EPA Comment
1-G-1

Stakeholder-Water Flow Model Concerns

Text from the Citizens for Alternatives to Radioactive Dumping (CARD) news release on March 25, 2009, raises questions about DOE's conceptualization and, therefore, performance assessment modeling of the shallow hydrology at WIPP. CARD claims that new data and a recent analysis done by Dr. Phillips invalidate the conceptual model, therefore the certification must be "rescinded." CARD also claims that the Culebra hydrology model peer review held by DOE, " ...reveals that water levels in the test wells at WIPP rise and fall with rainfall, meaning that, should the site be breached at some future time, as predicted by DOE due to oil deposits beneath the WIPP site, there may not exist a reliable barrier to the migration of contaminated water."

In addition to the news release, the Agency recently received documents from CARD that outline the aforementioned issues. EPA will provide this documentation to DOE separately so that the Department is aware of CARD's issues and can address the concerns raised in their documentation.

DOE Response

EPA's 2nd completeness letter dated July 16, 2009, addresses this comment specifically as comments 2-15-CARD-1 through 8. DOE will respond to those numbered comments as part of its response to the 2nd completeness letter.

EPA Comment
1-G-2

The shielded container planned change request has been an ongoing activity that was not completed before the CRA-2009 was received by EPA. The Agency considered the idea of including the shielded container request into the CRA-2009 review and decision process. However, after seeking comments from stakeholders EPA determined that it was most prudent to keep the two actions - the shielded container review and the 2009 recertification - distinct and separate. Therefore, EPA will proceed to review and complete the CRA-2009 as required by the LWA. EPA will then continue its review of the shielded container planned change request. This approach will give stakeholders ample opportunity to consider and comment on both actions by the Agency.

DOE Response

DOE acknowledges EPA's decision to review the shielded container planned change request separately from its review of the CRA-2009.

EPA Comment
1-G-3 Inventory

As outlined in the Executive Summary of DOE/TRU-2008-3379, Rev. 1 (ATWIR 2007), DOE has proposed that ATWIR 2008 be used as the inventory source document if EPA requires a new Performance Assessment Baseline Calculation (i.e. PABC-2) to support the 2009 compliance re-certification application. DOE further states in ATWIR 2007 (p. 34) that, "Additional information on EDTA and chelating agents will be collected in the next TRU waste inventory update and, at that time, mass quantities of EDTA will be further refined and quantified and ultimately reported in the Annual Transuranic Waste Inventory Report - 2008."

However, DOE altered its actual reporting in ATWIR 2008 stating on p. 13 that, "Items 4, 5, 6 and 8 above [i.e., complexing agents, oxyanions, cement, and emplacement materials] are not included in this report, which provides information on waste streams only, but are collected for PA and will be reported in a separate report when requested by CBFO." EPA requests that DOE provide the date when such a report will be available.

DOE Response

A copy of the Performance Assessment Inventory Report - 2008 (Crawford et al. 2009) is included in Enclosure 2.

Reference

Crawford, B. A., Guerin, D., Lott, S. A., McInroy, B., McTaggart, J., Van Soest, G., 2009. *Performance Assessment Inventory Report - 2008.* INV-PA-08, Revision 0, LA-UR-09-02260. Carlsbad, NM: Los Alamos National Laboratory Carlsbad Operations.

EPA Comment
1-23-2 Chemistry Issues – Provide Four ACRSP References Used in SOTERM

DOE should provide the following references from Appendix SOTERM-2009:

1) *Borkowski, M., J.-F. Lucchini, M.K. Richmann, and D.T. Reed. 2008. Actinide (III) Solubility in WIPP Brine: Data Summary and Recommendations. LCO-ACP08, LANL\ACRSP Report. Los Alamos, NM: Los Alamos National Laboratory.*
2) *Lucchini, J.-F., H. Khaing, M. Borkowski, M.K. Richmann, and D.T. Reed. 2009. Actinide (VI) Solubility in Carbonate-free WIPP Brine: Data Summary and Recommendations. LCO-ACP-10, LANL\ACRSP Report. Los Alamos: Los Alamos National Laboratory.*
3) *Reed, D.T., J.-F. Lucchini, M. Borkowski, and M.K. Richmann. 2009. Pu(VI) Reduction by Iron under WIPP-Relevant Conditions: Data Summary and Recommendations. LCO-ACP-09, LANL\ACRSP Report. Los Alamos, NM: Los Alamos National Laboratory.*
4) *Richmann, M.K. 2008. Letter report to D. Reed (Subject: Eh/pH Diagrams for Am(III), Th(IV) and Np(V) Based on the FMT Database and Current PA Assumptions). 21 November 2008. Los Alamos National Laboratory, Carlsbad Operations, Carlsbad, NM.*

DOE Response

Documents 1 and 4 are included with this response in Enclosure 2. Documents 2 and 3 will be provided when available.

EPA Comment
1-C-7 Chemistry Issues – Completeness of Table SOTERM-1

Appendix SOTERM-2009, Table SOTERM-1, provides an incomplete list of the current chemistry model assumptions. Examples of important assumptions in the chemical conditions and dissolved actinide source term conceptual models that are not in Table SOTERM-1 include the oxidation-state analogy and the assumption of equilibrium for dissolution and precipitation of actinide-bearing solid phases, but not for redox reactions among the actinides. DOE should revise this table to include all of the chemistry-related conceptual model assumptions as summarized in Appendix A of SCA (2008).

DOE Response

The DOE does not agree with the EPA recommendation to modify Table SOTERM-1. The purpose of Table SOTERM-1 was to present a summary of the non-actinide chemistry assumptions that are discussed in more detail in Section 2 of SOTERM-2009. The DOE agrees with the actinide-specific assumptions noted by the EPA, but assumptions pertaining to the actinides are presented in Section 4, not Section 2 (note the discussion in Sections 4.1, 4.2 and Table SOTERM-16).

EPA Comment
1-C-10 Chemistry Issues – $Th(OH)_4$ (s) vs. $Th(OH)_4$ (aq)

In Appendix SOTERM-2009, Section 4.4, DOE states that the chemical potential (μ^o/RT) for Th(OH)4(s) was changed in the FMT database since the CRA-2004 PA. However, only the chemical potential for Th(OH)4(aq) changed between the CRA-2004 PA and the CRA-2004 PABC (Xiong et al. 2005). DOE should correct this statement.

DOE Response

The DOE agrees with this comment – this is a typographical error in the text. The text will be corrected to read $Th(OH)_4$ (aq). Note that this is correctly stated in Figure SOTERM-17 and Equation SOTERM. 48.

This has been added to the errata list for Appendix SOTERM-2009.

EPA Comment
1-C-11

In Appendix SOTERM-2009, Section 4.4, DOE should explain what is meant by their statement that, "The effects of hydromagnesite and calcite precipitation were added..." to the FMT database for the CRA-2004 PABC, because hydromagnesite and calcite thermodynamic data have been included in the database at least since the CCA PAVT. In addition, SOTERM-4.4 states that the version of the code used was FMT_050405.CHEMDAT, which is the database version, not the code. DOE should correct this misstatement.

DOE Response

The EPA is correct in their statement that hydromagnesite and calcite precipitation were included in the FMT calculations at least since the time of the CCA PAVT. The second bullet in SOTERM-2009, Section 4.4 should be replaced with, "The dimensionless standard chemical potential for whewellite ($CaC_2O_4 \cdot H_20$) was added to the database (Xiong 2004)."

The first sentence in SOTERM-2009, Section 4.4 should read, "The version of the database used with the FMT code for the CRA-2004 PABC was FMT_050405.CHEMDAT (Xiong 2005)."

These corrections have been added to the errata list for Appendix SOTERM-2009.

References

Xiong, Y.-L. 2004. "A Correction of the Molecular Weight of Oxalate in FMT_021120.CHEMDAT, and Incorporation of Calcium Oxalate Monohydrate (Whewellite) into CHEMDAT with Its Recommended Dimensionless Standard Chemical Potential Value." Unpublished memorandum to L.H. Brush, June 8, 2004. Carlsbad, NM: Sandia National Laboratories. ERMS 535813.

Xiong, Y-L. 2005. "Release of FMT_050405.CHEMDAT." E-mail to J.F. Kanney and J.J. Long, April 5, 2005. Carlsbad, NM: Sandia National Laboratories. ERMS 539304.

EPA Comment
1-C-17 Chemistry Issues – Proper Reference for Brush (2005) in Section 2.3.2

In Appendix SOTERM-2009, Section 2.3.2, Brush et al. (2006) is cited as part of the documentation for the CRA-2004 PABC, but this report was prepared after the CRA-2004 PABC. DOE should replace it with the correct reference (Brush 2005).

DOE Response

The DOE agrees with this comment. Brush 2005 is the correct reference. This has been added to the errata list for Appendix SOTERM-2009.

EPA Comment
2-33-1

Please provide the following reference, or indicate where the reference is located in the data sets provided:

> *B.L. Resources, Monthly Injection & Saltwater Report for Southeast New Mexico, May, 2007*

DOE Response

The requested reference is included in Enclosure 2.