Waste Management

OECD-NEA National-Level Guidance on Building a Framework for Post-Nuclear Accident Recovery Preparedness

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Content

- Waste generated in nuclear or radiological emergencies
- National policy, strategy, legislation and planning
- Modelling tools
- Radiological criteria
Waste generated in emergencies

- Nuclear and radiological emergencies can generate **large volumes of radioactive waste** (contaminated waste).
  - Large amounts of waste generated from applying **remedial protective actions off-site**.
  - **Secondary wastes** created through treatment and reprocessing of contaminated waste.
  - Contamination entering **conventional waste streams** (municipal/industrial waste etc.).
Waste generated in emergencies

• ... may be more heterogeneous and voluminous than waste arising from routine operations,

• ... will have activity concentrations depending on initial level of contamination in the environment
  → larger volumes of lower activity waste (remedial measures)
  → smaller volumes of higher activity waste (e.g. secondary waste)

• ... may quickly exceed the existing capacity for management of radioactive waste from routine operations.

→ Preparedness for waste management in emergencies is important.
The national framework for waste management should...

- distinguish between waste management during routine operations and during emergencies,

- apply a **graded approach** that accounts for different amounts and types of waste from a **range of emergency scenarios**, and

- adequately cover the surge in capacity that is likely to be required in severe emergencies.
• Is there a need for modified or additional legal frameworks? (incl. framework for conventional waste management)

• Consider remediation and decontamination strategies.

• Consider application of (modified) waste hierarchy encouraged by the IAEA for radioactive waste from routine operations.
  → reduce waste generation → reuse/recycle → dispose as waste
National policy, strategy, legislation & planning

- The level of preparedness should follow a graded approach regarding the phase of the emergency response.
Modelling

• Modelling allows to estimate potential types, activity levels, and volumes of waste that could be generated in a nuclear or radiological emergency.

• Modelling can be used
  • in the preparedness phase to support planning for waste management,
  • in an emergency or during recovery to support decision making (remedial actions).

• Several modelling tools have been developed, such as:
  • CONDO, ERMIN, RODOS, WEST
Radiological criteria

• Establishing **radiological criteria** is highly important to support the **specification or classification of waste**.
  
  ➔ Important for reducing the amounts of waste that have to be treated as radioactive or contaminated.

  ➔ Where possible, **uncontaminated or lightly contaminated waste** should be segregated and dealt with using appropriate waste routes.
Radiological criteria

- Nuclide specific threshold values for the activity mass concentration (Bq/kg).

- Threshold values may function **similarly to clearance and exemption levels** for normal operations (IAEA GSG-11),

- Additional higher threshold levels may support graded treatment and disposal schemes.

→ See Annex B of EGRM-report for national examples.
Further existing guidance (non-exhaustive):