

NATIONAL RESEARCH COUNCIL
COMMISSION ON GEOSCIENCES, ENVIRONMENT, AND RESOURCES
2101 Constitution Avenue Washington, D.C. 20418

BOARD ON
RADIOACTIVE WASTE MANAGEMENT
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Brief Summary of the Academy WIPP Committee Study

The Waste Isolation Pilot Plant

In the mid-1970s, the Waste Isolation Pilot Plant (WIPP), a U.S. Department of Energy (DOE) site near Carlsbad, NM, was identified as a candidate location for a deep geological repository for radioactive transuranic waste. This waste would be permanently disposed of by storing it in excavations into a bedded salt formation 660 meters below the surface. The ability of the WIPP site to isolate such hypothetically emplaced radioactive waste from the rest of the environment has been the subject of two decades of technical work by DOE and its contractors.

The Academy

These WIPP-related activities have been critiqued by two comprehensive reports and eight letter reports of the Committee on the Waste Isolation Pilot Plant. The WIPP Committee study, begun in 1978, is organized within the Board of Radioactive Waste Management (BRWM) of the National Research Council (NRC) of the National Academy of Sciences (NAS), the National Academy of Engineering (NAE), and the Institute of Medicine (IOM), a collection of institutions that is often referred to loosely as "the Academy."

The Current Committee Study

For the next three years, the WIPP Committee will focus on two major topics. One topic is an assessment of the most important unknowns associated with modeling the long-term performance of a WIPP repository, with a report providing recommendations of a suite of research and technical activities that would reduce such model uncertainties. This investigation would examine the current DOE-supported work in geochemistry, site characterization, hydrogeology, and rock mechanics, as well as other appropriate sources of information, to assess the potential for radionuclide transport in the environment at WIPP. The second major topic is an examination of the DOE system to characterize, package, and transport wastes to WIPP, focusing on the technical bases for the system requirements and on technically valid ways to improve efficiencies without compromising safety. These studies are projected to be carried out over a period of three years and to result in the publication of two NRC reports.



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WIPP Committee

Project Scope

The objective of this study is to review, evaluate, and make recommendations on:
(i) future geotechnical research activities to improve understanding of the capability of WIPP to isolate radioactivity from the environment, and (ii) technical options to safely streamline the system of characterizing, treating, and transporting transuranic waste from U.S. Department of Energy (DOE) storage sites to the proposed WIPP repository.

Statement of Task

The purpose of this study is to identify the limiting technical components of the WIPP program, with a two-fold goal of (i) improving the understanding of long-term performance of the repository and (ii) identifying technical options for improvements to the National TRU Program (i.e., the engineering system that defines TRU waste handling operations that are needed for these wastes to go from their current storage locations to the final repository destination) without compromising safety.

To accomplish this goal, the study will address two major issues.

(1) The first major task is to identify a set of research activities that would enhance confidence in long-term repository performance. This study would examine the performance assessment models used to calculate hypothetical long-term releases of radioactivity, and would suggest future scientific and technical work needed to reduce uncertainties and overconservative assumptions.

(2) The second task is to identify areas for improvement in the TRU waste management system, to increase system throughput, efficiency, or cost benefit without compromising safety to workers or the public. This study will examine, among other inputs, the current plans for TRU waste handling, characterization, treatment, and packaging. The relation between these activities and transportation requirements will be considered, but in-depth commentary on design changes to the transportation system will not be offered.

Committee Roster

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