



A Citizen's Guide to Pump and Treat

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 these 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.

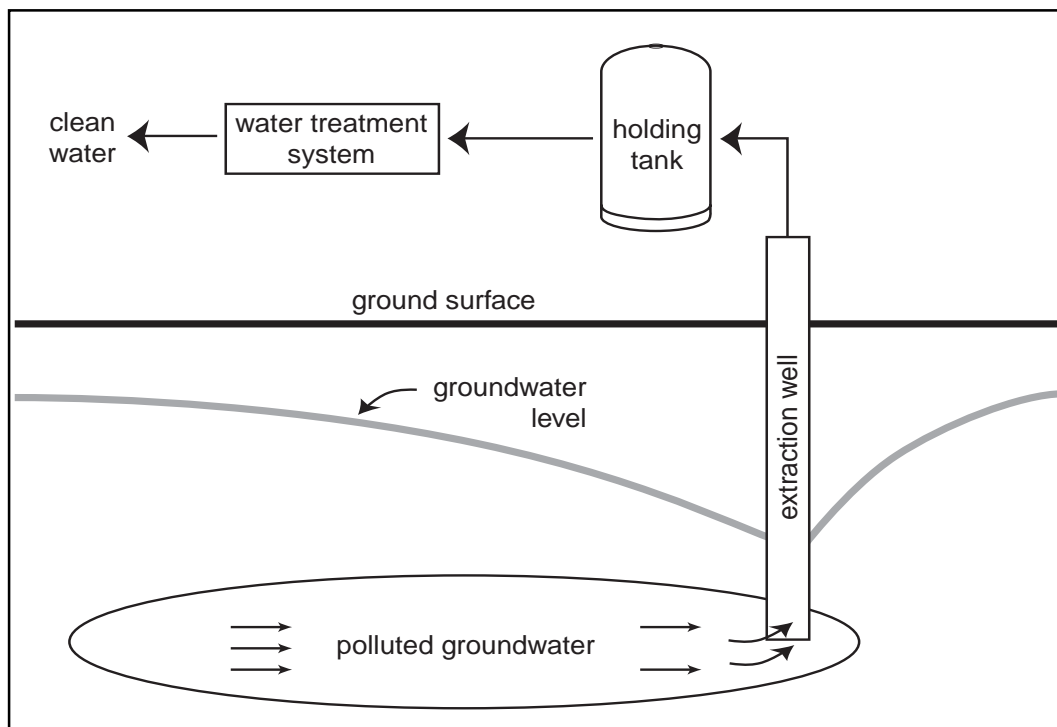
What is pump and treat?

Pump and treat is a common method for cleaning up groundwater. Pumps are used to bring polluted groundwater to the surface where it can be cleaned up (*treated*) more easily.

Groundwater is the water that has collected underground in the spaces between dirt particles and crack within rocks. Groundwater flows underground and may empty into rivers or lakes. Many people rely on groundwater as the source of their daily water needs.

How does it work?

To remove polluted water from underground, an *extraction system* is built. This system usually consists of one or more wells equipped with pumps. When the pumps are turned on,



they pull the polluted groundwater into the wells and up to the surface. At the surface, the water goes into a holding tank and then on to a treatment system, where it is cleaned. There are a number of treatment methods which can be used which either to destroy the polluting chemicals or to remove them for proper disposal (see *A Citizen's Guide to Air Stripping* [EPA 542-F-01-016], *A Citizen's Guide to Activated Carbon Treatment* [EPA 542-F-01-020], *A Citizen's Guide to Bioremediation* [EPA 542-F-01-001], and *A Citizen's Guide to Chemical Oxidation* [EPA 542-F-01-013]). The cleaned water can then be put back into the ground, into a public sewer, or into a pond.

In order for pump and treat to be effective, the source of the pollution must first be taken away so that it will not continue to seep into the groundwater. For example, leaking oil drums or tanks must be removed and the surrounding polluted soil must be cleaned up (see *A Citizen's Guide to Excavation* [EPA 542-F-01-023]).

Is pump and treat safe?

Pump and treat is quite safe when designed and operated properly. Since the polluted groundwater is pumped directly into holding tanks and from there into the treatment system, no one comes in contact with any harmful chemicals. The harmful chemicals are destroyed or removed and disposed of properly. The cleaned water is tested to make sure it is safe before it is put back into the ground or into a sewer system. EPA tests the groundwater regularly during the pump and treat process to make sure all of it is being collected and it is not spreading further.

How long will it take?

A pump and treat cleanup is a relatively slow process. It will usually last at least five to ten years, but can last for decades. The time it takes depends on:

- the type and amount of harmful chemicals present
- the size and depth of the polluted groundwater
- type of soil and rock in the area



Why use pump and treat?

Cleaning up polluted water while it is still underground is often very difficult and sometimes not possible. Pump and treat is the best remedy in such cases. Pump and treat can also be used to help keep polluted groundwater from spreading into nearby drinking water wells while other kinds of cleanup actions are being taken. EPA has used pump and treat at over 500 Superfund sites.

For more information

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

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