



## ARSENIC CONTAMINATED SOIL

### What is ARSENIC CONTAMINATED SOIL?

Arsenic is a silver-gray or white metallic solid element found in nature. Arsenic combines with other elements to form organic and inorganic compounds. Inorganic arsenic compounds are thought to be more toxic than organic arsenic compounds.

### Where can arsenic be found and how is it used?

In the United States, the highest levels of natural arsenic are found in western states. Arsenic is found in groundwater in all 50 states, mainly in areas with shallow groundwater reserves and large amounts of arsenic in soil and mineral deposits. In Delaware, little arsenic is found in groundwater or public water.

Industry, farming and medicine have all used inorganic arsenic compounds. Arsenic is no longer produced in the United States but it is still imported from other countries. Until the 1940s, inorganic arsenic compounds were often used as agricultural pesticides. Now most uses of arsenic in farming are banned in the United States. The use of chromated copper arsenic to make a wood preservative for pressure-treated wood has been greatly reduced since 2003.

Arsenic in soil results from human activities including pesticide use, mining and ore processing operations, operating coal burning power plants, and waste disposal. Sites of former tanneries, which make leather from animal hides, have large amounts of arsenic in the soil. Tanneries once used pits in the ground for preserving the hides or for waste.

### How can people be exposed to arsenic in soil?

You may have a higher chance of exposure if you live in an area that was once used for farming, tanning hides or processing ore. You may also have a higher chance of exposure if you live near a waste site containing arsenic. You could be exposed to arsenic in drinking water if you live in an area where high amounts of arsenic are in soils and mineral deposits. People living near factories, waste sites or farms where arsenic or pesticides were once used may be exposed.

*You could be exposed to arsenic in soil through:*

**Touching** soil that contains arsenic, by digging or playing in the soil.

**Eating** soil that contains arsenic. Children may eat dirt while playing. Drinking water contaminated from natural sources of arsenic is another possibility.

**Breathing** dust containing arsenic. Dust can be brought into the home from outside. You could be exposed by breathing air containing sawdust or burning smoke from wood treated with arsenic.

**Eye Contact** if dust containing arsenic gets into your eyes. That is uncommon.

### How does arsenic work and how can it affect my health?

High doses of arsenic can be deadly, especially in a short period. While long-term exposure to low levels of arsenic will not cause immediate effects, exposed people can suffer cancer of the skin, bladder, liver, lungs and kidneys. High levels of arsenic in drinking water can cause the skin on the feet, hands and torso to develop sores or turn color. Children are at more risk of exposure because they put objects in their mouths, eat dirt and spend more time outdoors. Inorganic arsenic is a cancer-causing substance.



## How is arsenic poisoning treated?

Medical personnel can limit the amount of arsenic absorbed by the body by treating the symptoms of arsenic poisoning.

## What should I do if exposed to arsenic?

If you think you were exposed to high levels of arsenic, talk to your doctor.

## What factors limit use or exposure to arsenic in soil?

Do not dig in soils with known arsenic levels. Arsenic that is a few feet under the surface, or deeper, should not be a risk if the soil is not disturbed. Plant a thick lawn or other kind of dense ground cover. Don't let children play where the soil is uncovered, don't let them have hand-to-mouth contact with dirt, and have them wash hands very well after playing outside and before eating. Control dust and dirt in your home by cleaning floors often and using HEPA air filters.

## Is there a medical test to show whether I've been exposed to arsenic?

Tests can measure arsenic in your blood, urine, hair and fingernails. These tests determine if you were exposed to high levels of arsenic. They cannot determine how the arsenic will affect your health.

## Technical information for arsenic

CAS Number: 7440-38-2

Chemical Formula: As

Carcinogenicity (EPA): A1-Carcinogen

MCL (Drinking Water): 0.01 mg/L (As of 1/23/06)

OSHA Standards (Air): 10 ug/m<sup>3</sup>, 8 hr Time-Weighted Avg. (TWA)

NIOSH Standards: NA

ACGIH (air): 0.01 mg/m<sup>3</sup>, 8 hr Time-Weighted Avg (TWA)

## References and Sources

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. *Toxicological Profile for arsenic*. (Draft for Public Comment.) Atlanta, GA: U.S. Department of Health and Human Services.

Nriagu, J.O., ed. *Arsenic in the Environment—Part I: Cycling and Characterization*. John Wiley & Sons, Inc., New York, 1994.

U.S. Environmental Protection Agency. *EPA Region III Risk-Based Concentration Table*. <http://www.epa.gov/reg3hwmd/risk/riskmenu.htm>. Updated October 2000. (Accessed 10/19/09)

Hazardous Substances Data Bank. On-line version, arsenic: <http://toxnet.nlm.nih.gov>. May 2006. (Accessed 10/19/09)