

Addressing Legal and Regulatory Barriers Could Accelerate Cleanup and Reduce Costs

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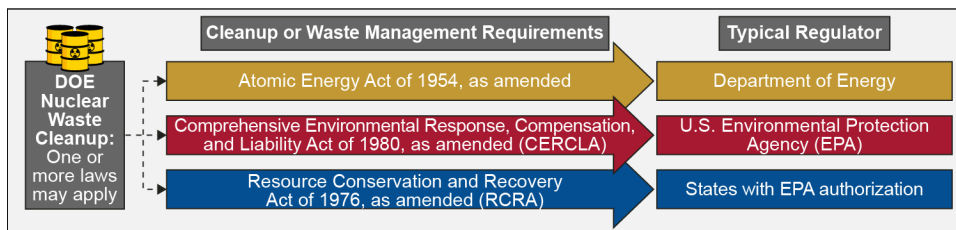
A report to congressional requesters

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What GAO Found

The Department of Energy's (DOE) nuclear waste cleanup is proceeding largely under three laws that set cleanup and waste management requirements. Each law has different requirements, applications, and regulators.

Selected Cleanup and Waste Management Laws and Regulators for the Department of Energy's (DOE) Nuclear Waste Cleanup



Source: GAO analysis of legal requirements. | GAO-27-107791

GAO and experts GAO convened with the National Academies of Sciences, Engineering, and Medicine identified several legal and regulatory factors that affect the cost and schedule of DOE's nuclear waste cleanup.

Certain state regulatory actions may exceed state authority. According to experts who participated in GAO's National Academies meetings, some states are taking legal and regulatory actions that address the radiological aspects of nuclear waste at DOE's cleanup sites, which are generally regulated by DOE under the Atomic Energy Act of 1954, as amended. Such actions may exceed a state's authority to regulate hazardous waste under authorizations from the U.S. Environmental Protection Agency (EPA) pursuant to the federal Resource Conservation and Recovery Act of 1976, as amended (RCRA). These state actions have led to disagreements between DOE and states on requirements for the radiological portion of DOE's waste, longer cleanup schedules, and billions in higher costs for the federal government, according to experts.

Courts have recognized that DOE's authority to manage and regulate its nuclear waste under the Atomic Energy Act preempts certain state regulatory actions that impact DOE's management of nuclear waste during its cleanup efforts. However, based on GAO's analysis, statutes and case law are unclear on what kinds of state actions that affect DOE's management and cleanup of radioactive waste are appropriate under the law, in part because of the prevalence of mixed waste at DOE cleanup sites. According to experts, because states are often taking such actions under state programs that are authorized by EPA to implement a federal law (RCRA), EPA could play a more active role in addressing instances where states may be improperly seeking to regulate radioactive materials covered by the Atomic Energy Act. EPA officials told us they currently do not have authority to challenge such state actions, as long as those actions are at least as stringent as federal requirements. If Congress clarifies the scope of the Atomic Energy Act's preemption—and creates a mechanism that allows for DOE to appeal to EPA to evaluate state actions that may infringe on federal authority over nuclear waste covered by the Atomic Energy Act—costly and resource-intensive legal disputes could be reduced and decision-making could be accelerated.

Why GAO Did This Study

DOE is cleaning up nuclear sites across the country, the majority of which were created during World War II and the Cold War to research and produce nuclear weapons. DOE has estimated it could take until 2100 and cost \$641 billion to \$840 billion dollars to complete its nuclear waste cleanup mission. Much of the waste at DOE sites is mixed waste, meaning that it includes both radiological and hazardous constituents. Radioactive waste emits radiation, sometimes for thousands of years. Hazardous waste may be toxic, corrosive, ignitable, or reactive.

Under a complex legal and regulatory framework, DOE and regulators (EPA and states) make decisions that affect the cost and schedule of DOE's nuclear cleanup efforts. For years, organizations have reported on the ways in which this framework has affected DOE's ability to complete its nuclear waste cleanup mission, such as through inconsistent decision-making processes for similar risks across sites.

GAO was asked to review the impact of the legal and regulatory framework on DOE's nuclear waste cleanup mission. This report examines (1) how state legal and regulatory actions affect DOE's ability to manage the radiological portions of nuclear waste at its cleanup sites, (2) how DOE's cleanup efforts are affected by assumptions about future land and groundwater use under the applicable legal framework, and (3) other aspects of the legal and regulatory framework that can contribute to higher cleanup costs and longer schedules.

GAO convened a series of expert meetings with the National Academies; conducted legal research, a literature review, and four case studies across six DOE cleanup sites; and interviewed DOE, EPA, and state officials.

What GAO Found (continued)

Assumptions about anticipated future land and groundwater use are sometimes unrealistic and can unnecessarily increase costs and schedules. Under the applicable laws and regulations, DOE's cleanup of its sites is based, in part, on the anticipated future uses of land and groundwater for an area. According to experts at GAO's meetings, DOE is cleaning up some areas based on unrealistic assumptions about those future uses. For example, DOE has agreed with state regulators and EPA to clean up large portions of some sites to allow for future residential use, even though there are no plans for such use. DOE did not evaluate the costs associated with cleaning up to less stringent standards associated with different land uses in those cases.

By comparison, realistic decisions about future land use have been critical to the successful cleanup of other DOE sites, such as at Rocky Flats in Colorado. After Congress designated that site as a national wildlife refuge in 2001, cleanup costs decreased from an estimated \$23 billion for residential use to about \$10 billion.

Historical Disposal (left) and Its Cleanup (right) at Idaho National Laboratory



Source: Department of Energy. | GAO-27-107791

According to experts, a better framework for making realistic assumptions about future land use at DOE's cleanup sites is needed. For example, DOE could assess benefits and costs associated with cleanup based on a range of potential future land uses. Clarification from Congress, and additional guidance from EPA and DOE, on incorporating future land use assumptions into the cleanup process would better position DOE to select appropriate cleanup approaches that are realistic, cost-effective, and aligned with congressional expectations.

The legal framework often requires DOE to clean up contaminated groundwater to meet drinking water standards, but, according to experts, the assumption that groundwater beneath contaminated sites will be used for drinking water in the future is sometimes unrealistic. Further, according to experts, standards for certain contaminants that can apply to groundwater are based on outdated information from the 1960s and may affect the feasibility of cleanup. By accounting for current scientific information, DOE may be able to achieve cleanup that is both protective and avoids unnecessary expenditures.

Other aspects of the legal and regulatory framework for DOE's nuclear cleanup are sources of conflict and affect costs and schedule. For example, DOE entered into various cleanup agreements with EPA and states in the 1990s before the extent of contamination was fully known. These agreements include hundreds of milestones that DOE has sometimes struggled to meet.

In a poll, all experts at GAO's meetings recommended that DOE and EPA create an interagency task force of experts to review high-priority cleanup decisions and areas of legal and regulatory disagreement for opportunities to make DOE's cleanup approach more risk-informed and cost-effective. Having an independent task force provide recommendations to DOE and EPA—such as when disagreements occur over revising cleanup agreements—may help to allow for cleanup approaches that more efficiently complete DOE's cleanup mission.

What GAO Recommends

GAO recommends that Congress consider (1) clarifying the preemptive scope of the Atomic Energy Act with respect to DOE nuclear waste cleanup and related activities, (2) creating a mechanism whereby DOE can appeal to EPA to evaluate state actions that may infringe on certain federal authorities over nuclear materials, and (3) providing more specific direction about incorporating potential future land use assumptions in the process for DOE nuclear waste cleanup.

GAO is also making six recommendations to DOE and EPA, including (1) that EPA take action to clarify guidance on making assumptions regarding future land use during the cleanup process, and (2) that DOE evaluate and document the expected costs and schedule associated with cleanup of a particular area based on multiple potential future land use assumptions when substantial cost or schedule benefits are possible. GAO is further recommending that DOE and EPA work together to (1) develop options to address certain outdated standards that can apply to groundwater cleanup; and (2) establish an interagency task force of experts to review cleanup decisions, processes, and areas of disagreement driving higher costs and longer schedules.

DOE concurred with two recommendations and did not concur with one related to evaluating multiple future land use assumptions. EPA also concurred with two recommendations and did not concur with one related to developing options to address certain outdated standards that can apply to groundwater cleanups. GAO continues to believe that taking action on these recommendations will help DOE achieve cleanup in a more risk-informed, cost-effective manner.