requested by MSs related to NORM residues through IAEA TC Projects and other activities
- GSR Part 3 establishes requirements on management of naturally occurring radioactive materials

# Chronicles

- Waste Safety Standards Committee (WASSC) concluded that: WS-G-1.2 is to be revised at the light of the new requirements and needs on management of NORM (June 2011).
- The first Standards Committee review of the draft publication by WASSC and RASSC in June 2016.
- 120 day Member States consultation completed in December 2016.
- The second Standards Committee review was conducted in November 2018.
- The draft was approved by Commission of Safety Standards in April 2019 (SSD60)

# Resolutions of MSs Comments

- 275 comments from 11 MSs
- 248 (90%) accepted and accepted with modifications
- 27 (10%) rejected:
  - ✓ Beyond the scope of the document
  - ✓ Fraction of 1 mSv/a
  - ✓ Citation and reference

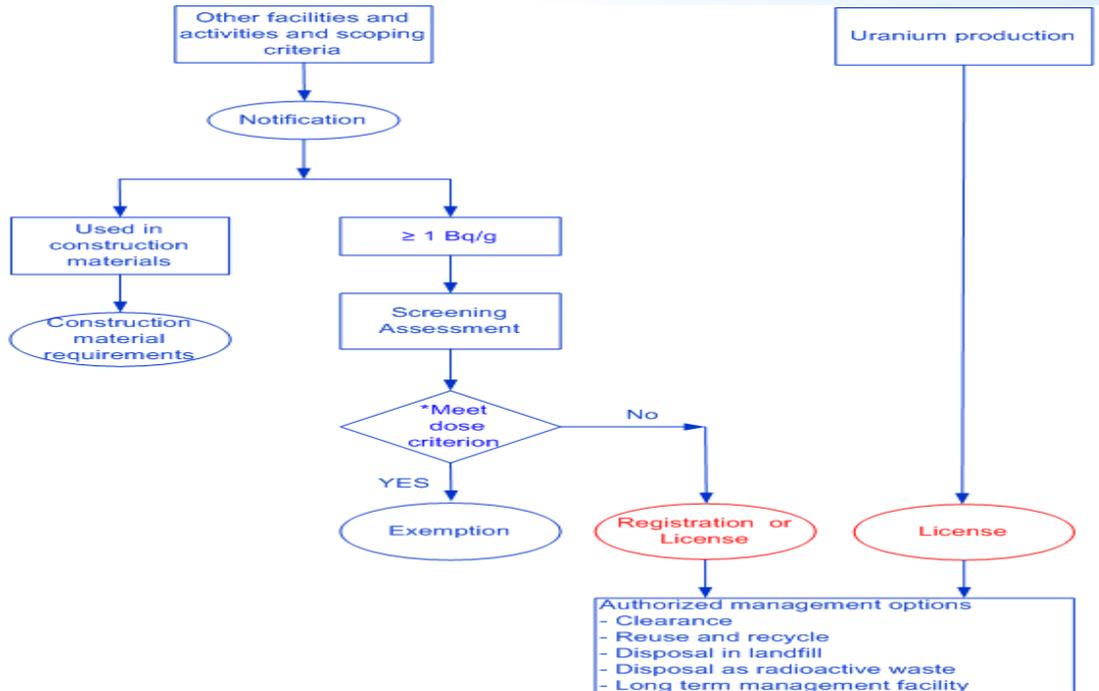
# Resolutions of comments by the Committee – second review

- 102 comments in total
- 99 (97%) accepted (57%) and accepted with modifications (40%)
- 3 (3%) rejected:
  - ✓ “Source constraint”
  - ✓ “Delete use of gross alpha on solids” (Annex II)
  - ✓ “Uranium can be estimated by gamma spec using the Protactinium peak”

# Structure of SSD60

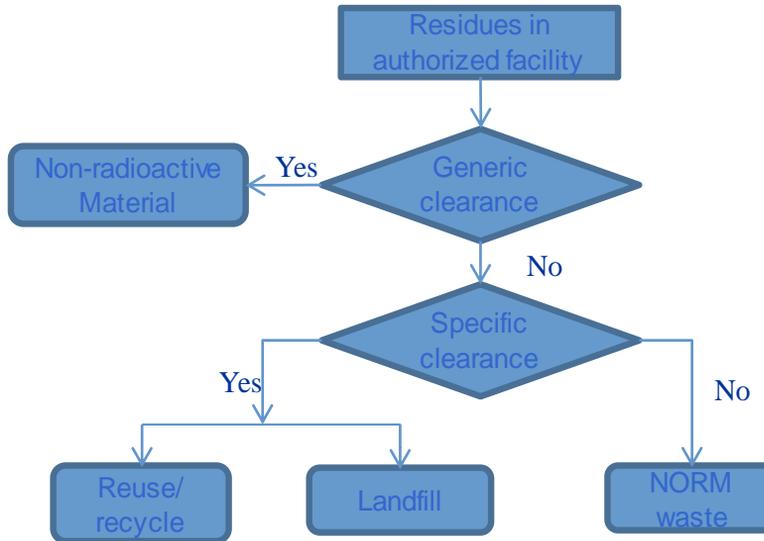
1. Introduction
  2. Overview of NORM activities and NORM residues
  3. Governmental, legal and regulatory framework for safety
  4. Protection of people and the environment
  5. System for regulatory control
  6. Strategies for NORM residue management
  7. The safety case and safety assessment for NORM residues management
  8. Safety consideration for long term Management of NORM Residues
- Appendix I. Special considerations of residues from uranium production
- Appendix II. Residue management plan for uranium production
- Appendix III. Closure plan for tailings management facility
- References
- Annex I. Examples of residues to be assessed for possible regulatory control
- Annex II. Sampling and determining radionuclide activity concentrations
- Annex III. Example of application of the graded approach in the management of NORM residues
- Annex IV. Reuse and Recycling of NORM Residues
- Annex V. Bibliography

# System for Regulatory Control



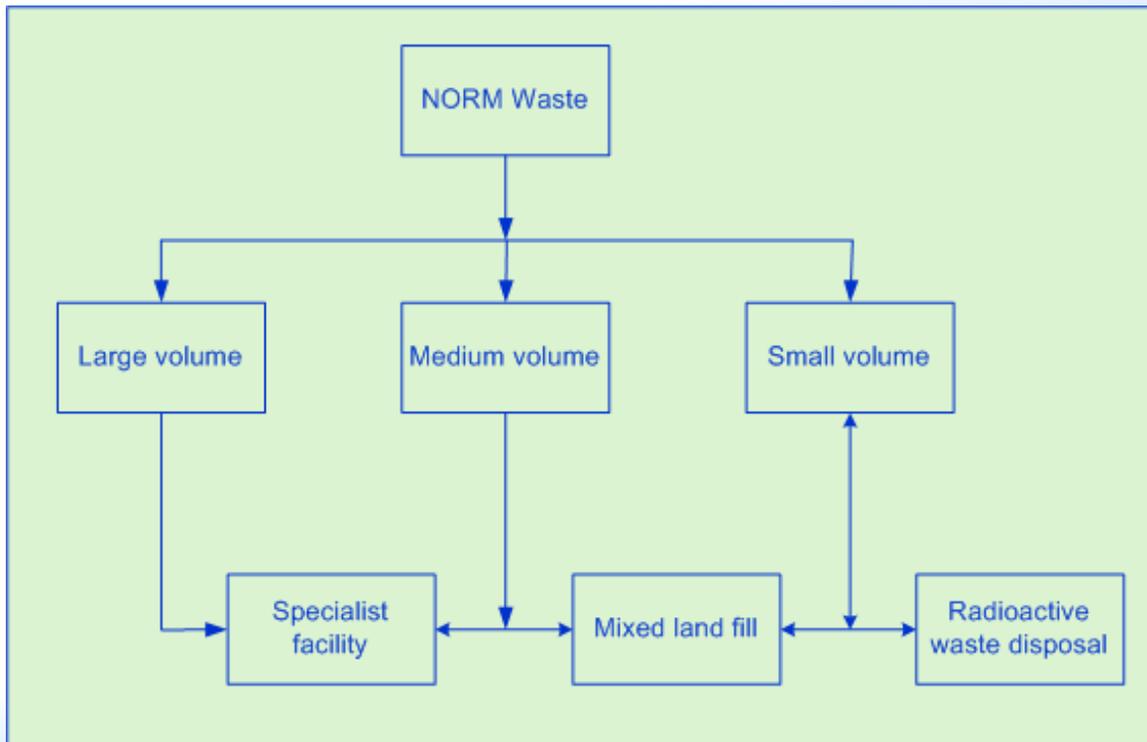
\* Dose criterion can be in the order of 1 mSv/y or other that is defined by the regulatory body.

# Management options for NORM residues under authorized activities



Remains under regulatory control

# Strategic approach for long term management of NORM waste



# Regulatory Forum for Safety of Uranium Production and NORM (REGSUN)



- To help build capacity in all Member States undertaking or considering uranium production or the management of NORM residues.
- To promote good regulation and safe and environmentally responsible practices, through the application of IAEA Safety Standards.
- To promote and increase the exchange of information and expertise among its participants, including regular updates on best practice approaches, targeted assistance in review and provision of expertise, and identification of gaps in guidance and support.
- To support the utilization of IAEA tools and training materials. And
- To provide strategic input for future IAEA work in areas related to safety of uranium production and NORM residues management.

# Summary

- **IAEA safety standards provides harmonized approach for management of NORM**
  - **Graded** - Regulatory control should be commensurate with the associated hazards and risk
  - **Integrated** - The regulations and controls that are already in place for non-radiological purpose should be considered and integrated
  - **Justified** - Regulatory control should be built upon good understanding of national situations, including facilities and activities in existence, resources that can be deployed for control, justification of control
- **REGSUN was launched to assist and promote such approach**



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*Thank you!*