



UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY

Washington, DC 20460

February 19, 2021

OFFICE OF
AIR AND
RADIATION

Mr. Mike Brown
Carlsbad Field Office
Department of Energy
PO Box 3090
Carlsbad, New Mexico 88221

Dear Mr. Brown:

This letter summarizes discussions regarding the Environmental Protection Agency's concerns regarding the Department of Energy's (DOE) initial actinide solubility calculations of the 2019 Waste Isolation Pilot Plant's (WIPP) Compliance Recertification Application (CRA-2019) performance assessment (PA). Specifically, with DOE's approach to establishing the initial actinide solubility of the WIPP, calculations predict a significant decrease in the WIPP repository water balance, where up to 83% of available brine is depleted from the system. The projected magnitude of brine depletion using the approach in CRA-2019 stands in sharp contradiction to the conceptual model and calculations from previous recertification applications, which projected brine depletion on the order of 11%. This brine depletion would invalidate many important conceptual model assumptions for the PA, especially those that make the magnesium oxide (MgO) engineered barrier effective in controlling CO₂ gas and limiting actinide solubility and releases. This water balance issue affecting actinide solubility stems from input parameters and geochemical modeling assumptions used for the CRA-2019 PA that do not appear to represent the data and observations of the WIPP system.

EPA initially raised concerns with water balance and MgO in the fifth set of CRA-2019 completeness comments to DOE, CC5-GEOCHEM-24, 25, and 26, dated September 11, 2020 (EPA-HQ-OAR-2019-0534). The completeness comments requested DOE to provide model calculations in its response. However, in DOE Response Round 8, dated January 1, 2021 (EPA-HQ-OAR-2019-0534), the Department declined to perform the calculations as they did not consider this a matter relevant to the CRA-2019 completeness process. After EPA reiterated the seriousness of the issue, DOE convened a teleconference with EPA on February 10, 2021 to discuss a path forward and agreed to carry out the requested calculations. Since the teleconference, EPA has received additional DOE correspondence outlining the details of the calculations DOE committed to perform. Based on this additional information, EPA anticipates that the new calculations should address the Agency's concerns on this topic. However, the Agency may have additional questions after DOE submits the new calculations.

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Agency staff appreciate the constructive dialogue of the geochemistry discussion and we look forward to further positive interactions with DOE. If you have any additional questions, please contact Jay Santillan at Santillan.Eugenio-Felipe@epa.gov and (202) 981-4142.

Sincerely,

Peake, Tom

Digitally signed by Peake,
Tom
Date: 2021.02.19 14:25:26
-05'00'

Tom Peake
Director
Center for Waste Management and Regulations
Radiation Protection Division

cc: Reinhard Knerr, DOE CBFO
Anderson Ward, DOE CBFO
Justin Marble, DOE HQ
Lee Veal, EPA HQ
WIPP Team
Raymond Lee, EPA HQ
Charles Starrs, EPA HQ
Paul Shoemaker, SNL Carlsbad

From: [Maestas, Ricardo, NMENV](#)
To: [Biswell, David, NMENV](#); [McLean, Megan, NMENV](#); [Barka, Natalie, NMENV](#)
Subject: FW: Letter on geochemistry
Date: Monday, February 22, 2021 7:53:43 AM
Attachments: [2021-02-19 Letter to DOE on Water Balance.pdf](#)

From: Peake, Tom <Peake.Tom@epa.gov>
Sent: Friday, February 19, 2021 2:08 PM
To: Mike Brown - DOE (mike.brown@cbfo.doe.gov) <mike.brown@cbfo.doe.gov>
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Subject: [EXT] Letter on geochemistry

Mike,

As we had stated a couple of weeks ago we were planning to send a letter on geochemistry issues. The attached letter identifies the issue and references the discussion we had on the topic. I want to say that we thought the recent geochemistry discussion was very positive and will get us to issue resolution. The summary you provided accurately captured expectations. Other recent interactions have been positive as well, and I look forward to having continued positive dialogue and general interactions. While there have been and will be some bumps in the road, I think the overall process works most efficiently when we (EPA, DOE and contractor staff) work constructively together as we have been recently.

Tom Peake
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mar