



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

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OFFICE OF  
AIR AND RADIATION

Mr. Edward Ziemianski  
Acting Manager, Carlsbad Field Office  
U.S. Department of Energy  
P.O. Box 3090  
Carlsbad, NM 88221



Dear Mr. Ziemianski:

This letter announces the U.S. Environmental Protection Agency's (EPA's) proposed decision to approve the Department of Energy's (DOE's) planned change request (PCR) to emplace a portion of the remote-handled (RH) transuranic (TRU) waste inventory in specially designed shielded containers at the Waste Isolation Pilot Plant (WIPP). With this request, DOE plans to place RH TRU waste in these containers on the floor of the disposal rooms, rather than emplacing it in boreholes in the facility walls. DOE submitted this request in order to enhance the efficiency of facility operations; once eligible waste is properly loaded into the shielded container assembly, it may be treated as contact-handled (CH) waste for the purposes of facility operations. DOE plans, however, to maintain the RH designation for the waste.

In its December 7, 2007 letter (Docket A-98-49, II-B3-106), EPA requested DOE to undergo a safety analysis, acquire approval from the Nuclear Regulatory Agency, and obtain certification from the Department of Transportation regarding shielded containers. At this time, the Agency finds that DOE has fulfilled all of these documentation requirements. Additionally, EPA finds that the results of performance assessment show that the use of shielded containers does not significantly affect facility compliance with 40 CFR 194. The results of the Agency's review are included in an attachment to this letter.

With this letter, EPA is opening an informal 60-day public comment period, which the Agency committed to provide to stakeholders in its December 11, 2008 letter (A-98-49, II-B3-115) to DOE. Following the receipt and resolution of public comments, EPA proposes to allow the emplacement of shielded container assemblies at WIPP, on the condition that, prior to shipping the shielded containers to WIPP, DOE implements a consistent complex-wide procedure to ensure that the shielded containers remain below the Land Withdrawal Act 200 millirem per hour dose limit for contact-handled waste. We understand that DOE will separately need a hazardous waste permit modification from the New Mexico Environment Department. This proposed approval is independent of that permit modification.



If you have any questions, please contact Jonathan Walsh at 202-343-9238 or [walsh.jonathan@epa.gov](mailto:walsh.jonathan@epa.gov).

Sincerely,



for Jonathan Edwards, Director  
Radiation Protection Division

cc: Electronic distribution

Frank Marcinowski, DOE HQ  
Christine Gelles, DOE HQ  
Alton Harris, DOE HQ  
Russ Patterson, DOE CBFO  
George Basabilvazo, DOE CBFO  
Steve Zappe, NMED  
Nick Stone, EPA Region 6

## Attachment

### Background

The WIPP Land Withdrawal Act (LWA) of 1992 (PL 102-579) defines remote-handled transuranic (RH TRU) waste as TRU waste with a surface dose rate of 200 millirem (mrem)/hr or greater, and contact-handled transuranic waste (CH TRU) waste as TRU waste with a surface dose rate not greater than 200 mrem/hr. RH waste is currently shipped to WIPP in an unshielded steel canister, which holds three 55-gallon drums of waste. The canister is handled and moved using specialized apparatus, and is emplaced in boreholes drilled horizontally into the walls of the waste disposal rooms; a concrete borehole plug shields facility workers from radiation from the canister after it is placed in the wall.

The shielded container has the approximate external dimensions of a 55-gallon drum. The sides of the container consist of an inch-thick layer of lead shielding between inner and outer layers of carbon steel, and the top and bottom of the container consist of three-inch thick carbon steel. The container holds a 30-gallon waste drum. Many RH waste streams, if loaded in shielded container assemblies, would have a container surface dose rate below 200 millirem per hour and could be handled using the same equipment and techniques as CH waste. DOE has stated that use of shielded containers will “increase the efficiency of utilization of the WIPP facility by easing the restrictions on waste handling needed during emplacement of RH waste canisters in the walls of the rooms” (Moody 2007). According to DOE, WIPP is currently limited to a maximum of six RH shipments per week due to logistical constraints, whereas CH waste handling processes allow four to five shipments to be received, unloaded and emplaced daily. In addition to minimizing the disruptions from in-the-wall emplacement of RH TRU waste canisters, the use of shielded containers would conserve borehole space for higher-activity waste streams by providing additional emplacement locations for some RH TRU waste.

Though some fraction of the RH TRU waste would be handled as though it were CH, DOE will still track the waste as remote-handled. DOE will continue to consider the shielded container waste in the calculation of the total amount of RH TRU waste disposed of at WIPP, which will remain below the 250,000 ft<sup>3</sup> (7,079 m<sup>3</sup>) specified in the Agreement for Consultation and Cooperation between DOE and the State of New Mexico (Moody 2007, DOE 1981), and below the 5.1 million Curies specified by the WIPP LWA, regardless of how the waste is handled and emplaced.

### Timeline

On November 15, 2007 (Docket A-98-49, II-B2-68), DOE submitted the shielded containers PCR to EPA for approval. Also in November, 2007, a stakeholder meeting was held in Albuquerque, NM, and a 60-day informal comment period was opened. In response to the PCR and public input, EPA advised DOE of three requirements that needed to be satisfied before the Agency would consider approval: 1) NRC would need to

approve the shipping container design, 2) the shipping container design would need to be approved by the Department of Transportation (DOT), and 3) DOE would conduct and submit a safety analysis for facility operations involving the shielded container. This initiated a series of technical correspondences. On June 10, 2009 (Docket A-98-49, II-B2-72), DOE received NRC approval to ship RH waste in the shielded container using the HalfPACT. In a November 10, 2010 submission (Docket A-98-49, II-B2-77), DOE provided the Agency with the final technical information needed to demonstrate that it had fully self-certified the shielded container assembly to DOT's Type-A shipping requirements. Finally, on December 3, 2010 (Docket A-98-49, Item II-B2-78), DOE provided the Agency with a revised White Paper, detailing the results of safety analyses. These materials satisfied the Agency's preconditions, and allowed a final technical review of the shielded container PCR.

#### Technical basis for approval

In order to determine the impacts of the shielded container assembly on repository performance, DOE conducted performance assessment (PA) calculations comparing several emplacement schemes with a known, compliant baseline (Dunagan et al. 2007). The baseline selected for comparison with the shielded container PA was the 2004 Performance Assessment Baseline Calculation (PABC-2004), which was the most recently EPA-approved PA at the time the PCR was submitted. In order to demonstrate compliance, DOE chose a bounding approach for the shielded container PA in which all of the RH TRU waste inventory would be emplaced on the floors of the disposal rooms. Three sets of complementary cumulative distribution functions (CCDFs) were calculated: one assuming that all RH TRU waste was combined into a single composite waste stream and emplaced in shielded containers; one in which RH waste was divided evenly between shielded containers and boreholes; and a third in which all 77 RH TRU waste streams were treated individually and placed on the repository floor. Comparisons were made based on mean total releases and mean releases from cuttings and cavings, direct brine releases, and spillings releases separately. DOE showed, and EPA agrees, that differences between the mean total releases for the various emplacement schemes were essentially indistinguishable. Direct brine releases were slightly reduced in scenarios in which all RH waste was placed on the floor of the repository in shielded containers. DOE's calculations were reviewed and found to be correct and appropriate.

The Agency's review finds that DOE has met EPA's stated requirements for approval of the shielded container assembly. The Department has successfully demonstrated that handling RH waste in shielded container assemblies does not pose greater operational hazards than those encountered in the handling of standard CH waste drums. PA results also show that even in the bounding case (in which all RH waste is emplaced in shielded containers) cumulative releases from the facility are unaffected over the 10,000 performance period. Full details of EPA's technical review are included in [SCA 2010].

## Public Comment

EPA is soliciting informal public comment for 60 days. As done previously with other planned change requests, the Agency will advertise the proposed approval on its WIPP website and send out a notice on the WIPP-NEWS e-mail listserv. Interested parties will be directed to Ray Lee (202-343-9463, [lee.raymond@epa.gov](mailto:lee.raymond@epa.gov)), and all comments will be considered before EPA issues its final approval on the shielded containers.