

Key U.S. NRC Regulatory Topics in LLRW Management

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All you need in radioactive and hazardous waste management

Summary of Issues

- How did we get here?
- Final rule is complicated
- Defense in depth
- Stability at 10,000 years
- Grandfathering provision
- Unintended consequences

Victor Borge



How did we get here?

Problem: Ensuring safe disposal of new waste streams not analyzed as part of the original 10 CFR Part 61 regulation

- Depleted Uranium
- Blended wastes
- Future waste streams

Gary Comfort
Presentation to ACRS, 11/3/2016

How did we get here?

Direction: SRM-SECY-08-0147

- Require rulemaking for site-specific analysis of DU disposal

Direction: SRM-SECY-10-0043

- Incorporate blending into rulemaking

Direction: SRMCOMWDM-11-0002/COMGEA-11-0002

- Use two-tiered approach with compliance period covering reasonably foreseeable future and longer period of performance

Gary Comfort
Presentation to ACRS, 11/3/2016

How did we get here?

Direction: SECY-13-0075

- 1,000 year regulatory compliance period with 25 mrem/yr public dose limit
- Published with a compatibility category “B” applied to the most significant provision of the revised rule
- 10,000 year intruder assessment
- Ensure draft guidance is reviewed by the broader scientific and academic community and other government agencies with disposal experience
- Intruder assessment should be based on intrusion scenarios that are realistic and consistent with activities in and around the disposal site at the time of closure
- A further protective assurance period should be performed from 1,000 to 10,000 years
- Qualitative analysis for >10,000 years
- Licensing decisions are based on Defense in Depth protections. DID and PA make “safety case”
- Solicit comments for compatibility category other than Compliance and Protective Assurance Analysis periods
- ACRS is encouraged to continue to provide input
- 120 day public comment period

Final rule is complicated

- Revision of Part 61 initiated as a “limited scope rulemaking” (SRM-SECY-08-0147)
- As finalized, it is not limited nor readily understandable
- Amount of detail is excessive
- Most additions belong in guidance
- These additions don’t strengthen rule or contribute to health and safety
- Compatibility “B” sections are less than expected

Is the result complex or simple

- (5)(a) Notwithstanding Subsection R313-25-9(1), any facility that proposes to land dispose of significant quantities of concentrated depleted uranium (more than one metric ton in total accumulation) after June 1, 2010, shall submit for the Director's review and approval a performance assessment that demonstrates that the performance standards specified in 10 CFR Part 61 and corresponding provisions of Utah rules will be met for the total quantities of concentrated depleted uranium and other wastes, including wastes already disposed of and the quantities of concentrated depleted uranium the facility now proposes to dispose. Any such performance assessment shall be revised as needed to reflect ongoing guidance and rulemaking from NRC. For purposes of this performance assessment, the compliance period shall be a minimum of 10,000 years. Additional simulations shall be performed for the period where peak dose occurs and the results shall be analyzed qualitatively.
- (b) No facility may dispose of significant quantities of concentrated depleted uranium prior to the approval by the Director of the performance assessment required in Subsection R313-25-9(5)(a).
- (c) For purposes of this Subsection R313-25-9(5) only, "concentrated depleted uranium" means waste with depleted uranium concentrations greater than 5 percent by weight.

Not saying we are perfect



Intruder assessment should be based on intrusion scenarios that are realistic and consistent with activities in and around the disposal site at the time of closure

Not saying we are perfect



Suppose we build a
Giant Badger!!



Defense in Depth

- Appreciate the inclusion of a safety basis and the emphasis on defense in depth
- Proposed rule misapplied the concept of defense in depth
 - Final rule removed analysis – thanks!!!!!!
- How this will be implemented will be interesting to watch
- Defense in depth comes from layers of protection
 - Suitable site geology + stability + proper package + activity limits = defense in depth

Stability at 10,000 years

- The rule requires demonstrating site stability at 10,000 years
- §61.44 – “disposal facility must ... achieve long-term stability of the disposal site for the compliance and protective assurance periods...”
- Inconsistent with Commission direction, which explicitly refers to a “reasonable analysis”
- Technically infeasible – stability cannot be demonstrated to be stable for 10,000 years

Grandfathering provision

- It is not reasonable to apply new rule to all existing and future LLW disposal sites – criteria should be fit for purpose
- The “limited scope” rulemaking was intended to address waste streams not previously analyzed for disposal – DU was considered
- Sites not disposing of such waste streams should be grandfathered
- Propose a Grandfather standard

Unintended consequences

- Complexity and cost of proposed rule will further limit development of new facilities
- The Commission should include provisions for the disposal of low activity waste streams
- Without grandfathering clause, existing facilities will be challenged and will incur expenses that most likely will not improve human health and the environment

Thank You



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management*