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Arnold Edelman, Document Manager
Greater-Than-Class C Low-Level Radioactive Waste EIS
Office of Technical and Regulatory Support (EM-43)
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0119

Dear Mr. Edelman:

Oregon appreciates the opportunity to review the *Disposal of Greater-than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste Draft Environmental Impact Statement* (DOE/EIS-0375-D), February 2011. Last month, the Acting Director of this agency – in a joint letter with the Director of the Washington State Department of Ecology – expressed strong opposition to the potential selection of the Hanford Site for disposal of wastes examined in this draft EIS. That letter pointed out the incompatibility of adding highly radioactive and long-lived waste to Hanford's subsurface, while tens of billions of dollars are being spent on the current cleanup effort.

The comments that follow in this letter expand on that position and also raise other concerns with various proposals considered in the draft GTCC EIS. In addition, we recognize that simply opposing the selection of Hanford without providing some alternatives to consider is not useful input to this process, so we do provide some recommendations for how to deal with the wastes covered by this proposed action.

Conflicts with the Hanford cleanup mission

As the U.S. Department of Energy's (DOE) Environmental Management program is fully aware, the Hanford Site is home to immense contamination from more than 40 years of plutonium production for America's nuclear weapons program. Hanford is also home to the largest environmental cleanup endeavor in the world – a cleanup that is now expected to stretch well past the year 2050.

Since cleanup began at Hanford in 1989, we and others have been increasingly frustrated by repeated attempts by DOE to add waste not associated with Hanford to the substantial environmental burden that exists here and that will exist for hundreds and even thousands of years into the future. DOE's own analysis in the draft Tank Closure & Waste Management

(TC&WM) EIS, released in late 2009, found that even after cleanup is complete, waste already in Hanford's soil column will continue to contaminate Hanford's groundwater for thousands of years. Modeling in the draft TC&WM EIS clearly indicated that additional waste from off-site would have unacceptable environmental consequences, especially if that waste contained mobile and long-lived contaminants such as iodine 129 and technetium 99.

In addition, uranium contamination in the Hanford soils and groundwater far exceeds acceptable levels. Despite DOE's best efforts, attempts to treat these plumes have to date been unsuccessful. The continued movement of uranium through the vadose zone and into groundwater is predicted in the draft TC&WM EIS to be the dominant risk far exceeding allowable levels over the next 10,000 years and beyond. As such, new wastes containing uranium would aggravate an already massive cleanup effort and increase the scope of environmental contamination.

The draft GTCC EIS recognizes the iodine and technetium limitation (and to a lesser extent the uranium problems) at Hanford. It recognizes the moratorium on sending new waste to Hanford until at least 2022. It also recognizes that use of Hanford for disposal of this waste would result in far more transportation than for any of the other alternatives that were considered. Given all this – plus the efforts that are underway to clean up the site – we have to ask the question: Why hasn't Hanford already been eliminated from consideration for this action?

The draft GTCC EIS says that Hanford and other DOE sites were evaluated on the basis of "mission compatibility" – that they have radioactive waste disposal as part of their ongoing mission. Importing highly radioactive waste and disposing of it in the shallow or intermediate subsurface at Hanford is not at all compatible with the cleanup mission. It is actually counter to the cleanup, as much of the Hanford cleanup mission is already devoted to retrieving waste from Hanford's shallow and intermediate subsurface. Adding new off-site wastes would only exacerbate an already challenging situation.

The draft GTCC EIS does not have a preferred alternative as DOE indicates it does not have a preference at this time. DOE is also awaiting further input from Congress, which directed DOE to conduct this EIS. However, it is DOE's responsibility to eliminate alternatives that are not reasonable or protective. Using Hanford for disposal of GTCC wastes is neither reasonable nor protective and Hanford should be removed from consideration as an alternative.

Geologic versus near-surface disposal

Federal law (10 CFR 61.55) is clear that GTCC waste "is generally not acceptable for near-surface disposal." Congress did allow that there may be some instances where GTCC waste would be acceptable for near-surface disposal with special processing or design. These would be evaluated on a case-by-case basis.

As DOE began this EIS process, the proposed high-level waste repository at Yucca Mountain was one of the options to be considered. DOE also planned to examine the existing geologic disposal site – the Waste Isolation Pilot Plant (WIPP) in New Mexico (even though current law forbids use of this facility for these wastes).

With the apparent demise of Yucca Mountain and the considerable level of uncertainty over America's plans for a high-level waste repository, DOE analyzed only WIPP for geologic disposal. Given that there is still the expectation that at some point the United States will site and construct a high-level waste repository, we strongly recommend that DOE analyze a "generic" repository in a medium other than salt (since DOE has already analyzed WIPP) for disposal of part or all of the wastes considered in this EIS.

DOE also went forward with examination of a range of alternatives of near-surface or intermediate-depth disposal. This wide-sweeping look at alternatives to deep geologic disposal would be difficult to justify on a case-by-case basis and suggests that long-term protectiveness may be overshadowed by efforts to reduce potential disposal costs. Decisions related to waste disposal should be commensurate with both the hazards posed by the wastes and with the time frames over which the waste remains dangerous. The uncertainty surrounding a national high-level waste repository should not lead to a premature decision to use less than protective alternatives.

From the risk analysis in the GTCC EIS, it is clear that trench and borehole disposal leads to impacts vastly exceeding regulatory standards at many of the sites considered. Despite these results, DOE has retained all of the sites and methods for consideration within the draft GTCC EIS. We believe the trench and borehole methods should be withdrawn from consideration. Experience with near-surface trenches at Hanford and around the DOE complex have shown repeatedly that steel containers rapidly degrade in the soil. This is not surprising, as the pH and humidity in Hanford and other soils is high, even though the moisture content is low.

Arid vs. Wet sites

At a high level, DOE argues that a major discriminator between sites is whether they are arid sites or wet sites. While it is true that the relative differences in rainfall and snow melt from site to site are important, this glosses over other major factors that can and often do outweigh this as a factor. For example: uranium is highly mobile when complexed with carbonate at above neutral pH. The arid sites all tend to be carbonate and silicate rich and to have high pH soils, which renders uranium highly mobile. Wet sites often have a lower pH and binding capacity that may render uranium far less mobile. In addition, wet sites are likely to have reducing conditions in soils, which can greatly affect mobility of radioisotopes and other contaminants. Technetium is likewise somewhat less mobile at wet sites, while it is completely and freely mobile at many

arid sites. DOE should not rely on the misleading simple attribute of water availability in comparing arid versus wet sites in its evaluations.

Models

The GTCC EIS relies on the use of the RESRAD computer model suite. Experience in Hanford's 100 and 300 Areas demonstrated serious flaws in the model. DOE now uses the "Surface Transport over Multiple Phases" (STOMP-W) and MODFLOW modeling codes for Hanford groundwater modeling. Though STOMP has serious limitations, it is vastly superior to RESRAD. STOMP-W is the basis of the TC&WM EIS now under development at Hanford.

In responding to commenters who noted RESRAD's limitations and offered alternatives, DOE acknowledges RESRAD's inadequacies. DOE replied that precise answers are not required; that all that is needed is an ability to compare the alternatives. DOE does a disservice to the public in making this argument and in using a flawed model. Given the fact these wastes will pose a hazard for thousands of years, DOE should use the best model that is available, while also recognizing its limitations.

Recommendations for Wastes Covered in the EIS

Activated Metals

The activated metals included in the EIS present some unique challenges. They are very radioactive in the near term with intense gamma radiation from cobalt 60. Some of the reactor vessels and associated components are quite large, which raise challenges in transport and in disposal other than in a trench. The high levels of radiation would make it difficult for workers to safely cut the vessels into smaller pieces to make them easier to transport or dispose. However, the EIS points out that little of these materials are currently in storage. Most activated metals are expected to be generated in the future and in many cases not for several decades. There is therefore no urgency to designate a disposal path for this waste stream. DOE should consider placing these reactor vessels and related components in surface or near-surface *storage* pending 50 to 75 years of decay to eliminate the hazard from the cobalt 60, prior to appropriate final disposal within the regions in which they originate.

Sealed Sources

The sealed sources can pose an immediate hazard. They are potentially attractive for use by terrorists. These should be rapidly recovered by DOE and stored in a highly secure storage facility pending the siting and construction of a high-level waste repository suitable to receive

them. Proper disposal in a deep geologic repository is the most protective approach. Given the limitation on the waste that can be received at WIPP, this reinforces the need for the nation to develop a new repository.

Other Wastes

The EIS points out that many of the GTCC-like wastes have long-lived transuranic radionuclides and will remain hazardous for many thousands of years. Similar wastes are currently being disposed of in a geologic repository (WIPP) because of this concern. We recommend DOE (and the U.S. Nuclear Regulatory Commission) consider and treat defense and non-defense transuranic wastes in a comparable manner with comparable protection by disposing of this waste solely into a deep geologic repository.

We do not have sufficient information to assess whether exhumation of the West Valley disposal areas should occur. However, if the decision is made to exhume those wastes, they should be disposed of consistently with similar materials and consistent with our comments above.

EIS Organization/Readability

The authors, writers and editors of the GTCC EIS have done a commendable job of producing a clear, concise and highly readable document. DOE staff also did a good job in providing direct and clear responses to comments provided during the scoping for this EIS.

We also commend DOE for working with Native American tribes in allowing them to provide their perspective throughout the draft EIS. However, in so recognizing the special relationship between Native people and the land and environment, it raises the expectation that DOE will fully consider this perspective in selecting a preferred alternative and moving forward with a decision that honors the Treaty-reserved rights of the tribes.

We look forward to working with DOE as it completes analysis of the GTCC EIS. If you have any questions or comments about our recommendations, please contact myself or Dirk Dunning of my staff at 503-378-3187.

Sincerely,



Ken Niles
Nuclear Safety Division Administrator

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