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Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

April 1996

Dear Citizen:

Please find enclosed the Draft Environmental Impact Statement (DEIS) for the Hanford Site Tank Waste Remediation System (TWRS). The U.S. Department of Energy (DOE), in cooperation with the Washington State Department of Ecology (Ecology), has prepared this draft in compliance with the National Environmental Policy Act and the Washington State Environmental Policy Act. This DEIS analyzes nine alternatives for the management and disposal of radioactive, hazardous, and mixed waste currently or projected to be stored in 177 underground storage tanks and approximately 60 miscellaneous underground storage tanks in the tank farm system, and four alternatives for the management and disposal of approximately 1,930 cesium and strontium capsules located at the Hanford Site near Richland, Washington.

The purpose for taking action is to implement permanent solutions for managing and disposing of tank waste, and cesium and strontium capsules that reduce risk to the public, site workers, and the environment. The alternative to be implemented must comply with Federal and Washington State environmental laws and DOE policies.

You are invited to comment on the TWRS DEIS. A complete copy of this DEIS and reference documents are available in DOE Public Reading Rooms and Information Repositories. The addresses of these reading rooms and repositories are shown in the Summary and in Section 7.1.1 of the DEIS. To request additional copies of the TWRS DEIS Summary or the entire document, including appendices, please call the Hanford Information Line at 1-800-321-2008, or for InterNet Electronic-Mail access, send to TWRSEIS@KEN01.jacobs.COM. Please remember to include your mailing address with the InterNet message.

The public comment period on the TWRS DEIS will extend from April 12, 1996, through May 28, 1996. To ensure consideration, written comments should be postmarked no later than May 28, 1996, and sent to either:

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Comments may also be submitted by the following means: facsimile at 1-509-736-7504; Electronic-Mail at the above referenced address; or presented at the public comment meetings. Please remember to include your name and mailing address with comments. Late comments will be considered to the extent practicable. DOE and Ecology will consider all comments in preparing the TWRS Final EIS, which is scheduled to be issued in the Summer of 1996.

The public comment meetings will be held in Pasco, Washington, Washington D.C., and Portland, Oregon. Information on dates and times for these meetings will be announced separately, and can also be obtained through the contacts listed above.

Sincerely,

Carolyn C. Haass
TWRS NEPA Document Manager
U.S. Department of Energy
Richland Operations Office

Geoff Tallent
TWRS EIS Project Lead
Washington State
Department of Ecology

Attachment

ATTACHMENT
VARIATION OF THE EX SITU/IN SITU COMBINATION ALTERNATIVE

This variation of the Ex Situ/In Situ Combination alternative and other potential variations of existing alternatives presented in the EIS are available for public comment and will be considered by DOE while preparing the Final EIS.

1.0 OVERVIEW

The variation of the Ex Situ/In Situ Combination alternative is similar to the Ex Situ/In Situ Combination alternative addressed in the Tank Waste Remediation System (TWRS) Environmental Impact Statement (EIS). However, the selection criteria for the waste that would be treated ex situ would be modified, providing for ex situ treatment of the largest contributors to long-term risk (Tc-99, C-14, I-129, and U-238) while limiting the volume of waste to be processed. Reducing the volume of waste requiring ex situ processing would likely reduce the required capacity of the treatment facility, occupational risks, and costs. The modified selection criteria would result in approximately 23 tanks selected for ex situ treatment instead of 70 tanks, based on currently available characterization data. This variation has not been fully developed into an alternative so the information presented in the following text is based on approximations, providing the reader with a general idea of the potential impacts associated with implementing the alternative.

Waste selected for ex situ treatment would be retrieved and transferred to processing facilities for treatment. Two treatment facilities would be constructed for ex situ treatment and would include one combined separations and low-activity waste treatment facility and one high-level waste treatment facility. The waste volume to be retrieved for ex situ treatment would be approximately 26 percent of the total tank waste volume obtained from approximately 13 percent of the tanks. The actual number of tanks would be based on future characterization of the tanks.

Waste contained in tanks selected for in situ treatment would be treated using the same process as described for the In Situ Fill and Cap alternative. In situ treatment of double-shell tanks would include evaporating as much water as practicable from the waste in the 242-A Evaporator. Each tank, both single-shell and double-shell tanks, would then be filled with gravel to stabilize the tank and prevent a dome collapse. Waste tanks selected for ex situ treatment would have waste retrieved, separated, and immobilized. An earthen infiltration cover would be constructed over all tank farms and low-activity waste disposal vaults to reduce water infiltration and inhibit human intrusion.

The potential benefit of this alternative is that by selecting the appropriate tanks for ex situ treatment, up to 85 percent of the constituents that are the greatest contributors to long-term risk would be disposed of ex situ while retrieving approximately 26 percent of the waste.

2.0 PROCESS DESCRIPTION

The first step in waste processing would be to recover and transfer selected waste for treatment. Waste retrieval and transfer would use the same technologies and processes as described for the Ex Situ Intermediate Separations alternative. Waste retrieval would use sluicing and arm-based systems for the single-shell tanks and slurry pumping for the double-shell tanks.

The separations and immobilization technologies used would be similar to those processes described for the Ex Situ Intermediate Separations alternative with additional separation steps to remove selected constituents from the low-activity waste stream. The low-activity waste treatment facility would be designed to produce approximately 50 metric tons (mt)/day (55 tons/day) of immobilized waste. The immobilized low-activity waste would be placed into containers for onsite near-surface disposal.

The high-level waste treatment process would be designed to produce 5 mt/day (5.5 tons/day) of high-level waste glass. The immobilized high-level waste would be placed directly into standard sized canisters and packaged into Hanford Multi-Purpose Canisters for interim onsite storage and eventual transport to a geologic repository. In situ treatment would begin by concentrating the double-shell tank waste followed by gravel filling of the remaining single-shell and double-shell tanks. The construction of the earthen infiltration cover would occur during closure following stabilization of the tanks selected for retrieval and in situ treatment.

3.0 CONSTRUCTION

Two treatment facilities would be constructed for ex situ processing. One facility would be a separations and low-activity waste treatment facility and the other would be a high-level waste treatment facility. The two treatment facilities would be located in the 200 East Area within the area identified for the Ex Situ Intermediate Separations alternative. The following systems and facilities would be constructed for ex situ treatment:

- Waste retrieval and transfer systems;
- Treatment facilities (one separations/low-activity waste treatment facility and one high-level waste treatment facility);
- Interim storage pads for immobilized high-level waste in the 200 East Area; and
- A low-activity waste disposal facility to provide for retrievable disposal of the low-activity waste.

Construction activities for the in situ activities would include filling the tanks with gravel, which would require installing gravel handling equipment, modifying tank openings to accommodate gravel handling equipment, and constructing gravel stockpiles.

4.0 SCHEDULE AND COST

The schedule for this variation to the Ex Situ/In Situ Combination alternative would begin with construction as early as 1998 with operations taking place from 2002 to 2024. The last high-level waste would be transported offsite by 2029, closure activities would be completed by 2034, and monitoring and maintenance would continue until 2134.

The total cost for this variation to the Ex Situ/In Situ Combination alternative would be less than that of the Ex Situ/In Situ Combination alternative due to the fewer number of tanks retrieved, the smaller production of the ex situ processing facilities, and fewer canisters of HLW requiring disposal in a geologic repository.

5.0 ENVIRONMENTAL IMPACTS

When compared to the Ex Situ/In Situ Combination alternative, this variation may result in fewer potential latent cancer fatalities from routine exposures during remediation, lower occupational fatalities, and a lower probability of accidents during operations and transportation. It may also result in less disturbance of the shrub-steppe habitat, fewer impacts on social services, and lower costs. However, it may also result in higher long-term releases of contaminants to the groundwater and may result in increased potential health effects to future potential users of the Hanford Site.

Effects on Groundwater

Contaminates would enter the groundwater from releases during retrieval and precipitation infiltrating through the residual waste in the tanks and the low-activity waste vaults. Although groundwater modeling has not been performed for this variation, the effects were estimated by comparing it to the Ex Situ/In Situ Combination alternative. This comparison shows that the groundwater effects would be somewhat greater than the Ex Situ/In Situ Combination alternative. It would be expected that there would be exceedances of groundwater standards for this variation to the Ex Situ/In Situ Combination alternative.

Anticipated Risk

Anticipated Risk During Remediation

The radiological and toxicological risk during remediation would result from air emissions and direct exposure from continued operations (including tank farm and evaporator operations), retrieval, separations and treatment (including vitrification, evaporator, and gravel fill operations), transportation (including truck transport of tank waste residuals and rail transport of vitrified high-level waste to a geologic repository), storage and disposal, monitoring and maintenance, and closure and monitoring. Because the facilities would process less waste, require fewer workers, and transport less high-level waste to a geologic repository than the Ex Situ/In Situ Combination alternative, the anticipated risks would be less than those calculated for the Ex Situ/In Situ Combination alternative.

Anticipated Risk After Remediation

By retrieving 23 selected tanks under this variation of the Ex Situ/In Situ Combination alternative, 85 percent of Tc-99, 79 percent of C-14, and 66 percent of I-129 would be retrieved rather than 90 percent as with the Ex Situ/In Situ Combination alternative. The long-term risk of contracting a fatal cancer from consumption of contaminated groundwater would be somewhat higher than those calculated for the Ex Situ/In Situ Combination alternative, which has a maximum risk of 3 in 1,000 at 5,000 years in the future for an onsite farmer.

Potential Accidents

Nonradiological/Nontoxicological Accidents

Occupational accidents from construction and operations as well as transportation accidents would be expected to be less than those calculated for the Ex Situ/In Situ Combination alternative because the workforce would be smaller.

Radiological/Toxicological Accidents

Operation activities would be similar to the Ex Situ/In Situ Combination alternative, therefore latent cancer fatalities and chemical exposures resulting from operation accidents during routine operations, retrieval, pretreatment, and treatment would be the same as those analyzed for the Ex Situ/In Situ Combination alternative.

6.0 REGULATORY COMPLIANCE

This variation of the Ex Situ/In Situ Combination alternative would involve the same regulatory compliance issues as the Ex Situ/In Situ alternative presented in the EIS. Implementing this alternative would require changes to the land disposal restrictions of the Resource Conservation and Recovery Act, the HLW disposal requirements of the Nuclear Regulatory Commission, and DOE's policy for disposal of readily retrievable high-level waste in a geologic repository.