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Actionee: Kevin Clarke
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Title: CTUIR COMMENTS ON THE 5-YEAR REVIEW OF CERCLA RODs

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MGR		Rochelle, Diane		SES	
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AMA			PNSO		
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June 15, 2006

Mr. Keith Klein
Department of Energy
Richland Operations Office
PO. Box 550
Richland WA 99352

Subject: CTUIR Comments on the 5-Year Review of CERCLA RODs

Dear Mr. Klein

We thank DOE and EPA for the opportunity to comment on the second Hanford 5-year review. This is a very important document. Some general comments are included in the cover letter, and more specific comments on many technical issues that have not been resolved are included in the attachment.

This document is a good catalog of regulatory actions, and with a few additions (such as the regulatory status and schedule of each operable unit, and a linkage of each OU to its milestone number), it will be a valuable resource. Please include some introductory language related to major milestone goals, such as to remove all contaminated soil to background in the River Corridor by 2012.

Also, please include a discussion of tanks and other RCRA sources/actions compared to CERCLA sources/actions, or at least show very clearly which source terms are not covered by this document. For example, we have heard that tanks are covered by RCRA but not by CERCLA, but the 200 Area NPL site does not appear to have 'holes' in it that are not covered by CERCLA. Therefore, a list of ARARs would also be helpful, including MTCA.

Overall, we believe that DOE cannot make protectiveness statements yet because the cumulative risk assessments have not been done. We do not know whether individual remedies or the sum total of all the remedial actions are protective on a sitewide basis,

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including disposal sites, landfills, groundwater, capped sites, deep vadose contamination, US Ecology, ERDF, and so on either now or far into the future. This is true even in the 300 Area which has a final ROD but no cumulative baseline risk assessment yet. Will the remedies result in “unlimited use and unrestricted exposure” for all media in each area or among areas *without institutional controls*? How confident are we that UU/UE will be reached by publicly stated goals such as 2012 when we know that groundwater will not be clean enough to use?

DOE cannot rely on assertions that groundwater use will remain restricted, therefore there is no public health threat. In fact, the converse is true: groundwater is *unsafe* to use, therefore institutional controls are required.

In particular, the “exposure assumptions, cleanup levels, and remedial action objectives” are not valid because our exposure scenario was not complete when the interim and/or final RODs were written. By definition, then, no remedy has ever based on protecting our health, and therefore no remedy is “protective.” The only exception to this is where background conditions have been met and there is no residual contamination in the deep vadose zone.

Most of the recommendations state the need to complete, continue, evaluate, or develop remedy components pursuant to the interim RODs.

- It is not clear what endstates these interim actions and interim remedies will result in, since the cumulative risk assessments have not been done. For example, interim groundwater RODs focus on characterization and monitoring, rather than on a final endstate RAO, such as cleanup to both drinking water standards for the general population and to health based standards for Native Americans using the cumulative multipathway risks calculated by using the CTUIR exposure scenario.
- Similarly, caps, barriers, pump and treat systems, institutional controls, and other interim remedies have no clear final RAO, just a list of things to do on an interim basis.
- Related to this, the draft WCH Closure Plan is terribly naive in that the endstate environmental quality is not discussed. Rather, it is simply a laundry list of things that will still need to be done (e.g., groundwater monitoring) once sites are delisted.
- It is further unclear to what level these recommendations in the 5-year review are being supported by funding and how these recommended actions are incorporated into milestone and budget planning.

Our conclusion is that the 300 Area ROD should be reopened, and that interim RODs cannot be converted into final RODs without revising the ARAR lists to include MTCA and until the cumulative multi-pathway, multi-contaminant risks using the Tribal exposure scenario without institutional controls are known.

If you have any questions, please feel free to call me or Dr. Harper (541-966-2804).

Sincerely,

A handwritten signature in black ink that reads "Stuart Harris". The signature is written in a cursive style with a large initial 'S' and a long horizontal stroke at the end.

Stuart Harris, Director
CTUIR Department of Science & Engineering

Cc: Nick Ceto, EPA
Cc: Jane Hedges, WA Ecology
Cc: Ken Niles, Oregon DOE
Cc: Russell Jim, YN
Cc: Gabe Bohnee, NPT
Cc: Pat Pettiette, WCH
Cc: Kevin Clarke

Specific Comments

1. Purpose

The purpose of conducting 5-year reviews is:

(from the Preamble of the EPA Guidance): “Section 121 of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), requires that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site be subject to a five-year review. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) further provides that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for **unlimited use and unrestricted exposure** be reviewed every five years to **ensure protection of human health and the environment.**”¹ [emphasis added]

(from Page 1-1 of the EPA Guidance): “The purpose of a five-year review is to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. Protectiveness is generally defined in the National Contingency Plan (NCP) by the **risk range and the hazard index** (HI). Evaluation of the remedy and the determination of protectiveness should be based on and sufficiently supported by data and observations.” [emphasis added]

Comment: The purpose of the 5-Year Review as defined by DOE is too narrow. DOE is attempting to narrow the purpose of the 5-Year Review to only “evaluate the implementation and performance of a remedy.” This avoids answering the protectiveness question. Protectiveness can only be demonstrated if it is addressed directly – “Is the remedy protective” according to the definition of protectiveness in EPA guidance? This means that cumulative risks, including CTUIR Exposure Scenario, must be mapped across the entire Hanford Site (as well as down river, wherever the contamination has come to be located) and through time. If DOE truly answers the question of protectiveness by asking only whether assumptions, cleanup levels, and RAOs are still valid, then **no** remedy is protective because there are new assumptions and information (such as our exposure scenario) that apply sitewide and to every component of every operable unit.

2. Providing assurances of protectiveness.

(from E.O. 12580): “(h) The functions vested in the President by Section 104(c)(3) of the Act are delegated to the [EPA] Administrator, with respect to **providing assurances for Indian tribes**, to be exercised in consultation with the Secretary of the Interior.”² [emphasis added]

¹ EPA (2001). Comprehensive Five-Year Review Guidance. EPA 540-R-01-007; OSWER No. 9355.7-03B-P, June 2001.

² Executive Order 12580, Superfund Implementation, January 23, 1987; as amended by Executive Order 12777, October 18, 1991, and Executive Order 13016, August 28, 1996.

(from DOE, 1992) Under Sections 104 and 121 of CERCLA, the Environmental Protection Agency (EPA) is required to assess the risks to human health posed by uncontrolled hazardous waste sites on the National Priorities List (NPL). That assessment is conducted in the remedial investigation/feasibility study (RI/FS) phase of the site cleanup process. When applied to the evaluation of human health impacts caused by uncontrolled CERCLA sites (i.e., no remedial action is taken), this process is termed the "baseline risk assessment."³

Comments about "protectiveness"

- 1) Conclusion (e.g., Executive Summary, page iii).
 - a) We do not think that DOE can demonstrate that the actions are protective of *our* health and the environment, because our exposure scenario was not used to derive cleanup goals. Even though any particular ROD might not have specifically required protection of tribal health, we would like DOE to add a statement to the effect that it is aware that our scenario was not used for any ROD or risk assessment yet.
 - b) We recognize that the two major risk assessments (River Corridor and River; TC-WM EIS) are not complete. Therefore, cumulative risks are not known and protectiveness cannot be demonstrated.
 - c) The phrases "will be protective" is problematic because no time frame is ever indicated.
 - d) Circular reasoning is an issue with the "will be protective" phrases. For example, it is asserted that groundwater actions will be protective when the work is completed, and work will be complete when protectiveness criteria are met. However, this could be in 30 years or 30,000 years. There is no clear path from short-term pump and treat to actually demonstrating that health-based and standards-based criteria have been met without the need for institutional controls, other than pumping and treating for potentially hundreds of years.
 - e) Issue and Action #18. The issue states that the U standard has been lowered from 48 to 10 ppb, and that an ESD should be prepared for the interim 200-UP-1 ROD. Does this mean that the final ROD will be based on the new standard, or simply that an explanation for why the new standard is not being implemented will be provided in the final ROD? This pertains to other ESD statements as well.
- 2) Criteria for demonstrating protectiveness should be listed at the front of the document.
 - a) A list of criteria should be added, particularly those addressing the cumulative health risk implied by the phrase "protective of human health." Protecting human health has two components: meeting standards or ARARs and meeting cumulative risk levels (using our exposure scenario to determine risk). Please be very specific that this includes MTCA as well as CERCLA.
 - b) Specific cumulative risk criteria (e.g., 1E-5 under MTCA) should be listed.

³ DOE (1992). CERCLA Baseline Risk Assessment - Human Health Evaluation. EH-231-012/0692(June 1992). <http://www.eh.doe.gov/oepa/guidance/cercla/cer-risk.pdf>

- c) Cumulative risk pertains to soil and groundwater exposure pathways combined. A mention of integration of soil, deep vadose, groundwater, and biota risks should be added, along with a description of the integration processes that are underway.
- d) When doing the sitewide cumulative risk assessment, risks must be evaluated as if there are no institutional controls. In other words, we need to know what the risks would be *now* if groundwater is used and if the deep vadose is drilled inadvertently. The final remedies may, indeed,
- e) A definition of “unlimited use and unrestricted exposure” should be added. It is mentioned on page xi, but no definition is given.
- f) Who decides whether new information is relevant to the determination of protectiveness, especially since sitewide risk assessments are not completed yet?

3. Other Comments

- 3) Action Status and Schedule.
 - a) It would be helpful to us if a column were added in Table 1 (and similar Tables) that shows the status of the action, such as ‘construction complete’ or ‘scheduled for completion in 200x.’ For example, we can’t tell from the tables or the text whether a construction complete letter was issued for 300-FF-1; the text merely says “RAOs have been met,” which might or might not be an official statement as opposed to a hopeful assertion. It is hard to tell whether a site is really “done” and whether EPA has officially agreed by issuing a concurrence letter. The columns about affecting current and future protectiveness are not very useful.
 - b) The Issues and Actions table on page v has two columns on protectiveness. It is not clear if they add much, since every action affects protectiveness directly or indirectly, and the distinction between current and future protectiveness is fuzzy.
 - c) All RODs should have a final step of restoration and revegetation. Please indicate whether these steps have been finished in the same column as above or in a separate column.
 - d) A TPA Milestone table would also be useful, showing links to each OU.
- 4) Treaty-reserved rights should be mentioned (they are not included in the land use plan).
- 5) Boundaries are very confusing.
 - a) Although RCRA is not included, there is no visible “donut hole” in the 200 Area.
 - b) The boundaries in Figures 1-4 do not match existing maps for the 100 Area. For example, the 100 Area is variously drawn as the entire River Corridor, a string of pearls (the Reactor Areas), large amorphous areas of groundwater plumes, or larger areas that encompass all of Hanford except the 200 and 300 Areas.
 - c) Since NPL closure cannot occur in a layer-cake fashion (i.e., we cannot close and delist soil sites separate from the underlying groundwater, even if the groundwater contamination comes from a distant location), true sitewide integration and risk mapping must occur before any final Hanford RODs can be written.
 - d) Figure 2 shows only one small area in the 200 Area, although there are many scattered sites and 24 soil OU groupings.

- e) Does the 100 Area include interim sites and orphan sites? Does the 100/300 Area risk assessment match the boundary of all the 100 Area maps shown in this document?
 - f) Comparing Figures 2 and 3 shows widely divergent Area boundaries – small sources at the surface and huge areas for groundwater. In a 3-D perspective, then, each OU would actually be a misshapen cone with the source at the tip, the groundwater at the bottom, and an unknown mass of contaminated soil in between.
 - g) Page xiii. What is the area in square miles – 560 or 586 m²? Does this include the 1100 Area? Perhaps a small table with each the square miles of each Area and each NPL site should be added. Given the confusion about NPL boundaries, this will be a challenge, but will indicate whether or not the entire Hanford site is included in one or another NPL site – our understanding is that there are no holes in the NPL coverage, and that all of the 200 Area is included in the 200 Area NPL even if tanks are covered by RCRA as well. In fact, the designation of “200 Area” is an NPL designation, and is never drawn with holes in it for tank farms.
- 6) Clean Fill. The total amount of clean fill needed for each NPL Area should be discussed.
- 7) 200 Area vadose and groundwater.
 - a) The text recognizes that Tanks (RCRA) and soil-groundwater and waste sites (CERCLA) are co-mingled (page 2.9). Since the human health and eco risk assessments will not be complete for several years (under the TC-WM EIS?), the overall cumulative risks for the 200 Area are unknown. DOE certainly cannot conclude that the remedies “are or will be protective of human health and the environment.”
 - b) There is considerable disagreement about the tank leaks for the B and T tank farms, so the oversimplification in this document is problematic.
- 8) Page xi, xviii and elsewhere.
 - a) Does the term ‘remedial action’ include restoration?
 - b) Page 1.12, #4. Actions for the 100 Area include “re-vegetate.” Please rephrase to “re-vegetate with appropriate native species” and add “recontouring, erosion minimization, maintenance, and 5-year monitoring” as part of the general remedy.
- 9) Page xii. Could you provide definitions that are in common Hanford usage, such as ‘past practice units’ for the uninitiated reader?
- 10) Page xix, Site Visits. Please add Tribes to the list of entities that perform field evaluations.
- 11) Page 1.35. Please add a short discussion of what has not been chosen and the reasons. For example, was a cryogenic sweep considered in the D Area?

12) We disagree with apatite injection in the N Area (Action 6-1) unless there is a closure plan that removes the apatite with its adsorbed strontium. Was an Environmental Assessment done? Was an EA done for the other pilot projects?

13) Appendix 1 – Institutional Controls

- a) Please add Tribal members to each box in the “Who it Protects” column (Tribal members are not included in ‘site visitors.’
- b) Please add a discussion of how cultural and natural resources are protected from people (in addition to the discussion of how people are protected from contaminants).