

**THE FIRST RECERTIFICATION OF THE WASTE ISOLATION PILOT PLANT:
EPA'S PERSPECTIVE**

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ABSTRACT

The WIPP Land Withdrawal Act (LWA) mandates that the Department of Energy's (DOE's) Waste Isolation Pilot Plant (WIPP) demonstrate continued compliance with the Environmental Protection Agency's (EPA) radioactive waste disposal regulations every five years after the initial certification. This process, deemed recertification, must begin no later than five years after the first receipt of waste, which occurred in March 1999. EPA will evaluate documentation of continued compliance provided by DOE and determine whether or not to recertify the WIPP for the disposal of transuranic (TRU) waste.

EPA received DOE's Compliance Recertification Application (CRA) on March 26, 2004. The receipt of the application marked the beginning of the recertification process, which is expected to continue through the spring of 2005. EPA is currently conducting a comprehensive evaluation of the CRA for any changes in conditions and activities at the WIPP since the initial certification in 1998. EPA's determination will include a systematic review of materials relevant to the Compliance Criteria (40 CFR Part 194), including the evaluation of a new performance assessment that reflects any new or changed information.

This paper briefly discusses EPA's authority for recertification. It also explains EPA's approach to recertification, including the completeness determination, technical evaluation and stakeholder involvement.

INTRODUCTION – THE WIPP, PAST AND PRESENT

The Waste Isolation Pilot Plant (WIPP) was authorized in 1980, under section 213 of the DOE National Security and Military Applications of Nuclear Energy Authorization Act of 1980 [1], "for the express purpose of providing a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from the defense activities and programs of the United States." The WIPP is a disposal system for transuranic (TRU) radioactive waste. Developed by DOE, the WIPP is located near Carlsbad in southeastern New Mexico. TRU waste is emplaced 2,150 feet underground in an ancient layer of salt that will eventually move by "creep" closure and encapsulate the waste containers. The WIPP has a total capacity of 6.2 million cubic feet of TRU waste.

The 1992 WIPP Land Withdrawal Act [2] limits radioactive waste disposal in the WIPP to TRU radioactive wastes generated by defense-related activities. TRU waste is defined as waste

containing more than 100 nanocuries per gram of alpha-emitting radioactive isotopes, with half-lives greater than twenty years and atomic numbers greater than 92. The Act further stipulates that radioactive waste shall not be TRU waste if such waste also meets the definition of high-level radioactive waste, has been specifically exempted from regulation with the concurrence of the Administrator, or has been approved for an alternate method of disposal by the Nuclear Regulatory Commission. The TRU radioactive waste proposed for disposal in the WIPP consists of materials such as rags, equipment, tools, protective gear, and sludges that have become contaminated during atomic energy defense activities. The radioactive component of TRU waste consists of man-made elements created during the process of nuclear fission, chiefly isotopes of plutonium. The waste proposed for disposal at the WIPP derives from Federal facilities across the United States, including locations in Colorado, Idaho, New Mexico, Nevada, Ohio, South Carolina, Tennessee, and Washington.



Fig. 1. Overhead view of the WIPP facility in southeastern New Mexico.

CERTIFICATION AND RECERTIFICATION OF THE WIPP

The WIPP must meet EPA's generic disposal standards at 40 CFR Part 191, Subparts B and C [3], for high-level and TRU radioactive waste. These standards limit releases of radioactive materials from disposal systems for radioactive waste, and require implementation of measures to provide confidence for compliance with the radiation release limits. Additionally, the regulations limit radiation doses to members of the public, and protect ground water resources by establishing maximum concentrations for radionuclides in ground water. To determine whether the WIPP performs well enough to meet these disposal standards, EPA issued the WIPP Compliance Criteria, described at 40 CFR Part 194 [4], in 1997. The Compliance Criteria interpret and implement the disposal standards specifically for the WIPP site. They describe

what information DOE must provide and how EPA evaluates the WIPP's performance and provides ongoing independent oversight. Thus, EPA implemented its environmental radiation protection standards, 40 CFR Part 191, by applying the WIPP Compliance Criteria, 40 CFR Part 194, to the disposal of TRU radioactive waste at the WIPP.

Using the process outlined in the WIPP Compliance Criteria, EPA determined on May 18, 1998, that DOE had demonstrated that the WIPP complied with EPA's radioactive waste disposal regulations at Subparts B and C of 40 CFR Part 191. EPA's certification determination permitted the WIPP to begin accepting TRU waste for disposal, provided that other applicable conditions and environmental regulations were met.



Fig. 2. TRU waste (in TRU-PAC containers) being unloaded at the WIPP facility.

Since the 1998 certification decision, EPA has conducted ongoing independent technical review and inspections of all WIPP activities related to compliance with the EPA's disposal regulations. The initial certification decision identified the starting (baseline) conditions for the WIPP site and established the waste and facility characteristics necessary to ensure proper disposal in accordance with the regulations. At that time, EPA and DOE understood that future information and knowledge gained from the actual operations of the WIPP would result in changes to the best practices and procedures for the facility.

In recognition of this, section 8(f) of the amended WIPP LWA requires EPA to evaluate all changes in conditions or activities at the WIPP every five years to determine if the WIPP continues to comply with EPA's disposal regulations for the facility. This determination is not

subject to standard rulemaking procedures or judicial review, as stated in the aforementioned section of the WIPP LWA. The first recertification process – currently underway – will include a review of all of the changes made at the WIPP facility since the original 1998 EPA certification.

Recertification is not a reconsideration of the decision to open the WIPP, but a process to reaffirm that the WIPP meets all requirements of the disposal regulations. The recertification process will not be used to approve any new significant changes proposed by DOE; any such proposals will be addressed separately by EPA. Recertification will ensure that the WIPP is operated using the most accurate and up-to-date information available and provides documentation requiring DOE to operate to these standards.

EPA'S RECERTIFICATION PROCESS

Section 194.4, Conditions of Compliance Certification, requires DOE to report any planned or unplanned changes in activities or conditions pertaining to the disposal system that differ significantly from the most recent compliance application. Several changes to the activities and conditions at the WIPP have occurred since 1998. These changes were usually proposed by DOE or requested by EPA. These changes included: updates to the WIPP waste inventory, small changes to the repository configuration, modification to the performance assessment and changes to several documents. All of the changes were summarized in DOE's Annual Change Reports. In addition to monitoring and approving changes throughout each year, EPA also evaluated DOE's annual change reports. These change reports became the foundation for the CRA. EPA received DOE's Compliance Recertification Application (CRA) on March 26, 2004. On May 24, 2004, EPA announced the availability of the CRA and EPA's intent to evaluate compliance the disposal regulations and compliance criteria in the Federal Register. At that time, EPA also began accepting public comments on the CRA.

Since its receipt, the Agency has been reviewing DOE's recertification application to ensure that the WIPP will continue to safely contain TRU radioactive waste. If EPA approves the application, it will set the framework for how the WIPP will be operated by DOE over the next five years. This approved application will then serve as the baseline for the next recertification in 2009.

Completeness Determination

The first step in the recertification process is a "completeness" determination. EPA will make this determination as a preliminary step in its more extensive technical review of the application. This determination is solely an administrative measure and does not reflect any conclusion regarding the WIPP's continued compliance with the disposal regulations.

The completeness determination will be made using a number of the Agency's WIPP-specific guidance; most notably, the "Compliance Application Guidance" [5] and "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" [6]. Both guidance documents include guidelines regarding: (1) content of certification/recertification applications; (2) documentation and format requirements;

(3) time frame and evaluation process; and (4) change reporting and modification. The Agency developed these guidance documents to assist DOE with the preparation of any compliance application for the WIPP. They are also intended to assist in EPA's review of any application for completeness and to enhance the readability and accessibility of the application for EPA and public scrutiny. It is EPA's intent for these guidance documents to give DOE and the public a general understanding of the information that is expected to be included in a "complete" application of compliance. The EPA may request additional information as necessary from DOE to ensure the completeness of the CRA.

Since receipt of the application, EPA has been undergoing its completeness review. Subsequently, the Agency identified several areas of the CRA where additional information was necessary to perform a technical evaluation. EPA sent four letters to DOE requesting additional information. On May 20, 2004, EPA requested additional information on the performance assessment and monitoring. On July 12, 2004, EPA requested additional information on waste chemistry. On September 2, 2004, EPA requested additional references, clarification of issues related to chemistry and actinide solubilities, waste inventory, hydrology and documentation on computer codes and parameters. On December 17, 2004, EPA requested additional information on the Hanford tank wastes and Hanford K-Basin sludges that are included in the WIPP waste inventory. DOE submitted the requested information with letters dated July 15, August 16, September 7, September 29, October 20, November 1, December 23, 2004 and January 19, 2005. Currently, the Agency is still working with DOE to resolve a few remaining issues and hopes to issue a completeness determination in early Spring 2005.

Once the recertification application is deemed complete, EPA will provide DOE with written notification of its completeness determination and publish a Federal Register notice announcing this determination as well. All correspondence between EPA and DOE regarding the completeness of the CRA will be placed in our public docket.

Technical Evaluation

EPA's technical evaluation focuses on Subpart C, Compliance Certification and Recertification General Requirements, of the WIPP Compliance Criteria. Subpart C of 40 CFR Part 194 is divided into 4 main sections: General Requirements, Containment Requirements, Assurance Requirements, and Individual and Ground Water Protection Requirements. The General Requirements address issues such as inspections, quality assurance, waste characterization, WIPP site characterization, and models and computer codes. The Containment Requirements provide instructions for calculating the release limits and address the scope and results of the performance assessment. The Assurance Requirements are more qualitative measures to provide the confidence needed for long-term compliance with the Containment Requirements. The Assurance Requirements address issues such as passive institutional controls and monitoring. The Individual and Ground Water Protection Requirements provide the criteria that must be met to ensure that the WIPP will comply with applicable groundwater and individual protection requirements.



Fig. 3. MgO being emplaced on top of TRU waste at the WIPP in its underground panels.

For the 1998 certification decision, EPA performed a rigorous technical evaluation of DOE's Compliance Certification Application's (CCA) compliance with the WIPP Compliance Criteria (40 CFR Part 194) requirements. EPA's technical evaluation was documented in Compliance Application Review Documents (CARDs) and Technical Support Documents (TSDs) that were part of EPA's certification decision. For each of the WIPP Compliance Criteria, these documents explained EPA's criteria for determining DOE's compliance with the requirement, a review of DOE's approach to demonstrating compliance, a discussion of EPA's compliance review and the basis for EPA's compliance decision.

For the first WIPP recertification, EPA intends to conduct the technical evaluation with the same type of technical rigor that was applied for the original certification decision. EPA will provide similar background information to support EPA's recertification determination. For each technical requirement of the Compliance Criteria, the Recertification CARDs will summarize the 1998 Certification Compliance Decision, describe the changes in DOE's Compliance Recertification Application, discuss EPA's evaluation of compliance for recertification and the basis for the recertification decision. EPA's evaluation for recertification will describe how EPA examined changes in activities and conditions at the WIPP, describe any verification of changes that took place through inspections, and will discuss relevant public comments on specific the requirements, if any.

As previously mentioned, EPA's recertification evaluation will focus on areas of the application in which changes to the activities and conditions at the WIPP have occurred. For example, during recertification, EPA will be evaluating compliance with Section 194.8, "Approval Process

for Waste Shipment from Waste Generator Sites for Disposal at the WIPP,” for the first time since this criterion was established at the time of the 1998 certification decision. A significant portion of EPA’s recertification evaluation will be applied to a new performance assessment. The performance assessment must address any significant effects on performance from any new information and from changes that have taken place at the WIPP over the past five years.

EPA is required to complete its technical review and issue a recertification decision within six months of receipt of a “complete” application. DOE must demonstrate that it meets all aspects of the disposal regulations before EPA will recertify the WIPP facility. Once the Agency has concluded its technical review and has approved DOE’s recertification application, it will set the framework for how the WIPP will be operated by DOE over the following five years.

Stakeholder Involvement

Public interest in EPA’s regulation of the WIPP has decreased since the Agency’s initial certification decision, as judged from inquiries to the Agency, correspondence on these issues, and attendance at WIPP-related EPA meetings and events. However, several key stakeholders remain active in the process and EPA continues to be progressive in keeping the public informed and involved in our WIPP activities.

Unlike the 1998 certification decision, much of EPA’s subsequent regulation of the WIPP has taken place outside of a rulemaking process. This has allowed EPA to communicate more effectively with DOE and our stakeholders. The Agency has had more flexibility in receiving and responding to important stakeholder issues, and is able to freely interact with stakeholders in a way that public hearings could not accommodate.

EPA has endeavored to maintain stakeholder involvement through the use of a variety of communication technologies. EPA is committed to maintaining an up-to-date website, from which most of our documents can be accessed and downloaded. EPA also continues to provide a toll-free WIPP information line. In addition, the Agency is using an email list-serve mechanism to keep our stakeholders informed of our actions in a timelier manner.

According to the procedures established in the WIPP Compliance Criteria, Section 194.64, WIPP Recertification will not take place as a rulemaking. According to Section 194.64, EPA was required to announce the availability of the CRA in the Federal Register and to provide for at least 30 days of public comment on the recertification application.

Once EPA received the CRA on March 26, 2004, the Agency immediately posted the CRA on its website. The Federal Register Notice announcing the availability of the CRA and the opening of the public comment period was published on May 24, 2004. A public information schematic describing the steps EPA will take during recertification and what the public can do at each of these steps was also developed and posted on the WIPP webpage.

EPA is interested in comments from the public and stakeholders on issues that are relevant to our completeness and determination and to our technical evaluation. For this reason, the comment period on the CRA will be open until 45 days after EPA makes a completeness determination.

The Agency is most interested in public comment on any issues where changes have occurred that may potentially impact the WIPP's ability to remain in compliance with the requirements outlined in EPA's disposal regulations, as well as any areas where the public believes that changes have occurred and have not been identified by DOE.

Because recertification is not a rulemaking process, EPA is not required to hold public hearings with regard to recertification. In dialogues with our WIPP stakeholders we have been told that public hearings are not particularly beneficial to the public because the technical experts are not always involved and EPA is typically restrained by rulemaking procedures to provide effective interaction. For this reason, EPA sought to design a public forum in which a technical exchange could be more productive and satisfying for both EPA and the stakeholders.

To this end, EPA asked the stakeholders to assist in designing this forum. Over the course of several conference calls, the stakeholders provided input on the topics they would like to discuss and the forum for the discussions. During these discussions it became apparent that the stakeholders valued the opportunity to talk to both EPA and DOE technical staff on a one-on-one basis and to have an opportunity to discuss issues as a group.

The result was a total of five public meetings in Carlsbad, Santa Fe and Albuquerque, New Mexico at the end of July 2004. Each session began with a poster session in which both EPA and DOE staff were available to discuss five key areas of interest: performance assessment, waste inventory, human intrusion, ground water and recertification. The poster sessions were followed by facilitated dialogue sessions among DOE, EPA and the public.

Stakeholder feedback on these meetings was very positive. Stakeholders were very appreciative of being included in the design of the meetings and were satisfied that the topics of the most interest to them were the focus of the meetings. The stakeholders were particularly satisfied with the opportunity to interact with both EPA and DOE staff.

EPA intends to continue its efforts for public involvement in EPA's regulation of the WIPP. Near the time of the completeness determination, the Agency will again meet with the WIPP stakeholders to get their comments on the technical adequacy of the recertification application. The Agency will also continue to provide up-to-date information on any recertification issues through periodic e-mail and website updates.

CONCLUSION

After completing its technical review and considering all significant public comments, EPA will issue its final recertification decision in the Federal Register and send out announcements through its WIPP e-mail listserv, web page, and toll-free information line. The approved application will then establish a new baseline from which EPA will measure any future changes to activities and conditions at the WIPP.

REFERENCES

1. “The National Security and Military Applications of Nuclear Energy Authorization Act”, PUB. L. 96-164, 93 STAT. 1259, 1265, U.S. Department of Energy (1980).
2. “The Waste Isolation Pilot Plant Land Withdrawal Act”, PUB. L. 102-579, U.S. Environmental Protection Agency (1992).
3. “Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level, and Transuranic Radioactive Wastes; Final Rule”, 40 CFR Part 191, 58 FR 66398-66416, U.S. Environmental Protection Agency (1993).
4. “Criteria for the Certification and Recertification of the Waste Isolation Pilot Plant’s Compliance with the Disposal Regulations: Certification Decision; Final Rule”, 40 CFR Part 194, 63 FR 27354-27406, U.S. Environmental Protection Agency (1998).
5. “Compliance Application Guidance”, EPA Pub. 402-R-95-014, U.S. Environmental Protection Agency (1996).
6. “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”, Docket A-98-49, Item II-B3-14, U.S. Environmental Protection Agency (2000).