



A Citizen's Guide to Soil Excavation

The Citizen's Guide Series

EPA uses many methods to clean up pollution at Superfund and other sites. If you live, work, or go to school near a Superfund site, you may want to learn more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a series to help answer your questions.

What is excavation?

Excavation is digging up polluted soil so it can be cleaned or disposed of properly in a landfill. The soil is excavated using construction equipment, like backhoes or bulldozers.

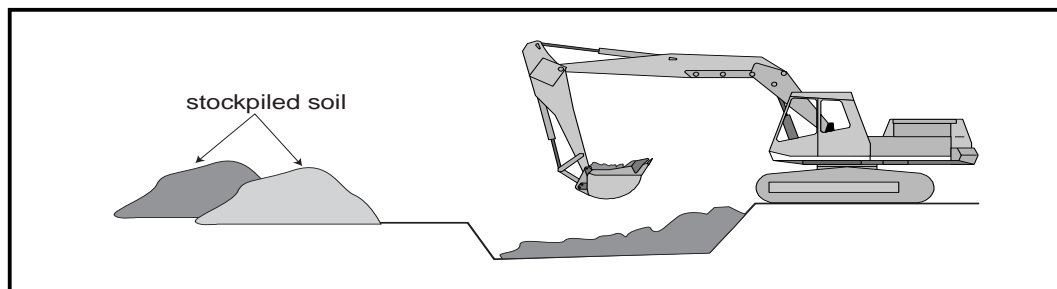
How does it work?

Before soil can be excavated, EPA must figure out how much of it there is. EPA also determines the types of harmful chemicals in the soil. This requires research on past activities at the site as well as testing of the soil.

Once the polluted areas are found, digging can begin. Backhoes, bulldozers and front-end loaders remove the soil and put it on tarps or in containers. The soil is covered to prevent wind and rain from blowing or washing it away. The covers also keep workers and other people near the site from coming into contact with polluted soil. The digging is complete when test results show that the remaining soil does not pose a risk to people or the environment.

The polluted soil may be cleaned up onsite or taken elsewhere for this purpose (See *A Citizen's Guide to Thermal Desorption* [EPA 542-F-01-003], and *A Citizen's Guide to Soil Washing* [EPA 542-F-01-008]). The soil may also be disposed of in a regulated landfill. If the soil is cleaned, it may be returned to the holes it came from. This is called *backfilling*. The area may also be backfilled with clean soil from another location.

After an excavation is backfilled, it may be landscaped to prevent erosion or it may be paved or prepared for some other use.



Is excavation safe?

Excavation can safely remove most types of polluted soil from a site. However, certain types of harmful chemicals require special safety precautions. For example, some chemicals may *evaporate*, or change into gases. To prevent the release of gases to the air, site workers may coat the ground with foam or draw the vapor into gas wells. Other chemicals, like acids and explosives, also require special handling and protective clothing to reduce the danger to site workers.

How long will it take?

Excavating polluted soil may take as little as one day or as long as several months. Cleaning the soil may take much longer. The total time it takes to excavate and clean up soil depends on several factors:

- types and amounts of harmful chemicals present
- size and depth of the polluted area
- type of soil
- amount of moisture in the polluted soil (wet soil slows the process)



Why use excavation?

EPA has had lots of experience using excavation to clean up sites. Excavation is used most often where other underground cleanup technologies will not work or will be too expensive. Excavation of soil for disposal or treatment above ground is often the fastest way to deal with chemicals that pose an immediate risk. Polluted soils deeper than 10 feet generally cannot be excavated. This method is most cost-effective for small amounts of soil.

For more information

write the Technology Innovation Office at:

U.S. EPA (5102G)
1200 Pennsylvania Ave.,
NW
Washington, DC 20460

or call them at
(703) 603-9910.

Further information also
can be obtained at
www.cluin.org or
[www.epa.gov/
superfund/sites](http://www.epa.gov/superfund/sites).