# Community Guide to Excavation of Contaminated Waste

## What Is the Excavation of Contaminated Waste?

Excavation of contaminated waste, such as soil, sludge and debris from a site, involves digging it up for "ex situ" (aboveground) treatment or for disposal in a landfill. Excavation also may involve removing old drums of chemicals and other buried debris. Removing these potential sources of contamination keeps people from coming into contact with it and helps speed up the cleanup of contaminated groundwater that may be present.

## How Does It Work?

Contaminated waste is excavated using standard construction equipment, like backhoes and excavators. The equipment selected depends on how large and deep the contaminated area is, and whether access is limited by the presence of buildings or other structures. Long-arm excavators can reach as deep as 100 feet below ground, but excavations are generally limited to shallower depths due to safety concerns and difficulty keeping the excavated hole open. Sometimes waste is excavated from below the water table, which requires walling off the contaminated area and pumping out the water to keep the waste dry while digging.

*Soil piles are covered with plastic tarps during excavation.*

*Worker collects soil samples to confirm that soil left onsite is clean.*

Excavated waste may be placed directly in a dump truck for immediate transport offsite, or stockpiled on plastic tarps or in containers for future treatment or disposal. Stockpiles are covered with tarps to prevent wind and rain from blowing or washing contaminants away and to keep workers from coming into contact with waste. Any contaminant vapors may be suppressed with foams or other materials. Excavation is complete when testing shows that the soil at the base and sides of the hole meets cleanup levels.

The excavated waste may be treated using an onsite system or transported to an offsite treatment or disposal facility. When treated onsite, treated soil typically is used to fill the excavated area. Clean soil obtained from other locations also may be needed. After an excavation is filled in, the area may be landscaped to prevent soil erosion and make the site more attractive.

## How Long Will It Take?

Excavating contaminated waste may take as little as a few hours to as long as a few years. The time it takes to excavate will depend on several factors that vary from site to site. For example, excavation will take longer where:

- The contaminated area is large, very deep or below the water table.
- Contaminant concentrations are high, requiring extra safety precautions.
- The waste contains a lot of rocks or debris.
- Buildings or site activities limit the movement of equipment.
- The site is remote, or the treatment and disposal facilities are far away.

## Is Excavation Safe?

Precautions are taken to keep work zones safe during excavation. Site workers follow safety procedures to avoid contacting contaminants and manage dust to prevent the spread of contamination offsite into the community. Workers wear protective clothing and wash or dispose of their rubber boots before leaving the site to avoid carrying contaminated waste offsite. Trucks and earth-moving equipment also are washed before leaving the site to avoid tracking waste through neighboring streets. Excavations that might be accessible to passersby are fenced off to prevent entry.

Workers monitor the air to make sure dust and contaminant vapors are not present at harmful levels.

## How Might It Affect Me?

During excavation activities, you may notice increased truck traffic and noise from earth-moving equipment. Excavations are fenced off to prevent entry to the area until it is backfilled and covered with clean soil and the site meets cleanup levels.

## Why Excavate Contaminated Waste?

Excavation is commonly used where “in situ” cleanup methods, which are conducted in place rather than aboveground, will not be effective. Offsite disposal and ex situ treatment are often the fastest ways to deal with high levels of contamination that pose an immediate risk to people or the environment. Excavation also is a cost-effective approach for small amounts of waste. Excavation has been selected for use at hundreds of Superfund sites and other cleanup sites across the country.

### Example

Soil excavation for offsite treatment and disposal was used to clean up the Federal Creosote Superfund site in New Jersey. After a wood-treating facility closed in the 1950s, residential housing and a shopping mall were built on the 50-acre property. Creosote and waste chemicals that had been stored in lagoons were buried during construction.

The contamination was discovered in the 1990s. Between 2002 and 2008, soil was excavated from as deep as 35 feet near 93 homes. Some residents were relocated, and 18 homes and the mall were demolished to reach the contaminated soil beneath. A total of 275,000 tons of soil from residential properties was transported offsite for treatment and disposal. Another 177,000 tons were excavated from the mall property. Following cleanup, buried utility lines were replaced, holes were backfilled with clean soil, properties were landscaped, and a new shopping center was constructed. Residents were able to return to their homes.

### For More Information

- About this and other technologies in the Community Guide Series, visit: https://clu-in.org/cguides or https://clu-in.org/remediation/
- About use of cleanup technologies at a Superfund site in your community, contact the site’s community involvement coordinator or remedial project manager. Select the site name from the list or map at http://www.epa.gov/superfund/sites to view their contact information.

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