



# A Citizen's Guide to Solidification/Stabilization

## The Citizen's Guide Series

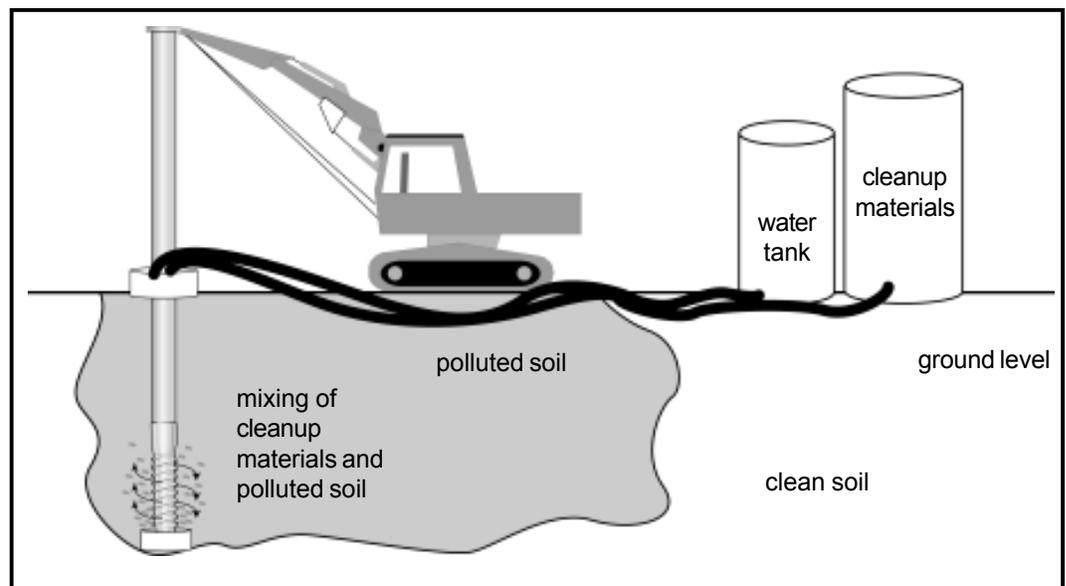
EPA uses many methods to clean up pollution at Superfund sites. If you live, work, or go to school near a Superfund site, you may want to learn more about these methods. Perhaps they are being used or are proposed for use at your site. How do they work? Are they safe? This Citizen's Guide is one in a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

### What is solidification/stabilization?

Solidification/stabilization refers to a group of cleanup methods that prevent or slow the release of harmful chemicals from polluted soil or sludge. These methods usually do not destroy the chemicals—they just keep them from moving into the surrounding environment. Solidification refers to a process that binds the polluted soil or sludge and cements it into a solid block. Stabilization refers to changing the chemicals so they become less harmful or less mobile. These two methods are often used together to prevent exposure to harmful chemicals.

### How do they work?

Solidification involves mixing polluted soil with a substance, like cement, that causes the soil to harden. The mixture dries to form a solid block that can be left in place or removed to another location. The solidification process prevents chemicals from spreading into the surrounding environment. Rain or other water cannot pick up or dissolve the chemicals as it



moves through the ground. Solidification does not get rid of the harmful chemicals, it simply traps them in place.

Stabilization changes harmful chemicals into substances that are less harmful or less mobile. For example, soil polluted with metals can be mixed with lime. The lime reacts with metals to form metal hydroxides. The metal hydroxides do not move through and out of the soil as easily.

Solidification/stabilization methods may or may not require the soil to be removed. Sometimes it is better to dig up the soil and place it in large mixers above ground to be sure that all of the polluted soil mixes with the cleanup materials, such as cement and lime. The mixture may then be returned to the ground at the site or placed in a landfill. At other sites, instead of digging up the soil, it is mixed in place with the cleanup materials. Then it is covered with clean soil or pavement. After solidification/stabilization is completed, EPA tests the surrounding soil to make sure no pollution was missed.

### **Is solidification/stabilization safe?**

In order to make sure of the safety of the remedy, EPA tests the final mixture to confirm proper sealing of the harmful chemicals and for strength and durability of the solidified or stabilized materials. Sometimes EPA will place use restrictions on areas that have received solidification or stabilization. These land use restrictions can prevent future damage to the treated area.

### **How long will it take?**

Solidification/stabilization may take weeks or months to complete, depending on several factors that vary from site to site:

- types and amounts of chemicals present
- size and depth of the polluted area
- types of soil and geologic conditions
- whether the mixing occurs in place or in mixing tanks



### **Why use solidification/stabilization?**

Solidification/stabilization provides a relatively quick and low cost way to protect from the threat posed by harmful chemicals, especially metals. Solidification/stabilization has been chosen as part of the remedy at 183 Superfund sites across the country.

#### **For more information**

write the Technology Innovation Office at:

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(703) 603-9910.

Further information also  
can be obtained at

**www.cluin.org** or  
**www.epa.gov/  
superfund/sites.**

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