

# NEWS

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## **DOE CAN IMPROVE CHARACTERIZATION PROGRAM FOR WASTE HEADED TO WIPP, BUT 'STRUCTURED AND QUANTITATIVE' ASSESSMENT IS NEEDED FIRST**

WASHINGTON – After four years of shipping transuranic waste from nuclear weapons facilities around the country to the Waste Isolation Pilot Plant (WIPP) in New Mexico, the U.S. Department of Energy has opportunities to change how it "characterizes" waste to confirm that it is appropriate for shipment to and disposal at the underground repository, says a new report from the National Academies' National Research Council. The transuranic waste being shipped to WIPP consists of material such as gloves, rags, tools, and other debris or dried sludge that has been contaminated by radioactive elements, including plutonium, during the production of nuclear weapons or cleanup of nuclear-weapons factories.

"Changes in characterization are to be expected as part of the normal learning process for a first-of-a-kind facility such as WIPP," said Susan Wiltshire, chair of the committee that wrote the report, and retired vice president of JK Research Associates Inc., South Hamilton, Mass.

However, before DOE seeks regulatory approval for changes to its characterization program, the agency should conduct and publish a systematic and quantitative assessment to show that the proposed changes would not affect the protection of workers, the public, or the environment, the committee said. The assessment should take into account technical factors, societal and regulatory impacts, and the time and effort required to make the changes.

The opening of WIPP in 1999 was a "significant achievement," the report says, noting that more than 2,000 shipments of transuranic waste already have been sent there. Before the waste is shipped, however, federal and state regulations require that sites generating the waste characterize it first to ensure that it is indeed defense-related transuranic waste and is appropriate for shipment to and disposal at WIPP. Workers use a variety of methods to examine the waste, including X-rays, visual inspection, tests for hazardous gases, review of historical records, and analyses of "core" samples pulled from the waste.

DOE has stated that characterization is extremely time-consuming and costly – the department estimates that the process accounts for about 16 percent, or \$3.1 billion, of the total cost of its transuranic waste disposal program – and that it intends to propose changes to its characterization activities as it gains experience. In fact, Congress recently directed DOE to submit a state permit modification request for exemption from some of the characterization requirements. Past Research

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Council committees and the New Mexico Environmental Evaluation Group, which provides independent technical advice to WIPP, also have questioned whether some of the information gathered during characterization is necessary for decision-making. But some New Mexico stakeholders have argued that all of the current characterization activities are necessary for the adequate protection of the public, plant workers, and the environment.

Given that WIPP is the first and only geological repository for transuranic waste, the rigorous characterization program was designed based on a conservative interpretation of regulatory requirements, the new report notes. The committee said that an initially conservative approach is not uncommon for a one-of-a-kind facility such as WIPP, where regulators and the permit holder have no prior experience from operating similar facilities. However, as experience is gained, some characterization activities can be modified, reduced, eliminated, or added. In fact, some requests to modify characterization activities for WIPP have already been submitted by DOE to regulators, and the majority of requests have been approved.

In the case of WIPP, if a change in characterization activities affects the program's state or federal permits, DOE must obtain approval from its regulatory agencies – the U.S. Environmental Protection Agency, New Mexico Environment Department, and the U.S. Nuclear Regulatory Commission. The committee suggests that DOE use a systematic and quantitative assessment, such as the one described in the report, to support such changes.

For its assessment, DOE should consider using an analytical framework that measures the value of information collected during characterization, the committee suggested. If the information does not affect decision-making, public safety, or the environment, it has no value. On the other hand, if the information is important for making decisions and reducing risks, it has high value. The connections between characterization, risks, and costs should be used to provide a defensible technical rationale to request regulatory approval of changes, the committee said.

One way DOE could improve the characterization program based on experience and advances in technology, the committee said, is to use more statistical sampling of waste, instead of taking samples from every container. In addition, some redundant steps may be eliminated if DOE takes advantage of additional methods, approved by EPA, to qualify available historical information about the waste. Likewise, DOE should propose to regulators that the characterization program take into account the physical properties of different waste streams, since waste from certain sources does not require the entire suite of characterization activities. Also, better management and record keeping may make waste easier to characterize in the future.

The committee's report only addresses the characterization of so-called contact-handled transuranic waste, which is waste that can be safely handled by humans, as opposed to remote-handled waste that requires heavy shielding and remotely operated equipment for safe handling. Any characterization changes that lessen the need for visual inspection or other intrusions into waste containers would reduce the potential for worker exposure to radiation, the committee noted.

Besides working with its federal and New Mexico regulators, DOE should keep states through which transuranic waste is shipped apprised of negotiations for changes to the characterization program. After hearing from many people who were concerned that any changes could result in a decrease in safety, the committee urged DOE to publish clearly written analyses of proposed changes and to continue its interactions with state officials, tribes, public interest groups, scientific oversight organizations, and other concerned citizens.

The study was sponsored by the U.S. Department of Energy. The National Research Council is the principal operating arm of the National Academy of Sciences and the National Academy of Engineering. It is a private, nonprofit institution that provides science and technology advice under a

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congressional charter. A committee roster follows.

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Copies of *Improving the Characterization Program for Contact-Handled Transuranic Waste Bound for the Waste Isolation Pilot Plant* are available from the National Academies Press; tel. 202-334-3313 or 1-800-624-6242 or on the Internet at <http://www.nap.edu>. The cost of the report is \$39.00 (prepaid) plus shipping charges of \$4.50 for the first copy and \$.95 for each additional copy. Reporters may obtain a copy from the Office of News and Public Information (contacts listed above).

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[ This news release and report are available at <http://national-academies.org> ]

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