

2014 Compliance Recertification Application (CRA-2014)
Compliance Application Review Document (CARD for Section 194.46)
Removal of Waste

46.0 BACKGROUND

Assurance requirements were included in the disposal regulations to compensate in a qualitative manner for the inherent uncertainties in projecting the behavior of natural and engineered components of Waste Isolation Pilot Plant (WIPP) for many thousands of years (50 FR 38072). Section 194.46 is one of the six assurance requirements in the Compliance Criteria. The requirement for waste removal after closure originates in 40 CFR 191.46(f). The WIPP is a mined geologic repository and the requirement for removal of waste after closure can easily be met without any design change using the same mining technology.

46.1 REQUIREMENT (194.46)

“Any compliance application shall include documentation which demonstrates that removal of waste from the disposal system is feasible for a reasonable period of time after disposal. Such documentation shall include an analysis of the technological feasibility of mining the sealed disposal system, given technology levels at the time a compliance application is prepared.”

46.2 1998 CERTIFICATION DECISION

To meet the requirements for Section 194.46, U.S. Environmental Protection Agency (EPA or Agency) expected the Compliance Certification Application (CCA) to describe the strategy for removing the waste from the repository after disposal is complete. EPA’s Compliance Application Guidance (CAG, EPA 1996c) states that compliance with the Section 194.46 criteria is demonstrated by an analysis that includes: (1) procedures necessary for removal of waste after disposal is complete; (2) descriptions of current technology that could be used in implementing these procedures; and (3) an estimate of how long it will be technologically feasible to remove the waste.

In CCA Chapter 7 and Appendix WRAC of the CCA (DOE 1996), the U.S. Department of Energy (DOE or Department) presented a five-phase approach to accomplish the removal of waste. This approach was supported by a discussion of techniques that could be used to remove the waste, given repository conditions at the time of removal. EPA reviewed the material to assess the completeness of the strategy and the justification of the proposed technology for removing the waste.

DOE demonstrated that it is possible to remove waste from the repository for a reasonable period of time after disposal, therefore EPA found DOE in compliance with Section 194.46.

A complete description of EPA's 1998 Certification Decision for Section 194.46 can be obtained from EPA Air Docket, A-93-02, Items V-A-1 and V-B-2.

46.3 CHANGES IN THE 2004 COMPLIANCE RECERTIFICATION APPLICATION (CRA-2004)

DOE did not report any significant changes to the information on which EPA based the 1998 Certification Decision. There were no significant changes to Chapter 7 of the 2004 Compliance Recertification Application (p.7-89 to 7-91) and CCA Appendix WRAC (DOE 1996).

46.3.1 EVALUATION OF COMPLIANCE FOR 2004 RECERTIFICATION

Based on EPA's review of the activities and conditions in and around the WIPP site, EPA did not identify any significant changes in the planning and execution of the DOE's strategy for removal of waste since the 1998 Certification Decision. The 2004 CRA provided documentation that the removal of waste from the disposal system was feasible for a reasonable period of time after disposal. (See CRA-2004 Chapter 7.6.2)

EPA did not receive any public comments on DOE's continued compliance with the removal of waste requirements of Section 194.46.

46.3.2 2004 RECERTIFICATION DECISION

Based on a review and evaluation of the CRA-2004, Appendix WRAC (1998), and supplemental information provided by DOE (FDMS Docket ID No. EPA-HQ-OAR-2004-0025, Air Docket A-98-49), EPA determined that DOE continued to comply with the requirements of Section 194.46 for CRA-2004.

46.4 CHANGES IN THE 2009 COMPLIANCE RECERTIFICATION APPLICATION (CRA09)

Section 46 of the CRA-2009 does not contain any significant changes to the information presented the 2004 CRA. Specifically, there have been no changes in the basic design and or waste emplacement plan that would impact waste retrieval since the submittal of CRA-2004.

46.4.1 EPA'S EVALUATION OF COMPLIANCE FOR THE 2009 RECERTIFICATION

EPA verified that no significant change have been made in the planning or execution of the DOE's strategy for removal of waste since the EPA's 1998 CCA. In the interim since CRA-2004, an incident took place which demonstrated DOE's ability to retrieve waste if necessary. Although waste removal specifically refers to "actions taken after the repository is closed and sealed" (CCA Appendix WRAC, DOE 1996), EPA recognizes that the technical procedures for waste retrieval prior to panel closure will potentially be applicable to retrieval for some time after closure.

Due to a labeling error, a contact-handled 55-gallon drum BN10161094 from the Idaho National Laboratory (INL) Advanced Mixed Waste Treatment Project (AMWTP) was incorrectly loaded into a standard waste box (SWB) with three other drums, shipped to WIPP, and emplaced in the repository on June 27, 2007. The drum had not been characterized to WIPP waste characterization standards. After the error was discovered and studied, CBFO contended that the drum had been sufficiently characterized to generally know the contents, and that the waste as emplaced did not impact human health or the environment. EPA concurred with CBFO's determination that contents of the subject drum would not adversely affect repository performance assessment. The State of New Mexico, in a letter dated August 3, 2007 (NMED 2007), required DOE to retrieve the drum from the repository since it was a violation of DOE's WIPP hazardous waste permit.

CBFO prepared detailed work instructions for the retrieval process, which required the removal of 36 rows of disposed waste containers from the waste columns in Room 6, Panel 4. Procedures were developed, anticipating potential hazards associated with the retrieval process, notably those associated with moving the 4,200 lb MgO super sacks placed on top of each column of waste containers. Multiple executions of the retrieval process were planned, including the removal of a top waste container with MgO supersack intact, removal of the MgO supersack alone, or emptying the supersack if necessary. Facility airflow was configured specifically for the planned removal activities.

Each waste column was evaluated by a Waste Handling Engineer to determine the safest and most effective method of disassembly based on the ground conditions. Relocated waste containers were permanently re-emplaced in a safe and stable configuration in the exhaust drift portions of Rooms 5 and 4 of Panel 4. A log keeper annotated all movement of waste containers, and the WIPP Waste Information System (WWIS) was updated following each shift. The target standard waste box was removed from the waste column with the forklift and placed on a Facility Pallet on the Underground Waste Transporter for transport to the Waste Hoist Conveyance. The SWB was brought to the surface and moved into permitted space in the Waste Handling Bay, where it was prepared for shipping to the INL AMWTP. The removal process was conducted without incident. EPA considers this to be a successful test case of waste retrieval.

EPA did not receive any public comments on DOE's continued compliance with the removal of waste requirements of Section 194.46.

46.4.2 2009 RECERTIFICATION DECISION

Based on EPA's review of the activities and conditions in and around the WIPP site, EPA did not identify any significant changes in the planning and execution of the DOE's strategy for removal of waste since the 1998 Certification and 2004 Recertification Decisions. The CRA-2009 provides documentation (FDMS Docket ID No. EPA-HQ-OAR-2009-0330, Air Docket A-98-49 Item V-B2-2) that the removal of waste from the disposal system is feasible for a reasonable period of time after disposal (See DOE 2009 CRA Section 46). Furthermore, recovery of the SWB from Room 6 of Panel 4 demonstrated DOE's ability to retrieve waste from

the repository if necessary. EPA determines that DOE continues to comply with the requirements of Section 194.46.

46.5 CHANGES IN THE 2014 COMPLIANCE RECERTIFICATION APPLICATION (CRA14)

Section 46 of the CRA-2014 does not contain any significant changes to the information presented in the 2009 CRA. Specifically, there have been no changes in the basic design and/or waste emplacement plan that would impact waste retrieval since the submittal of CRA-2009.

46.5.1 EPA'S EVALUATION OF COMPLIANCE FOR THE 2014 RECERTIFICATION

EPA verified that no significant changes have been made in the planning or execution of the DOE's strategy for removal of waste since EPA's 1998 CCA decision. EPA also noted that CCA Appendix WRAC has not been updated since the CCA (EPA completeness comment 2-46-1). In particular, the Agency found discrepancies between what was used in the original removal plan documented in CCA Appendix WRAC, "Waste Removal after Closure", with the current 2014 repository design, waste characteristics, and container characteristics. EPA noted that the repository is no longer mined on one continuous level, waste containers have changed, waste characteristics have also changed, the panel closure system is different, RH shielded containers are now emplaced with CH waste, and the PA has changed. DOE responded to this comment in response letter six. DOE rewrote Appendix WRAC including these changes as well as updating other text and updated references to the 2014 CRA.

EPA did not receive any public comments on DOE's continued compliance with the removal of waste requirements of Section 194.46.

46.5.2 2014 RECERTIFICATION DECISION

Based on EPA's review of the activities and conditions in and around the WIPP site, EPA did not identify any significant changes in the planning and execution of the DOE's strategy for removal of waste since the 1998 Certification and previous Recertification Decisions. The CRA-2014 provides documentation (Docket ID No. EPA-HQ-OAR-2014-0609) that the removal of waste from the disposal system is feasible for a reasonable period of time after disposal (see 2014 CRA DOE Section 46). EPA determines that DOE continues to comply with the requirements of Section 194.46.