

Arsenic Fact Sheet

Arsenic is a heavy metal. In its pure state, it is a dense, dull grey or yellow material. The metal is used in the manufacture of glass, semiconductors, pigments, and pressure-treated lumber. However, the most common use of arsenic is as a poison, including rat poison, insecticides, and fungicides.

Toxic Effects

At low doses, arsenic is a “co-carcinogen,” which means that it can work in concert with other cancer-causing agents (such as cigarette smoke) to cause cancer in human beings. Drinking water that contains significant amounts of arsenic has been linked with an increased risk of cancers of the skin, bladder, lungs, and kidneys. Typically, these cancers occur after about 10 to 40 years exposure to the contaminated drinking water.

The EPA currently has a drinking water standard of 10 parts of arsenic per billion parts of water. However, a recent study by the National Academy of Sciences indicates that even this relatively low level may result in an increase in the risk of cancer. An early symptom of exposure to arsenic in drinking water is keratoses, or rough patches of skin.

At moderate to low doses, arsenic can cause miscarriage in humans and animals. Arsenic is also a neurotoxin, and at high doses can cause tremors and death in most mammals and humans. Arsenic has also been linked to cardiovascular disease.

How Arsenic Acts in the Environment

Arsenic is relatively mobile in the environment. It is soluble in water and appears in many water supplies. It can also be transferred from the soil to plants because plants can “mistake” arsenic for phosphate, a needed nutrient, causing it to accumulate in plant tissues.

How Arsenic Acts in Your Body

The great majority of arsenic enters your body when you eat or drink contaminated food or liquids. Young children can become exposed to arsenic by putting arsenic-contaminated articles into their mouths. Some children eat soil, which can cause even greater levels of accumulation. Nearly all of the arsenic that is swallowed is absorbed through the walls of the stomach and intestinal tract.

Arsenic can also be absorbed through the lungs as a vapor, which is known to occur in some industrial settings or when smoking arsenic-contaminated tobacco products. Arsenic can also be absorbed from fine dusts that are inhaled deep into the lungs.

What You Can Do to Protect Yourself

If you suspect that your soil or water are contaminated with arsenic, you can have them tested. There are many laboratories that test for arsenic in soils. For information on how to do your soil sampling and labs in western Washington State, see <http://www.metrokc.gov/health/hazard/soilsamples.htm#resident>.

To safeguard young children, do not let them play in areas of known or suspected arsenic contamination. This is especially true in undisturbed soils (forested areas) and in bare dirt. Avoid eating root crops grown where soils contamination is suspected. Wash all fruits and vegetables thoroughly before eating. If you are working in contaminated soil areas wet down the soil and wear rubber or plastic gloves. You can also use a respirator designed for lead protection. These are sometimes available in hardware stores. Dust masks will not stop the small-diameter particles that may draw arsenic into your lungs, but they can help keep arsenic-contaminated soil out of your mouth.

If you suspect that your water supply is contaminated, you can reduce your exposure by treating your water. Both ion exchange systems and reverse osmosis systems can remove arsenic from drinking water. For greater effectiveness, treat water at the faucet, rather than at an earlier point in the water system. Contaminants such as heavy metals can accumulate on the walls of your water pipes, and water becomes re-contaminated between the filter and your tap.

There are many ways to reduce the arsenic concentration in soil, including removing the soil, adding imported soil or compost to dilute the arsenic level, or burying the soil on site.

We are working to collect information about remedial techniques, including which ones work best under different circumstances, costs and where to find contractors. We will post that information once it becomes available. In the meantime we will be happy to discuss your particular concerns about heavy metals contamination. Contact us at staff@iere.org, or by phone at 206-463-7430

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