

From: "Dahl, Suzanne" <SDAH461@ECY.WA.GOV>
To: <NRCREP@nrc.gov>
Date: Wed, Feb 1, 2006 7:19 PM
Subject: Docket Number PROJ0734, PROJ0735, PROJ0736, and POOM-32

Ms. Anna Bradford
Chief, Rules Review and Directives Branch
Mail Stop T6-D59
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Docket Number PROJ0734, PROJ0735, PROJ0736, and POOM-32
Re: NRC's Draft Interim Concentration Averaging Guidance for Waste Determinations.

Dear Ms. Bradford:
Please find attached an electronic copy of comments from the Washington State Department of Ecology.
If you are unable to open the attachment, please contact me at (509) 372-7892 and I will send a copy by facsimile.
Sincerely
Suzanne Dahl
Tank Waste Disposal Project Manger
Nuclear Waste Program
<<NRC Draft Interim Guidance on Concentration Averging.doc>>

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*Call - A. Bradford
(AHBI)*

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Chief, Rules Review and Directives Branch
Mail Stop T6-D59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
January 31, 2006

Re: Washington Department of Ecology Comments on Docket Numbers PROJ0734,
PROJ0735, PROJ0736, POOM-32

The Washington Department of Ecology, Nuclear Waste Program, has reviewed Federal Register, Volume 70, pp. 74847-74850, "Draft Interim Concentration Averaging Guidance for Waste Determinations," dated December 16, 2005. Our comments are enclosed. We focused our review on the most immediate application of the interim guidelines in our State, the disposition of aging 149 single-shell tanks (SST) and their ancillary equipment.

Ecology oversees the efforts made by U.S. Department of Energy's (USDOE's) Office of River Protection (ORP) to store, treat, and dispose of more than 53 million gallons of high level mixed waste stored in 177 tanks below ground at Hanford. The liquid tank waste is composed of a highly radioactive mixture of chemicals used in defense weapons materials production. Emptying the waste tanks, treating the waste, disposing of the waste, then closing the tank systems is underway. Protecting the resources of the State and the health of its citizens is the focus of our efforts to regulate the clean up at Hanford.

It is important to note that the legislation that directed the NRC to develop a method to potentially reclassify high-level radioactive waste pertains only to U.S. Department of Energy (DOE) sites in South Carolina and Idaho. It does not establish any precedent (and is not) binding on the State of Washington.

We also encourage your agency to promote use of waste forms other than cementitious forms for the stabilization and near-surface disposal of radionuclides that are long-lived and highly mobile. Those radionuclides present a threat to the waters of the State of Washington if they remain in the waste left in an SST or are present in waste that could degrade in the presence of moisture, travel through the unsaturated zone under the Hanford Site to the groundwater, and reach the nearby Columbia River.

If you have questions concerning our comments, please contact me at (509) 372-7892.

Sincerely yours,

Suzanne Dahl
Tank Waste Disposal Project Manager

cc: Anna Bradford, NRC
Roy Schepens, ORP

70 FR 74846	WASHINGTON STATE DEPARTMENT OF ECOLOGY COMMENTS
Section II. Proposed Concentration Averaging Guidance, Category 1 Physical Homogeneity "The preferred method to demonstrate homogeneity would be to prove a statistical measure of the variability of concentration within the waste, although it is recognized that this may not always be practical."	Ecology supports the use of statistical measures of variability in waste concentrations to demonstrate homogeneity. We encourage the rule-makers to consider strengthening the requirement to conduct statistical analyses by requiring sampling of final waste form unless laboratory analytical methods are not available to analyze the radioactive species present.
Same section	Ecology urges the NRC to consider addition of a stipulation in the final guidance that waste that is also designated as hazardous waste under the provisions of 40 Code of Federal Regulations Part 261 will be treated to meet the standards in 40 CFR Part 268 Land Disposal Restrictions. The draft guidance as written states that "In general, waste will have been processed to the maximum extent practical and will have been stabilized...". To ensure that wastes containing radionuclides and hazardous wastes are safe for near-surface disposal, the hazardous components must be treated.
Category 2. Stabilization to Satisfy 10 CFR 61.56 The factor of 10 is derived from consideration that most stabilization techniques commonly envisioned use cementitious materials, and most cementitious waste forms can readily achieve a ten mass percent waste loading.	Ecology urges the NRC to consider limiting the concentrations of mobile, long-lived radionuclides in cementitious materials to less than 10 mass percent or to consider other forms of stabilization that degrade less readily. Those radionuclides that travel with groundwater (such as Tc-99 and I-129) may be released to the groundwater more readily from a cementitious waste form, should that form develop small cracks or fissures, than they would from another more durable waste form (e.g., a vitrified waste or a polymer form). Use of a non-cementitious, more durable waste form would also provide additional protection to intruders by resisting penetration by drills, thus lessening releases of fine particles of radioactive waste that might result from drilling cement.
Category 3 Other provisions Example 3-1 (p. 74850) "The intruder constructs a home in the area over the tank. Because the direct exposure pathway is the only major contributing pathway for this scenario, the actual waste distribution can be used in the performance assessment. Alternatively, the average concentration of waste over the stabilizing materials can be used in the performance assessment because there would be less shielding for this calculation and the doses would likely be conservative."	Ecology suggests that the NRC clarify this text and provide more direction that the performance assessment include calculations using the actual waste distribution AND the average concentration of waste over the stabilizing materials. From the results of the calculation, the performance assessment should use the most conservative value derived during the calculations for modeling. Should one method be calculated and the other ignored, the potential exists for the USDOE to underestimate the impact to the person who built a home over the tank.

<p>The guidance states "The acceptable methods for concentration averaging for the purposes of waste classification for waste determinations are based on the following fundamental principles introduced in the BTP.</p> <p>(1) Measures....</p> <p>(5) Regardless of the averaging that is performed for waste classification purposes, the performance assessment or other approach used to demonstrate compliance with the performance objectives of 10 CFR part 61, subpart C, must consider the actual distribution of residual contamination in the system when estimating release rates to the environment and exposure rates to inadvertent intruders. Conservative assumptions regarding the distribution of contamination are appropriate."</p>	<p>However, the document later describes an example (Example 3-1) in which reducing grout is placed over a residual heel in a tank, and later a well is drilled through the tank and the cuttings are spread on land. This scenario is not conservative because the intruder is only exposed to a small amount of the residual waste (and the level of protection is allowed to be quite high, at 500 mrem/y).</p> <p>NRC should stress that a variety of other intrusion possibilities exist, such as access through road construction (including blasting) or significant exposure through mining activities, and many more. Therefore, when evaluating intruder protection, analyses should be done to determine if the quantities of radionuclides and other contaminants are acceptably low in the event of intruder access and direct exposure to a cross section of the treated waste.</p> <p>We have seen little evidence that waste site institutional controls can be maintained for periods even approaching 100 years. The rules should not assume that these controls would remain in place.</p>
<p>The guidance states "When performing the intruder calculations, it is not appropriate to calculate an average dose factoring in the likelihood of the occurrence of the scenario. The likelihood of the intruder scenario occurring is already represented in the higher limit (e.g., 500 mrem/yr) applied for inadvertent intruder regulatory analysis."</p>	<p>Please add citations of widely-available literature to justify the incorporation of a probability into a dose (the 500 mrem/y dose is far above the typical 15 mrem/y dose limit at CERCLA sites). This is the opposite of adding safety factors to balance uncertainty.</p>
<p>II Proposed Concentration Averaging Guidance Page 74848 bullet (2) Infrastructure....</p>	<p>Pipelines and infrastructure will present special challenges to immobilization techniques.</p> <ul style="list-style-type: none"> • It is hard to assume any mixing with grout and residuals given that the old pipes may be significantly clogged. • These structure exist much closer to the ground surface – than the bottom of tanks
<p>II Proposed Concentration Averaging Guidance Page 74848 bullet (3) Waste removed from tanks that is processed or treated....</p>	<p>At Hanford waste removed from tanks is required to be pretreated and vitrified according to legal commitment in the Hanford Federal Facility Agreement and Consent Order. The portion to be disposed of on the Hanford site is Immobilized Low Activity Waste (ILAW) and it will be thoroughly mixed with glass formers and vitrified. The discussed concentration averaging guidelines don't directly apply to this ILAW glass, given the differences in glass and grout matrix.</p>