

## **WIPP Compliance Recertification Application 2019 (CRA-2019) – Big Changes Coming – 14148**

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### **ABSTRACT**

The Department of Energy/Carlsbad Field Office (DOE/CBFO) is responsible for managing activities related to the disposal of TRU and TRU-mixed waste in the geologic repository at the Waste Isolation Pilot Plant (WIPP), near Carlsbad, New Mexico. The WIPP Land Withdrawal Act (LWA) (Pub. L. 102-579, 106 stat. 4777, as amended by Pub. L. 104-201, 110 stat. 2422) required the U.S. Environmental Protection Agency (EPA) to certify WIPP's compliance with the disposal regulations of Title 40 CFR Part 191 Subparts B and C [1] prior to the commencement of disposal operations. To meet this requirement, DOE submitted the Compliance Certification Application (CCA) in October 1996 [2], demonstrating that the geological, hydrological, physical, chemical, and environmental characteristics of the site, along with engineered features of the facility, would safely contain radioactive waste for the 10,000-year regulatory time period. EPA certified DOE's compliance in May of 1998 [3] and waste disposal operations began on March 26, 1999.

The WIPP LWA also requires the DOE to submit documentation of WIPP's continued compliance with the disposal regulations to EPA not later than five years after initial waste receipt and every five years thereafter until decommissioning of the facility is completed. DOE will submit the third Compliance Recertification Application (CRA) to the EPA in March 2014<sup>1</sup>. This recertification is very similar in content and format with the CRA of 2009. The DOE plan is to submit a completely revised recertification document in 2019 in order to focus on new information since CRA-2014 and to streamline the EPA's review process. This paper discusses plans for preparation of CRA-2019, based upon EPA's final action with regard to CRA-2014.

### **INTRODUCTION**

In March of 2014, the DOE will submit the third CRA for WIPP to the EPA. Submission of a CRA is required by the WIPP LWA every five years on the anniversary of first waste receipt at the repository, through the decommissioning phase. EPA's recertification criteria, promulgated in 40 CFR 194 [4], specify how DOE will meet the radiation protection standards in 40 CFR 191 and what information is to be included in a certification and a recertification application. In particular, EPA expects a recertification application to contain new, WIPP-relevant information since the last CRA and an updated performance assessment calculation [5]; information already provided in previous CRAs can be summarized and referenced, but does not need to be repeated.

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<sup>1</sup> At the time this paper is being finalized, DOE has not yet submitted CRA-2014.

For the next recertification application, due in March of 2019, DOE plans to more closely follow this guidance in an attempt to further streamline and shorten the duration of the recertification process.

## **DISCUSSION**

The original CCA in October 1996 consisted of 9 Chapters, over 50 appendices and numerous reference documents, and demonstrated that WIPP will be able to isolate radioactive TRU waste from mankind and the environment for the 10,000-year regulatory period. In the 2004 recertification (CRA-2004), DOE kept the same general format and content as in the original CCA, keeping all 9 chapters and highlighting any changes since 1999 in blue bold text, combining some appendices, and referencing others. EPA used the information provided in these chapters and appendices to create the technical support documents (TSDs) and compliance application review documents (CARDs) that mirrored the requirements under each section of 40 CFR 194. It took EPA 24 months to recertify WIPP after submittal of CRA-2004.

For the 2009 CRA (CRA-2009), DOE, with EPA and stakeholder agreement, decided to prepare the CRA documentation in a form that more closely followed the criteria of 40 CFR 194 and the EPA CARDs. This approach is attractive because: (1) it responds directly to the regulatory guidance and criteria in each section of 40 CFR 194, (2) it provides relevant historical information for each section of 40 CFR 194, (3) it simplifies EPA's preparation of TSDs and CARDs, and (4) it thereby shortens the review and approval process. In fact, the EPA reviewed the 2009 CRA and recertified the WIPP in 19 months.

The 2014 CRA (CRA-2014) follows the same format and content as the CRA-2009. It consists of documentation based on each of the sections in EPA's 40 CFR Part 194, plus appendices providing technical information and recent data for actinide source term (SOTERM) and performance assessment (PA), among other topics. The CRA-2014 also includes a full PA to demonstrate that the performance of the repository meets the regulatory requirements for potential radionuclide releases. The content of each CRA section corresponding to a section in 40 CFR Part 194 includes a background section that describes the regulatory criteria to be met, a discussion on how DOE met the requirements in 1996, 2004, 2009 and 2014, and a synopsis of EPA's review and approval of the CCA and of the CRAs in 1998, 2004 and 2009. The left-hand column in Figure 1 illustrates a section outline for presentation of this information.

While this approach has been effective for CRA-2009 and CRA-2014, repetition of all the historical information from the previous compliance submissions (namely, the CCA, CRA-2004, CRA-2009, and CRA-2014) in the 2019 CRA (CRA-2019) and future CRAs is not practical and not necessary. The general requirement in 40 CFR 194 is for the DOE to identify changes since the last recertification [5]. In other words, EPA's approval of the previous recertification defines a new baseline, and EPA will focus on any new data and new models that have been developed or become available since the last recertification was approved. While historical information

provides a useful perspective, it is not a requirement for recertification and a long historical narrative may be a distraction from the new information that EPA must consider for recertification. DOE is therefore proposing to summarize the changes and information in previous recertifications and summarize the EPA's evaluation of compliance for the previous recertifications. This approach should provide a streamlined recertification document that will be focused on changes and new information since CRA-2014, thereby simplifying and expediting the regulator's review. Figure 1 compares a typical table of contents for a section on Monitoring using the existing format and the proposed format.

<b>Existing Format for 42.0 Monitoring (40 CFR § 194.42)</b>	<b>Proposed Format for 42.0 Monitoring (40 CFR § 194.42)</b>
42.1 Requirements 42.2 Background 42.3 1998 Certification Decision for the CCA 42.4 Changes or New Information Between The CCA and the CRA-2004 42.5 EPA's Evaluation of Compliance for the 2004 Recertification 42.6 Changes or New Information Between the CRA-2004 and the CRA-2009 42.7 EPA's Evaluation of Compliance for the 2009 Recertification 42.8 Changes or New Information Between the CRA-2009 and the CRA-2014 42.9 EPA's Evaluation of Compliance for the 2014 Recertification 42.10 Changes or New Information since the CRA-2014 42.11 References	42.1 Requirements 42.2 Background 42.3 Changes or New Information Between the CCA and the CRA-2014 42.4 EPA's Evaluation of Compliance Through The 2014 Recertification 42.5 Changes or New Information since the CRA-2014 42.6 References

**Figure 1. Comparison of Existing and Proposed Formats for a Section of the CRA-2019**

#### **A NEW FORMAT for CRA-2019**

The general framework for the CRA-2019 documentation will be similar to the previous CRAs in that it will follow the structure of the EPA CARDS. Each section will start with the regulatory requirement from 40 CFR 194, followed by a high-level synopsis of how DOE demonstrated that the WIPP met this requirement through 2014, and another synopsis discussing EPA's evaluation and agreement that WIPP met this specific requirement up through the last recertification (2014) (see Sections 42.3 and 42.4 in the right-hand side of Figure 1). After this a new section will be added that only discusses activities/changes that have taken place since the last recertification and the effects, if any, of this new information on overall repository performance (see Section 42.5 in the right-hand side of Figure 1). This approach is consistent with the requirement in 40 CFR Part 194 that DOE needs to document new information and changes since the previous CRA, and can summarize and/or reference historical information that has not changed. The appendices for actinide solubility and performance assessment, among others, will also be shortened by limiting the discussions to new information or changes since the last CRA, and by

referencing other documents or previous versions of the appendices for repetitive material that has not changed since the last recertification.

These plans will be further refined in the future and discussed with EPA and the stakeholders for agreement before preparation of the next recertification begins in 2018.

### **POSSIBLE DATA CHANGES FOR CRA-2019**

The WIPP's overall safety case is documented in the WIPP certification and recertification applications, peer review reports, technical reports, and the Resource Conservation and Recovery Act (RCRA) hazardous waste facility permit that DOE has with the New Mexico Environment Department (NMED). Each recertification provides documentation of routine and planned changes made in repository facility operations for technical or managerial reasons over the time period since the last recertification application; and serves to update and maintain the safety case for WIPP. These changes may be minor or major; but all are discussed and evaluated for the impact, if any, on the long-term containment capability of the repository. All major changes are captured in a planned change request (PCR) that is submitted to EPA for review and/or approval prior to the change being implemented. However, each PCR is also captured, at a high level, and discussed/evaluated in the recertification applications.

The 2019 WIPP recertification will focus on new information since CRA-2014. Between 2014 and 2019, plans are being made for some significant changes at WIPP. New information for CRA 2019 may include discussions on a revised colloid transport conceptual model, new information on microbial effects on the repository, and a performance assessment completed using three-dimensional models on a different computer hardware and software system. CRA 2019 also may discuss potential results from underground experiments at WIPP (currently the Salt Defense Disposal Investigations [SDDI]), along with the results from studies on alternative waste disposal concepts and methodologies yet to be defined.

Legislative changes, if any, could also have a large impact on WIPP's future mission. Depending on the timing of these changes, and any changes incurred strictly to improve operational efficiency, they will be thoroughly discussed in CRA 2019.

### **CONCLUSIONS**

Compliance recertification applications are required to be submitted to EPA every 5 years on the anniversary of the date that WIPP first started waste disposal operations. As time progresses, DOE continues to search for ways to streamline and shorten the recertification approval process. In 2019 DOE will, with EPA and stakeholder agreement, revise the CRA submittal documentation following EPA guidance and recommendation to focus on new information that is directly relevant to WIPP.

## REFERENCES

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2. US Department of Energy. 1996. Title 40 CFR Part 191 Compliance Certification Application for the Waste Isolation Pilot Plant, DOE/CAO-1996-2184, October 1996, Carlsbad Field Office, Carlsbad, NM.
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5. U.S. Environmental Protection Agency. 2000. *Guidance to the U.S. Department of Energy on Preparation for Recertification of the Waste Isolation Pilot Plant with 40 CFR Parts 191 and 194*. Office of Radiation and Indoor Air, Washington, D.D. December 2000.