

What is arsenic?

Arsenic is a naturally occurring element that is not essential to our bodies. It can be found in the environment in organic and inorganic forms. When metallic arsenic comes into contact with water it can become arsine gas.

What are some sources of arsenic?

Arsenic is found in the air, water, and soil naturally but also a result of mining, manufacturing, and other industrial practices. It can be found in some foods, including seafood.

Arsenic has also been found in some folk remedies, veterinary products, and in homeopathic and naturopathic products.

How do arsenic exposures occur?

Arsenic can be absorbed by the lungs either by breathing air that has high levels of arsenic or by inhaling the actual gas form.

Arsenic can be absorbed through liquid exposures to large skin areas and by swallowing arsenic based products or contaminated food and water. Jobs and hobbies that involve arsenic in their production process can result in exposures if proper safety equipment is not used or if the work site is not properly ventilated. Such jobs include; glass manufacturing, metal refining, smelting, welding and other metal-work, along with those that involve herbicides, pesticides and insecticides.

Military personnel may be exposed through chemical weapons and those with hobbies that include glass or metal work may be at risk.

How can arsenic affect my health?

Arsenic itself is a poison to every cell in the body. The expected effects depend on the type of arsenic, the amount in the exposure, and the length of time one was exposed to arsenic.

Sudden and large inhalations of arsenic contaminated air or dust particles can cause irritation to the throat and lungs. Coughing, difficulty breathing, and chest pain may be noted.

If arsenic is swallowed in large amounts, abdominal pain, garlicky smelling breath, nausea, bloody vomiting, and large amounts of watery diarrhea may occur. Kidney failure, liver failure, heart failure and shock can all result from the loss of fluids due to the vomiting and diarrhea, and may also be due to the direct cell poisoning by the arsenic.

Weakness, coma, and seizures may be delayed by a couple of days, and loss of balance, decreased muscle strength and a sensation of pins and needles to the hands and feet may be seen a few days to weeks after exposure. A reduction in the number of red blood cells, white blood cells, and platelets can occur up to two weeks later.

Skin exposure effects include rash, irritation, burns, skin-peeling, and the development of white lines across the nails. These effects may also be delayed one to six weeks.

Long term or chronic exposures to smaller amounts of arsenic also affects all of the body systems. There can be mental slowness, tiredness, coma, high blood pressure, decreased blood flow to the hands and feet, and irritation to the lungs and stomach. Liver damage, bladder and kidney damage, numbness and tingling to the hands and feet, decreased balance and muscle wasting may also be experienced. Arsenic is associated with skin changes such as patchy changes in skin colour, thick horny growths, and increased sensitivity. Arsenic is a well known cancer causing agent and has been linked to many cancers including those of the skin, the bone marrow, the liver, the bladder, the kidney, the prostate, and the lung.

Is there a medical test that can determine if I have been exposed to arsenic?

Yes. In situations where the history and symptoms fit with arsenic exposures a medical doctor can order specific blood and urine tests to be collected and sent to an appropriate laboratory. Hair and fingernail samples are not useful in determining toxicity.

Does an elevated level of arsenic always mean that I have arsenic poisoning?

No. Because arsenic is found in all parts of our environment, we will all have detectable arsenic levels. The need to treat an arsenic level depends on the history of exposure and the patient's symptoms.

What is the treatment for arsenic exposures?

The main treatment is to remove the source of the arsenic and prevent re-exposure. This may involve use of proper protective equipment on the job or with hobbies. It may involve discontinuation of folk remedies and supplements. Some patients, depending on test results, arsenic levels, and symptoms, may require medications called chelators (kee-lay-tors), to help remove some of the arsenic from their bodies.

What are chelators and when would they be used?

Chelators attach to some metals and remove them from the body, but they also remove good minerals. Chelators can cause damage to other organs and can cause life threatening allergic reactions. Because of these dangers it is important that patients be assessed by a medical doctor and that appropriate tests are performed at an appropriate laboratory.

This decision to chelate should be made by a medical doctor after considering the history of exposure, the test results, and the patient's symptoms.

Does arsenic cause cancer?

Not all types and forms of arsenic cause cancer. Inorganic arsenic, which can be found in smelting and semiconductor manufacturing, is a known cancer causing agent.

Where can I get more information?

If you have questions about arsenic call PADIS (Poison and Drug Information Service) at 1-800-332-1414. Information Specialists are available 24/7 to help answer your questions.