




W16: The Future of Risk-Informed Regulation

Risk-Informing the Concentration Averaging and Encapsulation Branch
Technical Position: Ensuring Long-term Safety and Minimizing Worker Exposure


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Outline

- Regulatory context
- Scope
- Categories of waste
- Reasons for the revision
- Changes for mixtures of discrete items
- Alternate approaches
- Conclusions


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Regulatory Context

- Appendix G of 10 CFR Part 20 “Uniform Waste Manifest” requirements
- 10 CFR Part 61 Waste Classification tables (i.e., Ci per cubic meter or gram)
- 10 CFR 61.55(a)(8) allows averaging over volume or weight of waste

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Scope of Concentration Averaging and Encapsulation Branch Technical Position 


- Provides guidance to address potential “hot spots” in waste containers
- Constrains concentration averaging to address potentially unsafe practices (e.g., activated metal or sealed source averaged over contaminated trash)
- Does not cover radiological characterization, waste stability criteria, etc.

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Categories of Waste 

- Blendable
- Discrete Items
 - Activated Metals
 - Sealed Sources
 - Cartridge Filters
- Solidified Waste
- Encapsulated Waste


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Why Revise? 

- Averaging positions not risk-informed, performance-based and technical bases not well documented
- Unnecessary worker exposures from additional waste characterization and surveys
- Commission decision on blending of low-level radioactive waste in 2010
- Sealed source disposal constrained by 1995 Branch Technical Position

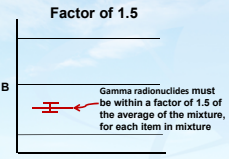
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Mixtures of Discrete Items



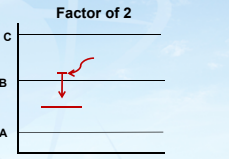
Average concentration in each package is the same and meets the Class B limit

Factor of 1.5



1995 Guidance

Factor of 2




Revised Guidance

Gamma radionuclides must be within a factor of 1.5 of the average of the mixture, for each item in mixture

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Alternate Approaches




- As in the past, revised Branch Technical Position provides broadly applicable “look up” guidance
- New Alternative Approaches provides licensees/Agreement States with NRC guidance on factors to consider in evaluating alternative approaches


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Trojan Reactor Vessel

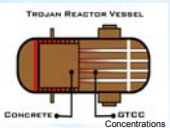




Trojan Reactor Vessel (TRV) is one of the Class B items (BQ 1000-10) from the Trojan Plant.








TROJAN REACTOR VESSEL
CONCRETE → BTGC Concentrations

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Alternate Approaches (cont'd) 

- Provides suggestions and considerations for site- or waste-specific approaches
- Examples include:
 - Site-specific Intruder Assessments
 - Encapsulation of sealed sources
 - Likelihood of Intrusion
 - Large Components
 - Time of Intrusion into Blendable Waste
 - Legacy Wastes

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Conclusions 

- New revision to the Branch Technical Position on Concentration Averaging and Encapsulation :
 - Protects inadvertent intruders in the future from hot spots in waste
 - Protects current workers by reducing survey requirements
 - Provides generic guidance for vast majority of waste
 - Provides guidance on site- / waste-specific situations

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