

GAO Highlights

Highlights of [GAO-25-107109](#), a report to congressional committees

Why GAO Did This Study

To complete its cleanup mission, EM must dispose of over 11 million cubic meters of nuclear waste that pose a range of risks to human health and the environment. In addressing its nuclear waste disposal needs, EM chooses among disposal options with different costs and risks. Final approval of a disposal pathway can take years of careful planning and communication with regulators and a variety of federal, state, and other stakeholders.

Senate Report 117-130 includes a provision for GAO to report on EM's nuclear waste disposal planning efforts. This report addresses (1) available information about nuclear waste requiring disposal to complete EM's mission, (2) disposal options available to EM, and (3) how EM and cleanup sites plan for nuclear waste disposal.

GAO analyzed EM waste data, interviewed or requested information from all 15 EM sites, visited commercial nuclear waste disposal facilities, and developed a hypothetical model for optimizing transuranic waste disposal using EM data.

What GAO Recommends

GAO is making five recommendations to EM, including that EM develop complex-wide analyses—such as optimization models—to identify optimal disposal pathways; develop a complex-wide disposal plan; and create a forum for EM and cleanup site and disposal facility regulators to address regulatory constraints to optimal disposal approaches. EM did not agree or disagree with the five recommendations and deferred its response for whether it will implement them to a later date.

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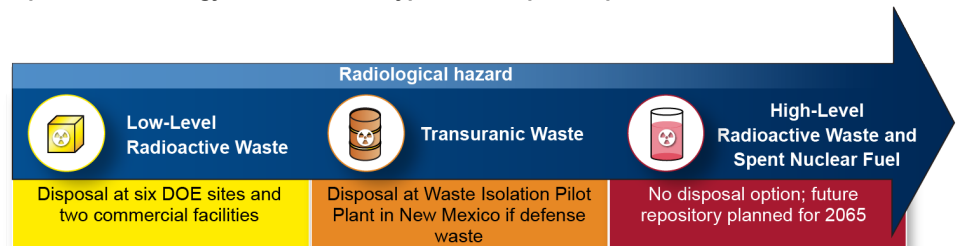
NUCLEAR WASTE

An Integrated Disposal Plan Could Help DOE Complete Its Cleanup Mission and Save Billions

What GAO Found

The Department of Energy's (DOE) Office of Environmental Management (EM) is responsible for cleaning up and disposing of nuclear waste from 15 federal sites, known as the EM complex. EM primarily manages four types of nuclear waste: low-level radioactive waste (LLW), transuranic waste, high-level radioactive waste, and spent nuclear fuel. EM develops estimates of the amount of each type of waste that it expects to dispose of to complete its cleanup work. However, EM's estimates include significant uncertainties. For example, waste amounts could vary depending on the future cleanup approaches selected.

Department of Energy Nuclear Waste Types and Disposal Options



Source: DOE documentation and interviews. | GAO-25-107109

EM has multiple disposal options for LLW, including six DOE facilities and two commercial facilities. GAO's analysis found that EM's disposal needs exceed these facilities' current capacity and future expansion will be required. Further, transuranic waste currently has only one disposal option—the Waste Isolation Pilot Plant in New Mexico—and additional future transuranic waste could nearly exceed the facility's capacity. High-level radioactive waste and spent nuclear fuel have no existing disposal option and will require the siting of a new deep geologic repository.

EM headquarters delegates disposal decisions to individual cleanup site officials and supports them as needed. However, EM has not assessed opportunities to optimize complex-wide disposal decisions—GAO has previously found that EM could save billions of dollars by considering alternate disposal plans for certain waste. EM has also not developed an integrated waste disposal plan to address factors affecting EM's ability to complete its cleanup mission.

EM officials told GAO they have not assessed complex-wide strategic alternatives to current disposal plans because regulatory constraints limit alternatives. However, the use of models, such as optimization models, could reduce the costs of EM's cleanup mission by billions of dollars. By developing a complex-wide plan, EM will be better able to address interrelated issues across its 15 sites and identify opportunities to address regulatory constraints. Moreover, implementing its disposal plan will likely require EM to negotiate with multiple regulators to revise agreements at different sites. By leveraging modeling and integrated planning, EM would be better positioned to engage with regulators in a complex-wide forum to ensure that each waste stream is disposed of in a cost-effective manner that protects human health and the environment.