



Arsenic

Arsenic is a naturally occurring element that is found in combination with either inorganic or organic substances to form many different compounds. Inorganic arsenic compounds are found in soils, sediments, and groundwater. These compounds occur either naturally or as a result of mining, ore smelting, and industrial use of arsenic. Organic arsenic compounds are found mainly in fish and shellfish. In the past, inorganic forms of arsenic were used in pesticides and paint pigment. They were also used as wood preservatives and as a treatment for a variety of ailments. Today, usage of arsenic-containing pesticides and wood preservatives is restricted.

How People Are Exposed to Arsenic

People are most likely to be exposed to inorganic arsenic through drinking water and to a lesser extent through various foods. Water sources in some parts of the United States have higher naturally occurring levels of inorganic arsenic than other areas. Other sources of inorganic arsenic exposure include contact with contaminated soil or with wood preserved with arsenic.

People are exposed to organic arsenic by consuming seafood.

How Arsenic Affects People's Health

Unusually large doses of inorganic arsenic can cause symptoms ranging from nausea, vomiting, and diarrhea to dehydration and shock. Long-term exposure to high levels of inorganic arsenic in drinking water has been associated with skin disorders and increased risks for diabetes, high blood pressure, and several types of cancer. Inorganic arsenic and arsenic compounds are considered to be cancer-causing chemicals. Forms of organic arsenic (for example, arsenobetaine) found in seafood are not known to be toxic to humans.

Levels of Arsenic in the U.S. Population

In the *Fourth National Report on Human Exposure to Environmental Chemicals (Fourth Report)*, CDC scientists measured total arsenic and seven different forms of arsenic in the urine of 2,557 participants aged six years and older who took part in the National Health and Nutrition Examination Survey (NHANES) during 2003–2004. By measuring arsenic in urine, scientists can estimate the amount of arsenic that has entered people's bodies.

- Inorganic arsenic is converted in the body into the breakdown product (metabolite) called dimethylarsinic acid (DMA). DMA and arsenobetaine were found to be the major components of urinary total arsenic levels.

Finding a measurable amount of the different forms of arsenic in urine does not mean that the levels of arsenic cause an adverse health effect. Biomonitoring studies on levels of arsenic provide physicians and public health officials with reference values so that they can determine whether people have been exposed to higher levels of arsenic than are found in the general population. Biomonitoring data can also help scientists plan and conduct research on exposure and health effects.

For More Information

- Agency for Toxic Substances and Disease Registry (ATSDR)
Public Health Statement for Arsenic
<http://www.atsdr.cdc.gov/toxprofiles/tps2.html>

- Environmental Protection Agency
Consumer fact sheet on Arsenic
<http://www.epa.gov/safewater/arsenic/index.html>

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The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national, and international organizations.