





## Critical Needs: Waste Disposal

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# Managing Waste to Maintain a Healthy Environment

Waste is an inevitable byproduct of society. Waste types are as varied as human activities themselves, and many waste products are toxic. Protection of human health and the environment often relies on geoscience knowledge to isolate waste materials from people and ecosystems.

Geoscientists translate their understanding of complex Earth systems into meaningful approaches for isolating waste streams and remediating waste sites.

## To optimize the balance between resource use and a healthy society:

**Assess the safety of disposing of liquid waste in deep wells.** This method of disposal is commonly used today to dispose of treated wastewater, chemicals, and oil field brines, but it can potentially induce earthquakes or contaminate groundwater.

Geoscience investigations can help make disposal safer.


**Understand and minimize impacts of energy production and usage.** Energy byproducts include solid wastes such as fly ash, thermal pollution of water from power plant cooling, liquid wastes, and gaseous byproducts such as CO<sub>2</sub>.

**Mitigate the high risk associated with nuclear waste.** Large volumes of spent nuclear fuel are currently stored at multiple temporary sites in the United States, and more such waste continues to be generated. A long-term disposal option is still needed for this toxic radioactive waste, and a geologic repository may provide a long-term solution. Geoscientists provide information to help assess site suitability and selection.

**Support cleanup of abandoned mines, brownfields, and Superfund sites.** Landfills, dumps, and spills can introduce a wide variety of toxic chemicals into the environment. Geoscience provides a basis for evaluating risks, setting priorities for remediation, and assuring that expenditures yield substantial benefits.

## Learn more

- Geoscience for America's Critical Needs: Invitation to a National Policy Dialogue (Webpage and Report), *American Geosciences Institute*

This document outlines high-level actions to address major policy issues where the geosciences play a significant role. 

[Download the report](#)

- Critical Issues: Waste Management (Webpage), *American Geosciences Institute*  
Overview of the geoscience behind waste disposal issues.
  - Critical Issues Webinar: Induced Seismicity in the Midcontinent (Recorded Webinar), *American Geosciences Institute*  
Current information about induced seismic activity in the United States.
  - Critical Issues Webinar: Making Produced Water More Productive (Recorded Webinar), *American Geosciences Institute*  
Discussion of produced water management and re-use options.
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