

# GAO@100 Highlights

Highlights of [GAO-22-104365](#), a report to congressional addressees.

## Why GAO Did This Study

DOE oversees the treatment and disposal of 54 million gallons of nuclear and hazardous waste at the Hanford site in Washington State. Hanford's tank waste is currently managed as HLW; however, more than 90 percent of the waste's volume has low levels of radioactivity. DOE plans to vitrify a portion of Hanford's LAW, but it has not made a decision on how to treat and dispose of the roughly 40 percent referred to as supplemental LAW. In May 2017, GAO found that grouting supplemental LAW could save tens of billions of dollars and reduce certain risks compared to vitrification. However, little is known about disposal options for grouted LAW.

GAO examined (1) what potential disposal options exist for grouted supplemental LAW, (2) what is known about the costs and environmental risks of potential disposal facilities and the extent to which DOE has assessed them, and (3) the challenges DOE faces in selecting a disposal method. GAO reviewed technical reports on DOE's waste disposal strategies at Hanford, compared DOE's approach to best practices, and interviewed DOE officials and disposal facility representatives.

## What GAO Recommends

Congress should consider clarifying two issues, including DOE's authority to manage and dispose of the tank waste as other than HLW, consistent with existing regulatory authorities. GAO also recommends that DOE expand the potential disposal options it assesses to include all facilities that could receive grouted supplemental LAW. DOE concurred with GAO's recommendation.

View [GAO-22-104365](#). For more information, contact Nathan Anderson, 202-512-3841, [andersonn@gao.gov](mailto:andersonn@gao.gov)

December 2021

## NUCLEAR WASTE DISPOSAL

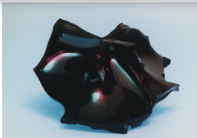

### Actions Needed to Enable DOE Decision That Could Save Tens of Billions of Dollars

## What GAO Found

Several potential options exist for disposing of grouted supplemental low-activity waste (LAW) from the Department of Energy's (DOE) Hanford site. (Grout immobilizes waste in a concrete-like mixture.) Specifically, two commercial and two federal facilities present minimal technical challenges to accepting grouted LAW. The commercial facilities—Clive Radioactive Waste Disposal Facility in Utah and Waste Control Specialists in Texas—are licensed to receive similar waste. The federal facilities—Hanford's Integrated Disposal Facility and the Nevada National Security Site—face regulatory constraints and other challenges to disposing of grouted supplemental LAW.

Disposal costs and health and environmental risks vary among the four potential disposal facilities, but disposing of Hanford's supplemental LAW as grouted waste could cost billions less than disposing of it as vitrified waste, which is DOE's current plan. (Vitrification immobilizes the waste in glass.) DOE estimated that vitrification and disposal of the waste would cost between \$21 billion and \$37 billion. GAO estimated grouting and disposal would cost between \$11 billion and \$13 billion (see figure) and may be faster. DOE has begun exploring how to dispose of grouted Hanford waste, but it has not analyzed a range of options as GAO and DOE best practices recommend. As a result, DOE is likely missing opportunities to reduce risks, expedite treatment, and save tens of billions of dollars.

**Figure: Estimated Total Costs for Treatment and Disposal of Vitrified and Grouted Supplemental Low-Activity Waste**

	DOE's current baseline approach	Alternative approach
		
Waste form	Glass	Grout
Disposal site	Hanford Integrated Disposal Facility, Washington	Several options, including two federal facilities in Washington or Nevada and two commercial facilities in Texas and Utah
Total cost	\$21 - \$37 billion	\$11 - \$13 billion

Sources: GAO analysis of Department of Energy (DOE) and disposal site documents, photos: DOE, mdbildes/stock.adobe.com. | GAO-22-104365

DOE faces legal challenges in selecting a disposal site if it grouts supplemental LAW. For example, before DOE can consider alternatives to vitrification, it must show it can manage Hanford's tank waste as a waste type other than high-level waste (HLW) because it is currently required to vitrify at least a portion of the HLW. DOE is testing alternative treatment and disposal options, but DOE officials told GAO that if they continue with the testing, they expect the effort to be the subject of litigation. Clarifying DOE's authority to manage Hanford's supplemental LAW as low-level waste and transport it outside Washington State for disposal could help save tens of billions of dollars by allowing DOE to pursue less expensive disposal options.