



# A Citizen's Guide to Thermal Desorption

## The Citizen's Guide Series

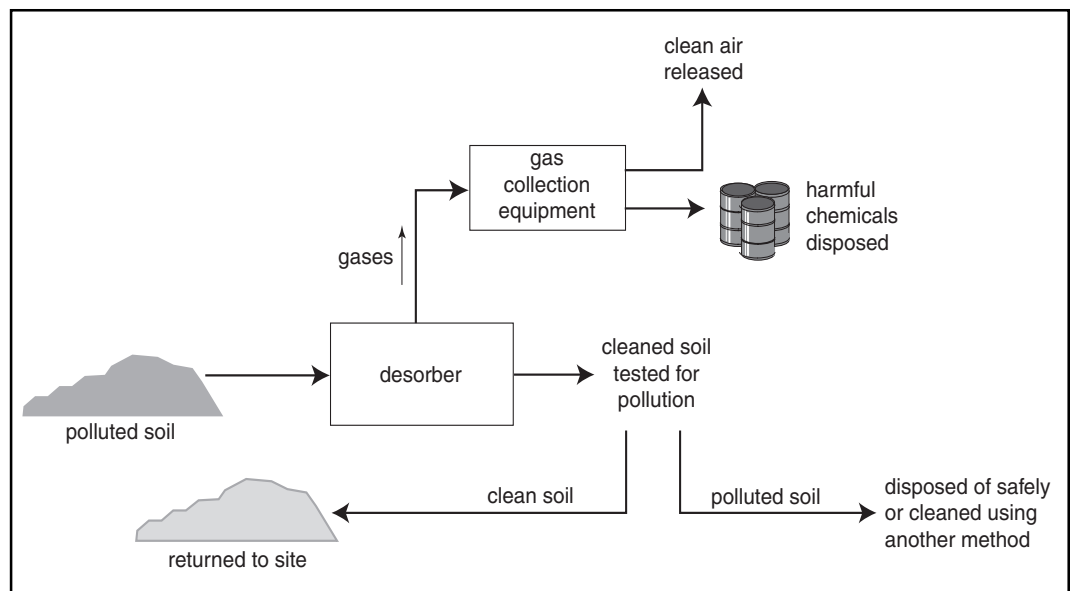
EPA uses many methods to clean up pollution at Superfund and other sites. If you live, work, or go to school near a Superfund site, you may want to know more about cleanup methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide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

### What is thermal desorption?

Thermal desorption removes harmful chemicals from soil and other materials (like sludge and sediment) by using heat to change the chemicals into gases. These gases are collected with special equipment. The dust and harmful chemicals are separated from the gases and disposed of safely. The clean soil is returned to the site. Thermal desorption is not the same as incineration, which uses heat to *destroy* the chemicals.

### How does it work?

Thermal desorption uses equipment called a *desorber* to clean polluted soil. Soil is excavated and placed in the desorber. The desorber works like a large oven. When the soil gets hot enough, the harmful chemicals evaporate. To get the soil ready for the desorber, workers may need to crush it, dry it, blend it with sand, or remove debris. This allows the desorber to clean the soil more evenly and easily.



During each step of the process, workers use special equipment to control dust from the soil and collect harmful gases that are released to the air. The polluted gases are separated from the clean air using gas collection equipment. The gases are then changed back into liquids and/or solid materials. These polluted liquids or solids are disposed of safely.

Before returning the cleaned soil to the site, workers may spray it with water to cool it and control dust. If the soil still contains harmful chemicals, workers clean it further by placing it back in the desorber. Or they may try other cleanup methods instead. If the soil is clean, it is returned to the site. If the soil is not clean, it is sent to a landfill.

## Is thermal desorption safe?

Thermal desorption has been used at many sites over the years. EPA makes sure that materials are handled safely at each stage of the process. EPA tests the air to make sure that dust and gases are not released to the air in harmful amounts. EPA also tests the soil to be sure it is clean before it is returned to the site. All equipment must meet federal, state, and local standards.

### How long will it take ?

Thermal desorption systems can clean over 20 tons of polluted soil per hour. The time it takes to clean up a site using thermal desorption depends on:

- the amount of polluted soil
- the condition of the soil (Is it wet or dry? Does it contain a lot of debris?)
- type and amounts of harmful chemicals present

Cleanup can take only a few weeks at small sites with small amounts of chemicals. If the site is large and the chemical levels are high, cleanup can take years.



### For more information

write the Technology Innovation Office at:

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1200 Pennsylvania Ave.,  
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or call them at  
(703) 603-9910.

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

## Why use thermal desorption?

Thermal desorption works well at sites with dry soil and certain types of pollution, such as fuel oil, coal tar, chemicals that preserve wood, and solvents. Sometimes thermal desorption works where some other cleanup methods cannot—such as at sites that have a lot of pollution in the soil.

Thermal desorption can be a faster cleanup method than most. This is important if a polluted site needs to be cleaned up quickly so it can be used for other purposes. The equipment for thermal desorption often costs less to build and operate than equipment for other cleanup methods using heat. EPA has selected thermal desorption to clean up 59 Superfund sites.

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