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**To:** <NRCREP@nrc.gov>  
**Date:** Tue, Jan 31, 2006 5:18 PM  
**Subject:** Dockets Nos. 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

12/16/05  
70 FR 74846  
②

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 State of Oregon, Department of Energy.

If you are unable to open the attachment, please contact me at (503) 378-3187 and I will send a copy by facsimile.

Sincerely,

Dirk Dunning, P.E.  
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Theodore R. Kulongoski, Governor



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January 31, 2006

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

Dear Ms. Bradford:

The State of Oregon appreciates the opportunity to comment on the Draft Interim Concentration Averaging Guidance for Waste Determinations.

Oregon has long-standing interests and concerns related to the final disposition of high-level waste at the Hanford Site in Washington state. In January 1990, the States of Oregon and Washington and the Yakama Nation petitioned the Nuclear Regulatory Commission (NRC) to clarify the definition of high-level and "incidental" wastes because of concerns over plans at Hanford for near-surface disposal of certain wastes from Hanford's tanks. Among other things, we sought a credible definition of incidental waste – based on a thorough and sound technical evaluation and subject to independent peer review and close public scrutiny. The NRC rejected that petition in February 1993. Our underlying concerns have yet to be addressed.

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 (or) the State of Oregon." Your draft interim guidance fails to mention that limitation.

Even though this process is not intended to set precedent for what ultimately is done at Hanford, we believe that could eventually be the case. As such, we would like to convey to you our concerns about using waste concentration averaging to allow near-surface disposal of wastes that would otherwise require deep-geologic disposal.

The enabling legislation directs that NRC, in consultation with DOE, may authorize such actions, provided the waste 1) does not require permanent isolation, 2) has had highly radioactive radionuclides removed to the maximum extent practical, and 3) does not exceed Class C low-level waste concentrations; and will be disposed of pursuant to a State approved closure plan or permit, authority for which is conferred on the State separately. The proposed rules do not appear to satisfy these conditions.

### Removal of radionuclides to the maximum extent practicable from the wastes.

Perhaps our greatest concern is that the proposed rules fail to meet the mandate for removal of radionuclides from the waste to the maximum extent practicable. They instead rely on removing the bulk of the radionuclides by retrieving the bulk of the waste, while not removing the nuclides from the waste that remains behind.

At Hanford and other DOE sites, much of the waste of concern is hard heal waste. This waste was created by chemical reactions as the waste in tanks was concentrated and boiled. These wastes tend to contain the highest concentrations of transuranic elements and other problem isotopes most in need of retrieval.

Additionally, the rules fail to recognize that these heals and liquid wastes do not readily mix with grout (reducing or otherwise). There is also a disconnect with logic – if the waste remaining in a tank will mix well with grout, than that waste could and should be retrieved.

At Savannah River, the reducing grout added to the tanks failed to mix with the high-level waste liquid heal. Instead, the dense viscous grout formed puddles that pushed the waste aside. Over time, as water percolates down the tank walls and corrodes them, it will reach the waste and leach it out of the tank system, leaving the grout puddles and stabilizing grout behind. This process leaves high-level radioactive waste in a mobile form in the near-surface.

Contrast this with DOE's successful demonstration of complete cleanout of tanks at Oak Ridge. Using these and similar technologies, very nearly 100 per cent of tank waste should be retrievable in most DOE underground tanks. NRC's rules should mandate comparable levels of cleanup at all DOE sites.

### Differing criteria for deciding on near-surface disposal and performance assessment

The proposed rules average the volume of mixed grout and stabilizing materials with the residual wastes to reduce waste concentrations below regulatory standards, while specifically directing that such averaging not be used in the performance assessments. This makes little sense. If the appropriate standard for the performance assessment does not allow such averaging, neither should the standard for determining whether the waste is allowed in near-surface disposal.

### Ensuring permanent isolation

The proposed rules are constructed on the basis that performance assessments can adequately calculate the risk from the residual wastes; that caps, covers, or other barriers will perform as designed for periods vastly longer than human experience; and that institutional controls will be maintained in perpetuity. Each of these assumptions is flawed.

At Hanford and arid sites across the west, hydrogeologic investigations are demonstrating that no existing mathematical model adequately predicts the movement of contaminants through the vadose zone soils or through the groundwater. Consequently, for Hanford and perhaps Idaho,

there can be little or no confidence that the performance assessments are adequate predictors of future risk.

It has long been assumed that arid sites would be best suited for disposal of this sort of waste based on the lack of rainfall to move the waste through the soil. At arid sites, and particularly at Hanford and Idaho, there is a complex layered geology under the sites. This geology causes preferential flow of water and waste through the soil – bypassing the vast majority of the soil column. This preferential flow is often dominated by horizontal flow in thin layers on old surfaces, by direct vertical flow on dikes, down channels and along pipes, and through fractures in basalt. The performance assessments do not consider this preferential flow.

More over, at Hanford and possibly other arid sites, the major radioactive waste hazards are from elements (uranium, technetium, iodine, neptunium, americium, selenium, cobalt) that form anions in the soil. The soils at these sites do not easily retain anions.

The caps, covers and barriers proposed pre-suppose that water gets to the waste by traveling directly downward from the surface. Layered and structured soils may make this assumption invalid. Without specific vertical cutoff barriers to intercept the lateral flow of water in the soil, the caps and barriers may serve little purpose in such cases.

DOE also currently proposes use of evapotranspiration barriers. However, as recent events at Hanford have shown, the bulk of the precipitation occurs when the plants are least able to take up water. Hanford is also subject to periodic large scale range fires that remove the entire plant canopy, greatly reducing the ability of the caps and barriers to function for a decade or more. The proposed rules should address site investigation and study, and the design of caps, covers, cutoff walls and barriers, and on-going monitoring to assure their long-term performance.

#### Institutional Controls

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 absent physical means to assure that they do.

If you have questions or require clarification of these comments, please contact Dirk Dunning of my staff at (503) 378-3187, or myself at (503) 378-4906.

Sincerely,



Ken Niles  
Assistant Director

**CC: Roy Schepens, U.S. Department of Energy, Office of River Protection  
Nick Ceto, U.S. Environmental Protection Agency, Region 10  
Jane Hedges, Washington Department of Ecology  
Stuart Harris, Confederated Tribes of the Umatilla Indian Reservation  
Gabe Bohnee, Nez Perce Tribe  
Russell Jim, Yakama Nation**