

Risk-Informed LLW Management

WM 2011 Session 101
Thursday 1:00 PM

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LLW Rules:

- 61.41 Principle Protection Criteria
- 61.55 Waste Classification Tables
(Deterministic Result for a Generic Site)
- 61.58 Alternative Requirements for Waste Classification

Main Risk Metrics for Waste

- Concentration – Best used as a metric for operational risks
- Quantity – Best used as a metric for disposal risks
- Half-life: long-term risk, transport, and environmental impacts

Concentration

- Radiation Protection
 - Worker protection to external exposure
- Shipping Cask Operations
 - Compliance with dose rate limits

Quantity

- For Disposed Radioactive Materials
 - Local concentration does not drive the risks
 - Total quantities released from the inventory in a site drive the risks

Half-Life

- Distinguishing short-term from long-term risk & waste acceptance criteria
- Considering long-term risk from progeny
- Considering long-term transport and potential environmental impacts

Areas for Improvements

- Greater emphasis on Risk-Informed Approach to LLW management
- Focus on radionuclide content (inventory) rather than waste origins or concentrations
- Address intermediate level waste category (ILW) – GTCC
- Address clearance issue

Areas for Improvements

- Need to focus on Extended Storage of Class B and Class C LLW
- RCRA Subtitle-C and Subtitle-D Sites: Are they suitable for certain types of LLW and LAW?

Approaches for Improvements

- Specify the calculational methods and perform a risk-informed assessment
- Use the result to specify site-specific quantities/limits for the expected wastes within the bounds of the risk assessment
- Develop site-specific waste acceptance criteria

Approaches for Improvements

- Risk-inform the characteristics of:
 - Waste
 - Waste Package
 - Disposal Technology Below Grade (Vaults and barriers)
 - Cover Technology At and Above Grade
 - Update performance assessment approaches and methodologies
 - Geohydrology and Geology