



## Steam Reforming Treatment for the Liquid Sodium-Bearing Waste

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On August 3, 2005, the U.S. Department of Energy published a “Notice of Preferred Sodium Bearing Waste Treatment Technology” in the *Federal Register*. The Idaho National Laboratory Site Environmental Laboratory Citizens Advisory Board (CAB) has reviewed the subject notice, as well as the *Supplement Analysis to the Idaho High-Level Waste and Facilities Disposition Environmental Impact Statement* (EIS) (EIS-0287-SA-01).

The evaluation in the Supplement Analysis considered updated characterization data, revised latent cancer risk calculations, and revised worker days lost calculations as they applied to the treatment and packaging of sodium bearing waste (SBW). The CAB agrees with the conclusion of the Supplement Analysis that the estimated impacts of the steam reforming process are adequately bounded by the information presented in the final EIS and that a supplemental EIS is not required.

### **Scope of the Record of Decision**

We are disturbed that, according to the Notice, the first Record of Decision in the phased decision-making process will focus on "SBW treatment and facilities disposition." There is no information in either the Supplement Analysis or the *Federal Register* Notice regarding facilities disposition. Only SBW treatment is discussed.

We are aware that alternatives for disposition of high level waste facilities were discussed in the Final Idaho High-Level Waste and Facilities Disposition Environmental Impact Statement issued in 2002. It is our understanding that the Department of Energy plans to issue a Record of Decision that will deal with the disposition of facilities associated with the disposition of high-level waste, such as the tank farm and the calcine bin sets. It appears that liquid SBW may be reclassified as transuranic waste rather than as high level waste. The classification and proposed disposition of facilities associated with SBW treatment has not yet been determined.

**The CAB recommends that the first Record of Decision in the phased decision-making process only deal with treatment for the liquid SBW (steam reforming or other technologies) and not address facilities disposition.** The disposition of facilities should be considered separately from waste treatment, storage, and shipment and should be addressed in a separate phased Record of Decision.

### **Selection of the Preferred Treatment Technology**

A logical decision making process for treatment of the liquid SBW would include the following steps:

1. Determine the waste classification of the SBW
2. Evaluate alternate technologies and the waste forms that would result.

3. Determine at which repositories the treated SBW would be acceptable for final disposal, based on the waste classification and the waste acceptance criteria at each repository.
4. Select the appropriate treatment technology based on acceptability at the selected repository, transportation requirements, potential need for long term storage, and cost.

DOE has proposed reclassifying the SBW as transuranic waste for possible disposal at the Waste Isolation Pilot Plant. The process for reclassification has not yet been defined nor completed. The outcome of this effort will affect the selection of the final disposal site.

It appears that DOE proposes to proceed with the selection of the treatment technology (step 4) before completing the other steps outlined above. **The CAB prefers that determination of waste classification and acceptability of waste forms at repositories be completed before deciding on treatment technology. If this determination threatens to unduly delay the removal of liquid SBW from the tanks, then the CAB recommends that the selected treatment method be neutral with regard to repository requirements, with the expectation that further treatment may be required prior to final disposition.**

We understand that other technologies may be less expensive and may leave the waste in a form that would be easier to transport and dispose. **The CAB recommends that DOE demonstrate that all reasonable technologies, including vitrification, have been fully evaluated before making a final decision.**

#### **Waste Form for Transport**

We understand that steam reforming used on the SBW would result in a waste product that resembles “fine dust and sand-like granules” which may be very difficult to transport. This waste form would appear to be less than ideal. It also may not be acceptable at the final disposal site. **The CAB recommends that the treatment and packaging utilized for transportation and final disposition of SBW be based on validated, peer-reviewed research. The waste form should be stable and sufficiently robust to assure that a transport, handling, or terrorist incident will not pose the risk of catastrophic contamination.**