

The Hanford Advisory Board received an early briefing on the draft *Proposed Plan for the Remediation of 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units* in May, 2011. The board issued Advice #247, *PW-1/3/6 and CW-5 Operable Units*, to the TPA agencies in June, 2011.

Responses to HAB advice #247 are included in the Comment and Response section of the *Record of Decision for Hanford 200 Area Superfund Site 200-CW-5 and 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units* (<http://www5.hanford.gov/arpir/?content=findpage&AKey=0093644>). Below is a compilation of the agencies' responses to that advice from the comment and response document. Comments were organized and responded to by themes, e.g., *EXCAVATE AND REMOVE ALL PLUTONIUM*.

Susan Leckband, Chair, Hanford Advisory Board (Advice #247)

Advice

Comment 1: The Board advises the U.S. Department of Energy (DOE) to get as much plutonium out of the waste sites as possible.

Response to comment 1: EXCAVATE AND REMOVE ALL PLUTONIUM

Response to comments:

The Tri-Party agencies recognize that plutonium is a dangerous contaminant that must be remediated carefully to protect human health and the environment and that institutional controls would be used, as part of the selected remedy, over long time frames where plutonium is left in place. Concern over plutonium reaching groundwater and the Columbia River is understandable. However, plutonium is not currently entering the Columbia River from the Hanford Site. Monitoring programs are in place to monitor if any contaminants from Hanford are entering the Columbia River and to identify any need for additional actions to protect human health and the environment from unacceptable risk.

The Tri-Party agencies also recognize that many members of the public would prefer to have all or nearly all of the plutonium contamination removed from the High-Salt Waste Group. DOE and EPA do not agree that all plutonium contamination should be sent to WIPP for disposal and have determined that the plutonium contamination that will remain in place after the selected remedy is implemented will not pose an unacceptable risk to human health and the environment. The selected remedy will remove approximately 90% of the plutonium contamination in the Low-Salt Waste Group and almost all of the plutonium contamination from the Z-Ditches and Settling Tanks Waste Groups. For the High-Salt Waste Group, soils located two feet below the bottom of the disposal structure, where the highest concentrations of plutonium are located, will be removed. After excavating to the specified depths in these waste sites, plutonium-239/240 levels will be assessed. DOE will consider removing additional plutonium-contaminated soil from these waste sites.

At waste sites in the Z-Ditches Waste Group, traditional excavation methods will be used to remove contaminated soils as part of the selected remedy. Clean overburden will be removed and stockpiled for backfilling. Subsequent excavation using traditional excavation methods will result in plutonium contaminated soil being removed with some clean soil. This is not an intentional "blending" of clean and contaminated soil, but rather a result of the traditional excavation methods that are used for

digging up soil. As contaminated soil is removed and packaged for disposal, waste in containers will be screened to determine if it meets ERDF waste acceptance criteria as low-level waste or if the waste has plutonium concentrations greater than 100 nCi/g. Since Hanford waste is a result of defense-related activities, waste containers that have plutonium concentrations greater than this value qualify as transuranic waste and can be disposed in the approved geologic repository. Transuranic waste will be sent to WIPP for disposal.

The EPA and DOE did evaluate the removal of contaminated soils that pose an unacceptable risk at waste sites in the High-Salt and Low-Salt Waste Groups. This was evaluated under Removal, Treat (if necessary) and Dispose – Option E in the feasibility study. This cleanup alternative was evaluated along with the other alternatives that were identified through the CERCLA process. There are nine criteria that must be considered when evaluating cleanup alternatives under CERCLA. The first two criteria, known as “threshold criteria”, are the overall protection of human health and the environment and compliance with (or qualification for a waiver from) Applicable or Relevant and Appropriate Requirements (ARARs). The next five criteria, known as “balancing criteria”, allow for a comparison of the relative performance of each alternative against these criteria. These criteria are: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. The last two criteria, known as “modifying criteria”, are State acceptance and community acceptance. The selected remedy meets the threshold criteria and provides the best balance of the CERCLA balancing criteria and modifying criteria considerations.

The land where the waste sites addressed in this Proposed Plan and ROD are located is considered an industrial-use area and will have the necessary land-use restrictions for land that has contamination in place that does not allow for unrestricted use and unlimited exposure.

It is important to note that cost is only one factor that is considered for deciding how much plutonium-contaminated soil to remove. While cost was a factor in selecting the remedy, budget limitations were not. A remedy must be protective of human health and the environment and comply with (or qualify for a waiver from) ARARs in order to be selected for implementation. After the plutonium-contaminated soil is removed in accordance with the selected remedy at the High-Salt and Low-Salt Waste Groups, the waste sites will be backfilled with clean soil and covered with an evapotranspiration barrier which will provide further isolation from humans and the environment.

The current and anticipated future land use for this area is industrial. The selected remedy and final cleanup level for plutonium were developed based on this anticipated industrial land use. Waste will remain in place that will not allow for unlimited use of the land (e.g., no residential or farming activities). Institutional controls will be used to prohibit activities that would disturb the soil at these waste sites to prevent potential human exposure to contamination and to protect the integrity of the remedy. DOE is ultimately responsible for maintaining institutional controls at the Hanford Site, even if the land is transferred to another owner.

The Tri-Party agencies understand that some members of the public are concerned about the possibility of someone trying to access the residual plutonium-contaminated soil in the future. Institutional controls will prohibit access to the plutonium-contaminated soil which, after implementation of the selected remedy, will be located deeper than 15 feet below the ground surface. Since contamination will remain in place that will not allow for unlimited land use, CERCLA requires

that the selected remedy be reviewed no less often than every five years to ensure that human health and the environment are being protected by the remedial action. If, based on a five-year review, further action at the site is determined appropriate, such action will be taken. Please see the “Government Is Not Long-Term Stewardship” section for additional agency responses related to this concern. Please see the “Regulatory Standards” section for agency responses regarding cleanup levels for plutonium.

Comment 2: The Board advises DOE to implement a RTD policy for plutonium that emphasizes remediation of plutonium disposal sites. DOE policy should opt to ship eligible plutonium-contaminated soil to WIPP for geological disposal, permanently removing it from Hanford.

Response to Comment 2: SHIP PLUTONIUM OFF-SITE

Response to comments: The Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico is where the US disposes of the nation's defense-related transuranic radioactive waste. Plutonium contaminated soils removed from the Hanford Site must qualify as “transuranic waste” in order to be accepted at WIPP. This means the contaminated soil and debris must have alpha-emitting TRU radionuclides possessing half-lives greater than 20 years and in concentrations greater than 100 nCi/g. Under the selected remedy, any contaminated soil and debris that are excavated and packaged for disposal that qualify as TRU waste will be sent to WIPP for disposal. Contaminated soil and debris that are excavated and packaged for disposal that do not qualify for disposal at WIPP will be disposed of at Hanford’s Environmental Restoration and Disposal Facility (ERDF).

Some plutonium will remain in place as part of the selected remedy. The risks from the plutonium that remains were evaluated as documented in the Remedial Investigation and Feasibility Study (RI/FS)(DOE/RL-2007-27). Based on that information, DOE and EPA have determined that the plutonium that will remain in place after the selected remedy is implemented will not pose an unacceptable risk to human health and the environment and that the selected remedy will protect the Columbia River and its ecological resources from degradation and unacceptable impact associated with hazardous substances, pollutants or contaminants originating from these waste sites.

Comment 3: The Board advises DOE to utilize RTD approach when a high concentration of a radionuclide exists. This approach is consistent with established Board values.

Response to Comment 3: OTHER COMMENTS ON THE PROPOSED PLAN

Response to comments: The Tri-Party agencies would like to thank those who provided comment on the Proposed Plan and acknowledge those comments that expressed support of portions of the selected remedy. The selected remedy for the Settling Tanks Waste Group includes removal of the remaining contents (including any liquid and sludge) and grouting of the tanks for stabilization, and will satisfy substantive closure requirements for dangerous waste tanks. The cost tables presented in the Proposed Plan show present worth calculations based on 350 years for the Cesium-137 Waste Group to 1,000 years for the Low-Salt and High-Salt Waste Groups and include estimated disposal costs at WIPP, where applicable. WIPP costs were included in the Proposed Plan in order to fully

present the full range of life-cycle costs for each alternative. This was done in part in response to HAB advice #207 regarding Criteria for Development of the Proposed Plan for 200-PW-1,3,6 (available at http://www.hanford.gov/files.cfm/HABAdv_207.pdf) which specifically requested life-cycle costs be provided.

Comment 4: The Board advises basing remedial design for cleanup of technetium and nitrates upon increased characterization. Extensive sampling is needed to determine the location and extent of technetium and nitrate contamination. This characterization should coincide with remediation efforts.

Response to Comment 4: INSUFFICIENT SCIENTIFIC DATA

Response to comments: The Tri-Party agencies recognize public concern over the amount of scientific data that was used to determine risks and select an appropriate remedy for these waste sites. Following the CERCLA process, DOE conducted an assessment of the nature and extent of contamination and the associated health and environmental risks (in the Remedial Investigation) and developed and analyzed the range of potentially viable cleanup alternatives for these operable units (in the Feasibility Study). The scientific data included use of historical data such as process history. For the Settling tanks, historical data on the tank contents is one valid source of information since there have been no leaks from the tank to date and long-lived radionuclides remain. For the Z-Ditches and High-Salt Waste Groups, there have been no major contaminant transport mechanisms (such as large volumes of liquid discharges) since operations ceased to cause the contamination to migrate. The long-lived radionuclide contamination is still present, making process history a valuable source of information for characterizing these waste sites. DOE and EPA have determined that the existing data and information is sufficient to make this remedy decision.

Comment 5: The Board advises a policy to conduct RTD concurrently with vapor extraction efforts to ensure meeting Tri-Party Agreement milestones.

Response to Comment 5: OTHER COMMENTS ON THE PROPOSED PLAN

Response to comments: The Tri-Party agencies would like to thank those who provided comment on the Proposed Plan and acknowledge those comments that expressed support of portions of the selected remedy. The selected remedy for the Settling Tanks Waste Group includes removal of the remaining contents (including any liquid and sludge) and grouting of the tanks for stabilization, and will satisfy substantive closure requirements for dangerous waste tanks. The cost tables presented in the Proposed Plan show present worth calculations based on 350 years for the Cesium-137 Waste Group to 1,000 years for the Low-Salt and High-Salt Waste Groups and include estimated disposal costs at WIPP, where applicable. WIPP costs were included in the Proposed Plan in order to fully present the full range of life-cycle costs for each alternative. This was done in part in response to HAB advice #207 regarding Criteria for Development of the Proposed Plan for 200-PW-1,3,6 (available at http://www.hanford.gov/files.cfm/HABAdv_207.pdf) which specifically requested life-cycle costs be provided.

Comment 6: The Board advises the proximity of cesium-137 to the surface necessitates implementing an RTD approach in order to dispose of cesium into the ERDF burial ground.

Response to Comment 6: REMOVE ALL CESIUM

Response to comments: The Tri-Party agencies recognize that some members of the public prefer to remove cesium-contaminated soil rather than leave it in place. When selecting a remedy, the Tri-Party agencies must select a remedy that meets the threshold criteria and provides the best balance of the CERCLA balancing criteria and modifying criteria considerations. The selected remedy for the Cesium-137 Waste Group to maintain/enhance the existing soil cover (MEESC) meets the threshold criteria and provides the best balance of the CERCLA balancing criteria and modifying criteria considerations. The 15 ft depth of the soil cover is effective in eliminating environmental pathways from biological activity, such as from plant roots or burrowing animals and from workers coming in direct contact with contamination.

Comment 7: The Board advises the Tri-Party agencies to hold public meetings to discuss the draft Proposed Plan for the Remediation of the 200-CW-5, 200-PS-1, 200PW-3 and 200-PW-6 Operable Units.

Response to Comment 7: OTHER COMMENTS ON THE PROPOSED PLAN

Response to comments: The Tri-Party agencies would like to thank those who provided comment on the Proposed Plan and acknowledge those comments that expressed support of portions of the selected remedy. The selected remedy for the Settling Tanks Waste Group includes removal of the remaining contents (including any liquid and sludge) and grouting of the tanks for stabilization, and will satisfy substantive closure requirements for dangerous waste tanks. The cost tables presented in the Proposed Plan show present worth calculations based on 350 years for the Cesium-137 Waste Group to 1,000 years for the Low-Salt and High-Salt Waste Groups and include estimated disposal costs at WIPP, where applicable. WIPP costs were included in the Proposed Plan in order to fully present the full range of life-cycle costs for each alternative. This was done in part in response to HAB advice #207 regarding Criteria for Development of the Proposed Plan for 200-PW-1,3,6 (available at http://www.hanford.gov/files.cfm/HABAdv_207.pdf) which specifically requested life-cycle costs be provided.

Note, public meetings were held:

Richland, Washington, Tuesday, July 19, 2011 – 5:30- 8:30 pm

Seattle, Washington, Thursday, July 21, 2011 – 6:00 – 9:00 pm

Hood River, Oregon, Tuesday, July 26, 2011 – 6:00 – 9:00 pm

Portland, Oregon, Wednesday, July 27, 2011 – 6:00 – 9:00 pm