



Citizens Advisory Board  
Idaho National Engineering and Environmental Laboratory

## **SURPLUS PLUTONIUM DISPOSITION DRAFT ENVIRONMENTAL IMPACT STATEMENT**

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The Idaho National Engineering and Environmental Laboratory (INEEL) Citizens Advisory Board (CAB) reviewed the U.S. Department of Energy (DOE)'s Surplus Plutonium Disposition Draft Environmental Impact Statement (EIS), although it was difficult to obtain copies to support our review. We regret that the INEEL CAB was not on the distribution list for the document—despite the fact that we submitted a recommendation addressing the ongoing EIS in the fall of 1997. Our request for copies of the Draft EIS (sent via the DOE's National Environmental Policy Act Internet homepage) similarly did not affect a response.

We submit the following recommendations and comments to support DOE's efforts to develop legally defensible environmental documentation for decision making related to the nonproliferation mission. **We recommend that the Department respond to all comments on the Draft EIS received during this comment period in order to ensure that the Final EIS will be able to support a decision by the Secretary of Energy on this important mission.**

### **GENERAL COMMENTS**

The INEEL CAB notes that Chapter One of the Surplus Plutonium Disposition Draft EIS includes the following quotation:

“The Record of Decision for the *Storage and Disposition Programmatic Environmental Impact Statement* (PEIS) issued January 14, 1997 outlines DOE's decision to pursue an approach to plutonium disposition that would make surplus weapons-usable plutonium inaccessible and unattractive for weapons use. DOE's disposition strategy, consistent with the preferred alternative analyzed in the *Storage and Disposition* PEIS, allows for both the immobilization of some (and potentially all) of the surplus plutonium and use of some of the surplus plutonium as mixed oxide (MOX) fuel in existing domestic, commercial reactors.”

The statement suggests that DOE believes that both approaches would render surplus plutonium (weapons-usable plutonium that has been deemed surplus) inaccessible and unattractive for weapons use, thereby achieving DOE's objectives.

Our analysis of the information presented in the Draft EIS leads us to a conclusion that DOE conducted a less-than-rigorous analysis of the full immobilization alternatives. We note that DOE conducted more extensive analysis for all of the hybrid alternatives (those that would involve implementation of both approaches). This leaves the reader with an impression that DOE decided to pursue the MOX disposition option without the benefit of adequate analysis.

Similarly, the INEEL CAB notes that the description of the alternatives is unclear regarding how immobilization would achieve the standards set the National Academy of Sciences. It has not been demonstrated, for example, that high-level waste can be used in the can and canister immobilization

method to achieve a radiation barrier. **The INEEL CAB recommends that the total immobilization options be given full consideration and rigorous discussion in this EIS.** Such an analysis will make the Final EIS less vulnerable to legal challenge and allow the Secretary of Energy greater leeway in selecting the most appropriate path forward for the disposition of surplus plutonium.

The members of the INEEL CAB are divided on whether national and/or international interests would be better served by selection of the total immobilization or the hybrid approach, partly because we lack confidence in the adequacy of the analysis. Improved analysis may reveal that the hybrid approaches will result in greater impacts on the environment, human health, and security. The hybrid alternative could also take a much longer period of time, require more transportation of radioactive materials, and produce greater quantities of wastes. We note that some of the alternatives propose using a 1954 facility for plutonium conversion and immobilization, which could involve permitting challenges that are not adequately addressed in the EIS.

Because our review of the Draft EIS left us without answers to questions about the true impacts of the various alternatives, we concluded that the Draft EIS does not allow comparison of the two approaches, much less comparison of the full range of alternatives. **The INEEL CAB recommends that the Final EIS resolve these major issues by conducting additional analysis.**

The Draft EIS and presentations by DOE related to the document imply that the international community will not be satisfied with U.S. nonproliferation efforts in the absence of MOX. **In light of the fluid political situation in Russia, the INEEL CAB recommends that the assumptions (that the U.S. has no choice but to pursue the MOX alternative in order to ensure that Russia will take reciprocal action) should be periodically confirmed. The INEEL CAB further recommends that implementation of U.S. actions, regardless of which alternative is selected, should proceed concurrently with implementation of comparable actions in Russia.**

**While the entire INEEL CAB wholeheartedly supports DOE's efforts to achieve nonproliferation objectives and would not argue in favor of a decision that would jeopardize Russian cooperation, the INEEL CAB recommends that DOE base its decisions on complete information and sound analysis.** In the spirit of the National Environmental Policy Act, this EIS must document the decision in a publicly defensible manner.

#### **COMMENTS ON THE COST ANALYSIS IN SUPPORT OF SITE SELECTION FOR SURPLUS WEAPONS-USABLE PLUTONIUM DISPOSITION DOCUMENT**

The INEEL CAB regrets that the cost analysis of the various alternatives presented in the Draft EIS was provided in a separate document that was relatively unavailable. The absence of cost information in the Draft EIS itself leaves the reader to a conclusion that either (1) the costs of implementing the alternatives do not differ or (2) DOE will not consider costs in selecting from the various alternatives. Neither conclusion seems realistic or appropriate. **The INEEL CAB recommends the inclusion of more information about costs in the body of the Final EIS.**

Review of the cost analysis document allows an improved understanding of the costs associated with implementation of the surplus plutonium disposition decision. The INEEL CAB believes the cost analysis is based on a questionable methodology, as it appears that the costs were not fully evaluated. We question why the estimates of total costs do not appear to include certain categories of costs (nuclear reactor modifications and irradiation services, for example) based on an assumption that they will apply uniformly across all alternatives. It is hard to believe that nuclear reactor modifications will be required under the full immobilization alternatives, however. Calculation of fuel offsets and

inclusion of those offsets in the estimates of total costs is questionable and the definition of those offsets is not clear, which further complicates the reader's ability to understand the analysis of costs for the various alternatives.

Similarly, we have concerns about the adequacy of cost estimates for immobilization as they are based on less thorough process design and experience than the MOX option. We also noted that they do not include cost estimates for several undetermined aspects of the plutonium ceramic fabrication process. Potentially significant costs that would be required to ensure that the glass product can meet the National Academy of Sciences "spent fuel standard" for making weapons plutonium "sufficiently unattractive to proliferation." Finally, recent developments at the Savannah River Site indicate that it could be significantly more expensive to meet nonproliferation standards using the immobilization approach than with one of the hybrid approaches.

**The INEEL CAB recommends that the cost analysis include calculation of all expected costs associated with each of the alternatives—including appropriate offsets (those that result in real reductions in the costs to the U.S. government). The INEEL CAB further recommends an independent review of the cost estimates by competent cost analysts following the suggested recalculation.** Improved cost estimates are imperative to support selection of the most appropriate alternative for inclusion in the Record of Decision following completion of the Final EIS.

#### **COMMENTS REGARDING THE SITING OF THE LEAD TEST ASSEMBLY FABRICATION AND POST-IRRADIATION EXAMINATION PHASES**

If DOE decides to pursue a hybrid approach, review of the analysis of the candidate sites for the lead test assembly phase reveals that Argonne National Laboratory - West (ANL-W) is well qualified. We noted that ANL-W was the only site that did not fall short in at least one of the site selection criteria considered.

With regard to the post-irradiation examination of the lead test assemblies, the INEEL CAB believes that ANL-W is uniquely qualified for conducting the needed examinations. The Hot Fuel Examination Facility has successfully completed similar missions and has appropriate facilities to handle all aspects of the work.

The INEEL CAB recognizes that fabrication of lead test assemblies will involve transportation of plutonium to the INEEL and fabricated fuel rods to the commercial power plant where irradiation will occur. In addition, we recognize that the post-irradiation evaluation phase will involve shipment of irradiated fuel rods to and from the site. The shipments to and from ANL-W, if the facility is selected to conduct either phase, will likely cross the Fort Hall Indian Reservation.

**The INEEL CAB recommends that DOE-ID develop an agreement with the Shoshone-Bannock Tribes to allow and appropriately manage the transport of plutonium and other radioactive materials across the reservation. We further recommend that such an agreement be achieved before decisions are made on the siting of the lead test assembly fabrication and the post-irradiation evaluation phases.**

With regard to the potential siting of both the lead test assembly and the post-irradiation examination phases at ANL-W, the INEEL CAB makes the following recommendations to help ensure that neither will jeopardize compliance with the Idaho Settlement Agreement:

1. The INEEL CAB understands that the plutonium involved in both of the phases can meet residence limitations imposed by the Settlement Agreement. **We recommend that DOE confirm that interpretation with Governor Batt's office.**
2. **The INEEL CAB recommends that the timing and quantities of plutonium shipments to and from ANL-W for the lead test assembly fabrication and the post-irradiation examination phases should be clearly defined in the final EIS.**
3. **The Board recommends that disposition plans should be in place for all waste streams from all activities before the Record of Decision is signed to ensure that the decision will be consistent with the Idaho Settlement Agreement.** The Draft EIS reports that the fabrication of lead test assemblies would produce 132 cubic meters of transuranic waste, 736 cubic meters of low-level waste, and 4 cubic meters of mixed low-level waste. No estimates of waste streams produced were included for the post-irradiation examination mission; the final EIS should specify that information. **In addition, the INEEL CAB recommends that DOE provide a clear exit path and timetable for all waste streams, as well as residual plutonium, before it enters Idaho if ANL-W is selected for either phase.**
4. With regard to the disposal of the lead test assemblies after the post-irradiation examination has been completed, how will the irradiated and archived fuel rods be managed and disposed? Will the INEEL be expected to store the rods until Yucca Mountain opens? What will happen if Yucca Mountain doesn't open? **The Board recommends that the Final EIS answer these questions.**