Locations and Descriptions for DOE Defense Reprocessing Waste Streams

Summary

DOE defense reprocessing wastes are currently stored at the Hanford Site, Idaho National Laboratory, and Savannah River Site. DOE has not made any decisions about whether or how the HLW interpretation will apply to any existing wastes or whether such wastes may be managed as non-HLW. Any such decisions will be the subject of subsequent actions. Below is an overview of existing reprocessing waste streams at these three sites.

Hanford, Washington

- There are approximately 56 million gallons of reprocessing wastes stored in 177 underground single-shell and double-shell tanks.
- Supernate (liquid found above sediment) and saltcake represent the largest volume of the waste in the tanks, yet contribute the lowest levels of radioactivity compared to sludge in the tanks.
- Hanford is constructing facilities (e.g., Waste Treatment and Immobilization Plant) to treat tank waste.
- Treatment of tank waste will also generate secondary waste streams, such as ion exchange filters, wastewater, and contaminated equipment.
- Cesium/strontium salts extracted from tank waste are contained in 1,936 capsules in secure storage at Hanford and will also require a final disposition path.

Idaho National Laboratory, Idaho

Calcine (4,400 cubic meters (m^3)):

- Liquid reprocessing waste at the Idaho National Laboratory (INL) was treated and converted into a dry, granular solid called calcine.
- Six bin sets contains a homogenous mixture of calcined waste with similar radiological characteristics.
- The total number of canisters that would be produced for off-site disposal of calcine is dependent upon the final form selected.

Sodium-Bearing Waste (SBW) (3,210 m^3):

- Approximately 850,000 gallons of SBW are stored in three underground tanks at the Idaho Nuclear Technology and Engineering Center, located at INL.
- The Integrated Waste Treatment Unit is being constructed to treat the SBW. SBW will be converted to a dry, solid carbonate and aluminate mineral. The resulting granular solids will be packaged in approximately 700 stainless steel cylindrical canisters.

Savannah River Site (SRS), South Carolina

SRS Waste Glass (approximately 4,190 canisters):

- Canisters of vitrified glass waste produced in the Defense Waste Processing Facility (DWPF) are stored in storage buildings where canisters are placed in individual vaults.

Remaining SRS Tank Waste (~35 million gallons):

- There are currently about 35 million gallons stored in 43 underground tanks.
- The vast majority of the radioactivity in this waste (>99%) will be vitrified at DWPF. Approximately 4,000 additional glass canisters are expected to be produced at DWPF by 2036.
- The remaining waste, after treatment, will be blended with grout and disposed on-site in saltstone disposal units.
- Treatment of tank waste will also generate secondary waste streams, such as ion exchange filters, wastewater, and contaminated equipment.
- The secondary waste includes recycle wastewater generated as part of DWPF operations. The recycle wastewater is a combination of several diluted liquid waste streams consisting of condensates from the

pretreatment and vitrification processes, process samples, sample line flushes, sump flushes, and cleaning solutions from the decontamination and filter dissolution processes.

Current Locations for DOE Defense Reprocessing Waste Inventories