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Implementation of the Waste Isolation Pilot Plant Land Withdrawal Act

FY 2004 Report to Congress

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I. EXECUTIVE SUMMARY

On May 13, 1998, the U.S. Environmental Protection Agency (EPA) certified that the Waste Isolation Pilot Plant (WIPP) can safely contain transuranic (TRU) radioactive waste and complies with EPA's radioactive waste disposal standards. On March 26, 1999, the WIPP facility began receiving radioactive waste. WIPP is the nation's first geologic facility designed for permanent disposal of TRU radioactive waste that was generated as a result of U.S. defense-related activities.

EPA has an ongoing oversight role at the WIPP. We independently verify that the Department of Energy (DOE) maintains and operates the facility in a safe manner, and that the facility continues to comply with our radioactive waste disposal standards. EPA's main oversight activities include:

- Recertifying the safety of the WIPP;
- Conducting audits and inspections; and
- Evaluating changes in activities and conditions at WIPP.

On March 26, 2004, EPA received DOE's first Compliance Recertification Application (CRA). A *Federal Register* notice announcing the receipt of the CRA and opening the public comment period was published on May 24, 2004. The entire CRA as well as all supporting documentation and correspondence between EPA and DOE are posted on the EPA website. During 2004, EPA began reviewing the application for completeness and considering public comment on the CRA.

EPA continues to audit, inspect and approve DOE's waste characterization and quality assurance programs. As of the end of fiscal year 2004, EPA has approved the following TRU waste sites: (1) Hanford Site in Washington, (2) Idaho National Engineering and Environmental Laboratory (INEEL), (3) Los Alamos National Laboratory (LANL), (4) Rocky Flats Environmental Technology Site (RFETS) in Colorado, and (5) Savannah River Site (SRS) in South Carolina. In addition, the Nevada Test Site (NTS), Lawrence Livermore National Laboratory (LLNL), Argonne National Laboratory-East (ANL-E) in Illinois, LANL, and SRS were approved to dispose of waste characterized by the Central Characterization Project (CCP) at WIPP.

Highlights from EPA's WIPP program for Fiscal Year (FY) 2004 include:

- EPA conducted fourteen audits of WIPP Quality Assurance organizations and determined that they had been properly established or maintained.
- EPA conducted eleven inspections of waste characterization activities at DOE waste generator sites. The inspections were conducted to ensure continued compliance with EPA regulations at approved sites and to approve new waste characterization programs and activities.
- In January 2004, EPA approved DOE's general framework for the characterization of remote-handled (RH) TRU waste. DOE must still develop site-specific procedures that

implement the general framework for RH and obtain EPA approval of RH WC activities prior to disposal at WIPP.

- In 2004, EPA inspected the WIPP site and verified compliance with the monitoring and waste emplacement requirements of the certification, and with Subpart A requirements of 40 CFR Part 191.
- In March 2004, EPA approved DOE's request to dispose of compressed waste (or super-compacted) from the INEEL at WIPP. EPA's approval of DOE's concept addressed the impact of compressed waste on the performance of the repository. Prior to the actual disposal of compressed waste, DOE must still demonstrate the ability to adequately characterize compressed waste.
- Finalized changes to 40 CFR 194 to increase EPA's efficiency with inspection priorities, scheduling and resources and to enhance the public participation process by allowing public comment on EPA's proposed approval of waste characterization programs in Santa Fe, New Mexico to discuss the components of DOE's Compliance Recertification Application and our recertification process.
- Completed evaluation of DOE's FY 2004 Annual Change Report and notified DOE that the changes to the WIPP program were not significant and did not require a modification, suspension, or revocation of the WIPP Certification Decision.
- In FY 2004, EPA funded 10 in-house staff positions at EPA Headquarters and EPA's Region 6 office in Dallas, TX and obligated contract dollars in the amount of approximately \$850,000 to fulfill our responsibilities under the WIPP LWA.

II. INTRODUCTION

With this report the U.S. Environmental Protection Agency (EPA, Agency or we) complies with the requirement in Section 23(a)(2) of the Waste Isolation Pilot Plant Land Withdrawal Act, Pub. L. No. 102-579 (Act or LWA), which requires EPA to submit an annual report to the Congress "on the status of, and resources required for the fulfillment of the Administrator's responsibilities under this Act."

The Act, as amended in 1996, gives EPA the authority to oversee many of the Department of Energy's (DOE) activities at Waste Isolation Pilot Plant (WIPP) throughout the facility's operational and decommissioning phases. The WIPP, located in southeastern New Mexico, is operated by DOE as a long-term geologic disposal facility for transuranic (TRU) radioactive waste. TRU waste is long-lived radioactive waste generated as by-products from nuclear weapons production and decommissioning.

The Act requires EPA to take the following regulatory actions:

- Issue Radioactive Waste Disposal Standards
Develop environmental radiation protection standards for the disposal of spent nuclear fuel, high-level waste and TRU radioactive waste, which will apply to all potential disposal sites except the site identified by Section 113(a) of the Nuclear Waste Policy Act, as amended (completed 09/19/1985, 40 CFR Part 191).
- Develop Compliance Criteria
Establish criteria to determine whether the WIPP will comply with the Agency's radioactive waste disposal regulations (completed 02/01/1986, 40 CFR Part 194).
- Conduct a Compliance Certification
Certify by rulemaking whether or not the WIPP complies with the Agency's radioactive waste disposal regulations (completed 05/18/1998, 63 FR 27354).
- Recertify Periodically
Determine every five years whether or not the WIPP facility continues to be in compliance with the Agency's radioactive waste disposal regulations (recertification process began in March 2004).

In addition to these regulatory actions, EPA must determine whether documentation submitted by DOE pursuant to Section 9(a)(2) of the Act demonstrates continued compliance with environmental laws, regulations, and permit requirements as described in Section 9(a)(1) of the Act.

This report summarizes EPA's activities during FY 2004 (October 1, 2003 - September 30, 2004) to fulfill its responsibilities under the WIPP LWA and to provide independent regulatory oversight of the disposal of radioactive waste at WIPP. Beginning in 1992 with the passage of the WIPP LWA, EPA has submitted such reports to Congress each year. For a

description of EPA's WIPP activities and accomplishments prior to FY 2004, please refer to these previous reports.

III. EPA'S WIPP REGULATORY AND OVERSIGHT ACTIVITIES

A. Management

The Office of Radiation and Indoor Air (ORIA), located in the Office of Air and Radiation (OAR), is charged with the primary responsibility for implementing the Act and ensuring that EPA's oversight responsibilities are performed in a timely and scientifically-credible manner. Other EPA offices with significant roles are the Office of General Counsel (OGC) and EPA Region 6. Region 6, together with the State of New Mexico, regulates the WIPP's compliance with the Resource Conservation and Recovery Act (RCRA). Region 6 also oversees DOE's demonstration of compliance with all other applicable Federal environmental laws.

Within ORIA, the Center for Federal Regulations in the Radiation Protection Division (RPD) executes most of EPA's responsibilities under the Act. RPD's Outreach Team leads EPA's WIPP public outreach efforts. Staff-level implementation of the Act is coordinated through an intra-agency work group established by RPD.

B. Resources

The Act authorized DOE to transfer funds appropriated for environmental restoration and waste management to the EPA through the year 2001 for fulfilling the responsibilities of the Administrator under the Act. Since 2001, DOE, although not required, has transferred multi-year funds to EPA through interagency agreements (IAG) to support our oversight of the WIPP. In FY 2004, under the current IAG, DOE provided funds to support EPA's continuing regulatory oversight of the WIPP, including recertification, conducting quality assurance (QA) and waste characterization (WC) inspections and attending various WIPP-related technical meetings. The resources required to fulfill EPA's responsibilities under the Act are highly dependent on DOE's schedule and can fluctuate greatly from year to year because of the number of sites requiring inspection each year, proposed DOE changes to WIPP, and the required recertification every five years.

C. Continuing Compliance

In 1998, EPA certified that the WIPP will comply with 40 CFR Part 191 and 40 CFR Part 194, thus allowing the opening and operation of the WIPP. EPA continues to monitor the WIPP's compliance with EPA's radioactive waste disposal standards. This oversight includes conducting audits and site inspections, reviewing annual change reports, and determining every five years if the WIPP should be recertified.

Recertification

In FY 2004, EPA began preparations to conduct the first "recertification" of the WIPP to determine the WIPP's continued compliance with the disposal regulations. Under the WIPP LWA, DOE must submit documentation of continued compliance no later than March 2004, five

years after initial receipt of waste at the WIPP. On March 26, 2004, DOE submitted the Compliance Recertification Application (CRA). EPA began its review of the CRA by assessing the completeness of the application. In FY 2004 EPA sent three letters to DOE requesting additional information for the CRA.

EPA's requests for additional information and DOE reports are available in EPA's dockets, and a public comment period will be opened on this material until the CRA is deemed complete by EPA. The Agency will conduct the recertification evaluation based on the results of our continuous oversight of the WIPP, on complete documentation provided by DOE, and on public input. The Agency's decision on recertification will be announced in the *Federal Register*. EPA must issue its decision on recertification no more than six months after the Agency determines that DOE's recertification application is complete. EPA will conduct recertifications every five years until the end of the decommissioning phase.

Quality Assurance Audits

EPA requires DOE (40 CFR Part 194.22) to establish and implement a QA program for all items and activities that are important to the containment of TRU waste in the disposal system. DOE's QA program must implement the applicable requirements of specific Nuclear Quality Assurance (NQA) standards issued by the American Society of Mechanical Engineers (ASME). QA is a process for DOE to independently verify the reliability of items and activities, such as technical data and analyses that are important to the long-term containment of TRU waste.

The Agency verified that DOE established these QA requirements in the Quality Assurance Program Document (QAPD) included in the Compliance Certification Application for the WIPP. The QAPD is the documented QA plan for the WIPP project, as a whole, to comply with the NQA requirements. The QAPD is maintained by the QA organization of DOE's Carlsbad Field Office (CBFO), which has the authority to audit all other organizations associated with TRU waste disposal at the WIPP to ensure that their lower-tier quality assurance programs establish and implement the applicable requirements of the QAPD. The other DOE organizations such as the generator sites, which characterize waste for disposal in the WIPP, must have site-specific QA plans.

Once EPA has approved the QA program of a particular site, the Agency audits it on an annual basis to verify that the program is properly maintained. In 2004, EPA completed QA audits at the five major waste generator sites that are approved to ship waste to the WIPP and found that all five were properly maintaining their QA programs for WC.

Site Inspections

There are approximately 20 major sites across the country that store TRU waste. CBFO determines which sites are eligible to ship waste to the WIPP and audits them for compliance with DOE requirements. As CBFO certifies each site, EPA inspects the site to determine whether it also meets EPA's certification requirements.

During FY 2004, EPA approved four waste characterization programs as follows: (1) solid waste from the Idaho National Engineering and Environmental Laboratory's (INEEL) Advanced Mixed Waste Treatment Project (AMWTP), (2) debris waste from the Lawrence Livermore National Laboratory's (LLNL) Central Characterization Project (CCP), (3) debris waste from the Los Alamos National Laboratories (LANL) CCP, and (4) soils from the Rocky Flats Environmental Technology Site (RFETS). DOE's CCP augments the sites' ability to characterize certain waste in an expeditious manner. In FY 2004, EPA also inspected four sites for continued compliance with their previously approved WC programs and waste streams approved for WIPP disposal: (1) AMWTP, (2) Hanford, (3) RFETS, and (3) SRS CCP. In addition, EPA inspected the TRU waste tracking system maintained at DOE's CBFO to track waste containers and their contents from generator sites to WIPP for placement in the repository.

In January 2004, EPA approved DOE's general framework for the characterization of remote-handled (RH) TRU waste. DOE must still develop site-specific procedures that implement the general framework for RH and obtain EPA approval of RH WC activities prior to disposal at WIPP.

In FY 2004, DOE stopped shipment of waste on three occasions: once each from LANL, Hanford and INEEL. First, when DOE found that LANL had been characterizing debris waste using radioassay equipment with calibration errors. DOE withdrew LANL's site certification and consulted EPA during its development of corrective measures. EPA evaluated information pertinent to the affected waste containers and equipment and concluded that these waste containers are adequately characterized. Second, when DOE found that EPA had not approved Hanford's solid waste from the Plutonium Finishing Plant (PFP), and CBFO had erroneously certified its disposal at WIPP. In the third instance, DOE found that some transuranic waste from INEEL had been shipped to WIPP and had not been included in INEEL's statistical sampling population. This resulted in one shipment being stopped enroute and returned to INEEL and stoppage of all shipments from INEEL until a review was conducted and correction actions were put in place. In all instances, EPA allowed the waste to remain underground because it was not thought to be an additional risk to human health and the environment. DOE has taken action to avoid similar occurrences in the future.

On July 16, 2004, EPA finalized 40 CFR 194 requirements for site inspection and approval process. Under the new rule, EPA must conduct baseline inspections at DOE's TRU waste generator/storage sites. As part of the baseline inspections, EPA must assign a tier to each component of the TRU waste characterization processes at the site. EPA can assign Tier 1 (requires reporting by a site of the proposed changes) or Tier 2 (requires reporting of changes to EPA but allows implementation of changes without prior EPA approval). The new rule also requires EPA to seek public comment on EPA's pending approval and docket site inspection report and DOE-provided documents. EPA can issue site approval only after consideration of public comment. EPA's waste characterization inspections performed in FY 2004 were subject to the site inspection and approval process promulgated in 1998. These changes provide equivalent or improved oversight and better prioritization of technical issues in EPA inspections to evaluate WC activities at DOE's WIPP waste generator sites; and offer more direct public input into EPA's decisions regarding which waste can be disposed of at WIPP.

In FY 2005, the Agency will conduct site inspections and waste characterization program approvals in accordance with the new rule. In addition, EPA will continue to conduct annual inspections of the WIPP site to ensure waste monitoring and emplacement activities are in compliance with the certification, as well as with 40 CFR Part 191, *Subpart A requirements*, dealing with waste storage and management.

Approval of INEEL Compressed Waste

In December 2003, DOE submitted a request to dispose of INEEL waste that will be compressed or supercompacted. DOE plans to supercompact 55-gallon drums of waste into “pucks”, and place three to five pucks in a 100-gallon overpack drum that will be shipped to WIPP. In addition to having different structural characteristics than typical WIPP waste, the INEEL supercompacted waste will have higher than average amounts of cellulosic, plastic and rubber (CPR) material. Because of these differences, EPA undertook a thorough review at DOE’s request. Based on the additional analysis, EPA concluded that the supercompacted waste from INEEL fits within the anticipated WIPP waste envelope and the waste characteristics are encompassed in the current performance assessment. EPA is requiring DOE to place additional magnesium oxide with the compacted waste to maintain the current safety factor.

Change Reports

EPA requires at 40 CFR Part 194.4(b)(4) that DOE report any planned or unplanned changes in activities or conditions on which EPA’s Compliance Certification decision was based. EPA provided DOE with reporting guidance on September 30, 1998 and placed it in EPA’s public docket. EPA reviews information about the changes and determines whether the initial certification should be modified, suspended, or revoked. Often, DOE makes changes to their activities to make improvements or increase efficiency, and in many cases, these changes are insignificant. The Agency may ask for public comment to assist in its review. Records of changes to WIPP that EPA has reviewed since 1998 have been placed in the public docket.

DOE submitted its 2003 report to EPA on November 13, 2003. EPA reviewed this report and requested additional information. EPA notified DOE on August 10, 2004, that the changes did not require a modification, suspension, or revocation of EPA’s certification decision. Most of the changes described in the report were associated with modifications to written plans and procedures, required monitoring activities, and upcoming changes that DOE was considering. We also approved a change in the reporting dates. Future annual change reports will cover changes from July 1 through June 30 to allow for additional time to compile the report and for the inclusion of more detailed information and analyses.

D. Alternative Provisions in the WIPP Compliance Criteria

Since EPA's initial certification in 1998, EPA has conducted dozens of independent technical reviews, inspections of the WIPP facility, and inspections of the DOE's TRU waste generator sites around the United States to verify compliance with our WIPP disposal regulations. Based on this experience, EPA determined that certain sections in the Compliance Criteria related to inspections of TRU waste generator sites needed to be revised. The Agency's goal was to apply experience regulating the waste generator sites to improve the Compliance Criteria, maintaining equivalent regulatory controls, and focusing resources where they may be most effective.

Following the process established in 40 CFR Part 194.6, EPA finalized the following alternative provisions in the *Federal Register* on July 16, 2004:

- change the WC program approval procedures to increase EPA's efficiency with inspection priorities, scheduling and resources;
- enhance the public participation process by allowing public comment on EPA's proposed approval of WC programs;
- add a streamlined process to allow the Administrator to make minor revisions to the Compliance Criteria in a timely fashion;
- allow DOE to submit compliance applications and reference materials in alternative (non-paper) format; and
- make other minor changes to the criteria for consistency with the changes listed above.

E. 40 CFR Part 191, Subpart A: Standards for the Management and Storage of Spent Nuclear Fuel, High-Level and Transuranic Waste

Subpart A of 40 CFR Part 191 contains EPA's environmental standards for the management and storage of spent fuel, high-level and TRU waste at disposal facilities operated by DOE. For the WIPP, these standards apply to activities during the operational period of the facility, including when waste arrives at the above-ground portion of the WIPP, is unloaded and prepared for emplacement in the underground repository, and is lowered down the shaft and emplaced in the underground disposal rooms.

To implement Subpart A, EPA and DOE are following EPA's WIPP Subpart A guidance, issued in January 1997, which interprets the standard specifically for the WIPP. (See 62 FR 9188.) As recommended by this guidance document, DOE notified EPA when initial startup of the WIPP was expected. In March 1999, prior to start-up occurring, EPA performed an on-site inspection of the WIPP to verify DOE's start-up readiness and its ability to capture, measure, and calculate any potential releases during

waste disposal operations. EPA inspections found that the WIPP was ready to receive waste and that DOE was able to monitor compliance with Subpart A. Thereafter, EPA has performed Subpart A inspections on an annual basis.

In June 2004, EPA performed a Subpart A inspection to verify DOE's continued compliance with the Subpart A requirements. The inspectors found that DOE, through its contractor Washington TRU Solutions, had an effective radiation sampling program, calculated doses estimates adequately, and that the procedures and documentation were technically adequate.

In the future, DOE will continue to monitor the WIPP facility to detect any potential releases of radioactive materials. If any releases occur and cause radiation doses exceeding the Subpart A limits, then DOE will implement a "remedial plan" and submit monthly reports to EPA. Otherwise, DOE will report on compliance with Subpart A as part of the Biennial Environmental Compliance Report (BECR).

F. Compliance with the Resource Conservation and Recovery Act

Substantial portions of the wastes proposed for disposal at the WIPP are mixed waste, which contain both hazardous waste subject to the RCRA and radioactive waste subject to the Atomic Energy Act (AEA). WIPP, therefore, must also comply with regulations developed under RCRA. This section describes EPA's implementation of RCRA requirements.

EPA authorized the State of New Mexico to carry out the State's base RCRA program and the State's mixed waste program in lieu of the respective Federal programs. Therefore, the State issued and implements the RCRA permit for the WIPP. EPA's Region 6 office provides oversight and technical assistance to the State in implementing this permit.

Under the permit, the State of New Mexico audits the DOE inspections of the generator sites contributing waste to the WIPP. The State approves each site that demonstrates adequate compliance with the requirements in the permit and monitors DOE's audit program and documentation.

G. Compliance With Other Federal Environmental Laws

The LWA requires DOE to submit documentation to EPA – and, where applicable, the State of New Mexico – every two years to demonstrate the WIPP's compliance with all applicable Federal environmental laws, regulations, and permit requirements, including: the radioactive waste management and storage regulations (40 CFR Part 191, Subpart A); the Clean Air Act; the Toxic Substances Control Act; the Comprehensive Environmental Response, Compensation, and Liability Act; the Solid Waste Disposal Act; and the Safe Drinking Water Act. This documentation must be submitted throughout the disposal and decommissioning phases of the WIPP. DOE provides this information to EPA in its "Biennial Environmental Compliance Report

(BECR).” EPA (and, where applicable, the State of New Mexico) must make a determination of compliance with these statutes, regulations, and permit requirements within six months of receiving DOE’s BECR. If EPA determines that the WIPP does not comply with any applicable Federal law, regulation or permit requirement, the Agency will require DOE to develop a remedial plan within six months of this determination.

DOE submitted the BECR for 2002-2004 to EPA on October 31, 2004. EPA determined that based on the report, WIPP remains in compliance with all applicable Federal environmental laws, regulations, and permit requirements. EPA expects DOE to submit the BECR for the 2004-2006 period in October 2006.

IV. COMMUNICATION AND CONSULTATION ACTIVITIES

EPA continues to inform interested parties about its WIPP oversight functions and encourage public participation in the Agency's oversight role and activities.

In July 2004, EPA sponsored public meetings in Carlsbad, Santa Fe and Albuquerque, New Mexico, to provide information about the recertification review process and timeline, and the content of DOE's compliance recertification application. The meetings offered presentations and poster sessions, and facilitated discussions on topics related to WIPP recertification. At the request of the stakeholders, DOE fully participated in these meetings. Meeting participants were invited to provide comments to EPA for our consideration during review of DOE's WIPP application. Public participants commented that the meeting development process, format and execution were a good model for public involvement.

EPA's toll-free WIPP Information Line (1-800-331-WIPP) provides up-to-date, recorded information about public hearings and meetings, publications, and other WIPP activities. Callers listen to recorded messages, add their name to the WIPP mailing list, request a WIPP publication, or leave a question for EPA staff.

In an ongoing effort to keep the public well-informed, EPA regularly places all pertinent information about the WIPP in the official docket at EPA Headquarters in Washington, DC and informational dockets located in Carlsbad, Albuquerque, and Santa Fe, New Mexico. Updated information can also be found at EPA's WIPP Web Site at: www.epa.gov/radiation/wipp which also has information on joining the WIPP email news service. EPA published Fact Sheets on the Agency's continuing regulation of the WIPP, and a periodic newsletter, the *EPA WIPP Bulletin*, which informs the public about EPA's continuing role and activities. We maintain a WIPP mailing list, which currently has over 2000 subscribers.