



Panel: NRC Draft Revision to Branch Technical Position on Concentration Averaging and Encapsulation

Waste Management Symposia 2012

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February 29, 2012**



Topics

- **Summary of changes**
- **Overview of comments from October 20th workshop**
- **Overview of ACRS comments**
- **Next steps**

Overview of Draft Revisions

- **Address LLW blending and homogeneous wastes**
- **More risk-informed**
 - **Sealed source scenarios and increased activity limits**
 - **Factors of 1.5 and 10 on mixtures of items**
- **More performance-based**
 - **Blending**
 - **Alternative approaches**
- **More transparent**

Overview of Comments from October 20, 2011, Workshop

General Comments

- **Comment: Scenarios are unnecessarily conservative. There is a compounding of conservatisms in choosing intruder scenarios—probability is one, occurs immediately after institutional control period ends and hits a hot spot**
- **Response: Staff will reexamine scenarios in next revision**

General Comments, cont.

- **Comment--Institutional control period unnecessarily conservative**
- **Response: 10 CFR 61.59 states that these controls may not be relied on for more than 100 years**

Alternative Approaches

- **Widespread support**
- **Recognition of “performance-based” aspect of new section**
- **Comment: BTP should acknowledge and endorse previous approvals of alternative approaches, in body of document (cartridge filters encapsulated in larger volumes, Trojan reactor vessel disposal, e.g.)**
- **Response: Staff considering inclusion of topical report references in body of BTP, but not Trojan vessel approval**

Alternative Approaches, cont.

- **Comment: BTP should provide as many specific considerations as possible for alternatives**
- **Response: Staff agrees and will provide additional details in revised draft**
- **Comment: Clarify the basis for default 10 meter depth of disposal**
- **Response: Will provide additional discussion of basis**

Homogeneous Wastes – Intrusion Scenario

- **Comment: The drilling scenario used as a basis for the homogeneity guidance is unrealistic, in particular, the assumption that drill cuttings will be spread on the surface**
- **Response: Drilling scenario is a surrogate for potential scenarios in which a small amount of waste is exhumed**
- **NRC staff considering whether it will continue to rely on a scenario in which a small amount of waste is exhumed and spread on the surface**

Waste Redistribution - Comments

- **Draft guidance assumes the distribution of radioactivity remains unchanged during shipping and disposal**
- **Vibrations during transportation, thermal gradients, density gradients, concentration gradients, and other processes tend to redistribute the radioactivity**

Homogeneous Waste Types

- **Guidance regarding homogeneous waste types (i.e., wastes assumed to be homogeneous) largely unchanged since 1995. Specific waste streams assumed to be homogeneous in the context of intrusion**
- **Comment: New recommendation that licensees should consider any existing information (e.g., transportation surveys) that could indicate waste inhomogeneity could be problematic in practice**
- **Response: recommendation likely to be unnecessary to establish reasonable assurance of intruder protection and will likely be eliminated from guidance**

Intentional Blending During Waste Processing

- **Comment: guidance regarding demonstration that waste does not have pockets of greater than 0.03 cubic m (1 cubic foot) with a sum of fractions greater than 10 is unnecessary and infeasible to implement.**
- **Response: Demonstration of complete elimination of hot spots expected to be unnecessary, but some demonstration of the quality of mixing expected to be necessary**
- **Radionuclide redistribution likely to be an important consideration**
- **Staff developing appropriate technical basis to make the recommendation quantitative**

Classification of Homogeneous Waste – Comments

- **NRC guidance regarding an appropriate level of uncertainty in the sum of fractions for homogeneous wastes is infeasible to implement**
- **NRC should give greater consideration to risks to workers conducting measurements for waste classification**

Classification of Homogeneous Waste – Staff Consideration

- **NRC understands worker dose is an important consideration**
- **A more rigorous consideration of uncertainties recommended for waste with a sum of fractions close to 1 is consistent with 1983 Branch Technical Position**
- **Staff reconsidering risks from waste inhomogeneities as well as industry data on waste package survey readings**
- **Staff likely to change specific recommendation regarding uncertainty but retain some recommendation regarding uncertainty in the sum of fractions**

Encapsulation

- **No suggestions for improvement from stakeholders other than ACRS**

Mixtures of Items

- **Comment:** Cartridge filters should not be treated like activated metals, i.e., they should be identified as homogeneous waste in the BTP
- **Response:** Staff does not believe that cartridge filters can be considered to be homogeneous in all cases



Comments from ACRS

ACRS's December 13, 2011, Letter

- **Alternative approaches is a good first step**
- **Blending approach is also good approach**
Ensure that blended constituents are compatible
- **Replace generic, stylized bounding calculations as basis for BTP positions with site-specific approach**
- **If this is not possible, go back to using DEIS scenarios**

Other ACRS Comments

- **Generic, stylized approach in BTP does not account for site-specific features that affect likelihood or consequences of intrusion event**
- **Approach to developing scenarios does not account for perpetual care funds and improved record-keeping and information management technology**
- **BTP does not properly account for radioactive decay**
- **Intruder protection should not overshadow the other performance objectives**

State and Compact Views

- **BTP as guidance**
- **Other**

Status of BTP and Next Steps

Follow up to October 20th Workshop and ACRS Review

- **Staff is addressing comments received and making revisions to August 2011 draft**
- **Comment resolutions will be documented in an Appendix to BTP**
- **To be issued for public comment May 31, 2012**
- **Final BTP – early 2013**