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NUCLEAR WASTE

Disposal Challenges and Lessons Learned from Yucca Mountain

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Highlights

Highlights of GAO-11-731T, a testimony before the Subcommittee on Environment and the Economy, Committee on Energy and Commerce, House of Representatives

Why GAO Did This Study

The United States has generated over 75,000 metric tons of spent nuclear fuel and high-level nuclear waste—extremely hazardous substances—at 80 sites in 35 states and is expected to more than double that amount by 2055. The Nuclear Waste Policy Act of 1982 (NWPA) required the Department of Energy (DOE) to investigate a geologic repository for nuclear waste. In 1987, Congress amended NWPA to direct DOE to focus on a repository at Yucca Mountain, Nevada. In 2008, DOE submitted a license application for the repository but in March 2010 moved to withdraw it. However, the Nuclear Regulatory Commission (NRC) or the courts—as a result of federal lawsuits—might compel DOE to resume the licensing process. GAO has reported on options for interim storage of this waste and the effects a Yucca Mountain termination could have on both commercial waste and DOE-managed waste. This testimony is based on that prior work and discusses (1) the status of the Yucca Mountain repository and national policy for nuclear waste disposal, (2) options for storing nuclear waste and their benefits and challenges, and (3) principal lessons that can be learned from past nuclear waste management efforts.

What GAO Recommends

GAO is making no new recommendations at this time and continues to believe that implementing the recommendations in its March (GAO-11-230) and April 2011 (GAO-11-229) reports could improve DOE's efforts to manage and store nuclear waste.

View GAO-11-731T or key components. For more information, contact Mark Gaffigan at (202) 512-3841 or gaffiganm@gao.gov

What GAO Found

Uncertainties exist about the direction of the nation's policy for nuclear waste disposal. Under NWPA, DOE investigated Yucca Mountain as a site for a repository. In 2002, DOE recommended the site to the President and in 2008 submitted a license application to NRC. DOE is now seeking to withdraw the application from NRC's Atomic Safety and Licensing Board. DOE did not cite technical or safety issues but stated that Yucca Mountain is not a workable option because of a lack of public acceptance by the people of Nevada. On June 29, 2010, the board denied DOE's motion, ruling that NWPA requires DOE to continue the licensing effort. The NRC commissioners announced they might consider reviewing the board's decision, but as of May 26, 2011, no review had been announced. Separately, state and local governments and a private party filed suit in federal court against DOE and NRC in an effort to stop the repository termination. The court has not yet ruled. Amid this uncertainty, DOE took steps to shut down Yucca Mountain by September 30, 2010. DOE also established a Blue Ribbon Commission to evaluate alternatives for nuclear waste disposal, which plans to report by January 2012.

Three primary waste storage options offer benefits but also face challenges, including high costs. Two options are for interim storage—continued on-site or centralized storage—which could allow time for research into new approaches that might have wider public acceptance than the Yucca Mountain permanent repository. Continued on-site storage would require less effort to implement since it is the current method of waste storage. However, this option could trigger significant financial liabilities as a result of industry lawsuits stemming from DOE's failure to accept the waste in 1998, as required under NWPA. The federal government has already paid $956 million, and future liabilities are estimated to be at least $15.4 billion through 2020. DOE and the Navy also might not meet certain commitments to remove their waste from two states, which could bring penalties and a suspension of the Navy's shipments of spent fuel, raising concerns about the Navy's ability to refuel its nuclear-powered warships. The second interim option, centralized interim storage, may face challenges because DOE states that it currently has no authority to implement this option. The third option, a geologic repository, is widely considered the only currently feasible option for permanently disposing of nuclear waste. DOE has faced challenges in identifying an acceptable site for permanent geologic disposal. Restarting the search would likely take decades and cost billions of dollars.

Published reports and interviews—with federal, state, and local government officials and representatives of various organizations—suggest two broad lessons that can be learned from past nuclear waste management efforts. First, transparency, economic incentives, and education are important tools for gaining public acceptance. Second, it is important for any waste management strategy to have consistent policy, funding, and leadership, particularly since the process will take decades. An independent organization with a more predictable funding mechanism may be better suited than DOE to oversee nuclear waste management.