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## Arsenic Toxicity

### (Arsenic Poisoning)

by [Krisha McCoy, MS](#)

#### Definition

Arsenic toxicity occurs when a person is exposed to arsenic. Arsenic is a naturally occurring element in the earth's crust. It has no smell or taste. If you suspect you have been exposed to arsenic, contact your doctor immediately.

There are two primary forms of arsenic:

- Inorganic arsenic—arsenic combined with oxygen, chlorine, or sulfur; found in the environment
- Organic arsenic—arsenic combined with carbon and hydrogen; found in animals and plants

Inorganic arsenic is usually more harmful than organic arsenic.

#### Causes

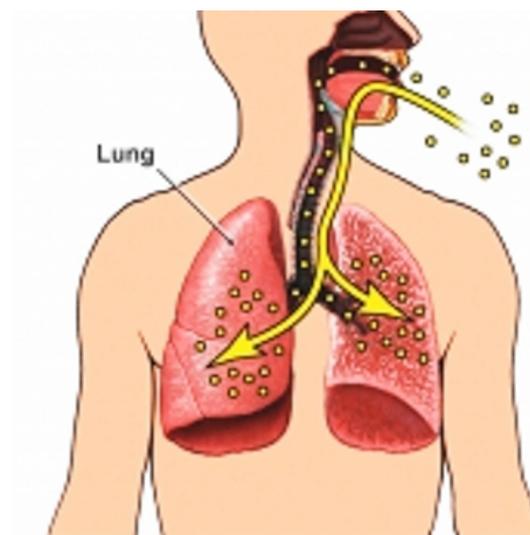
Arsenic occurs naturally in soil and minerals, and may enter the air, water, and soil. It is also used:

- To preserve or pressure-treat wood (this use is being phased out except for specific applications such as railroad ties and utility poles, but old stocks may still be around and pose a risk)
- As a pesticide
- To produce glass
- In copper and other metal manufacturing
- In the electronics industry
- In medicine

Arsenic toxicity may occur when a person is exposed to toxic amounts of arsenic due to:

- Breathing air containing arsenic
- Eating food contaminated with arsenic
- Drinking water contaminated with arsenic
- Living in areas with high natural levels of arsenic
- Working in a job that involves arsenic

#### Inhalation of Arsenic



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#### Risk Factors

Anyone can develop arsenic toxicity as a result of arsenic exposure. But certain people are more likely to be exposed to arsenic. The following factors increase your chances of being exposed to arsenic. If you have any of these risk factors, tell

your doctor:

- Working in:
  - Companies that preserve wood with arsenic
  - Metal manufacturing industry
  - Glass production industry
  - Electronic industry
  - Other industries that use arsenic
- Living in an area with high natural levels of arsenic

In addition, children may be more susceptible than adults to the health effects of arsenic. There is some evidence that arsenic exposure may harm pregnant women and their unborn babies.

### Symptoms

Ingesting very high levels of arsenic can result in death. Arsenic has also been linked to increased risks of cancer of the [lung](#) , [skin](#) , [bladder](#) , [liver](#) , [kidney](#) , and [prostate](#) .

Symptoms of arsenic exposure include:

- Thickening of skin
- Discoloration of skin
- Small "corns" or "warts" on the palms, soles, and torso
- Stomach pain
- Nausea
- Vomiting
- [Diarrhea](#)
- Decreased production of red and white blood cells
- Abnormal heart rhythm
- Damage to blood vessels
- Numbness in hands and feet
- Partial paralysis
- Blindness
- Garlic odor of breath
- Seizures

### Diagnosis

Your doctor will ask about your symptoms and medical history, and perform a physical exam. It can be difficult to make a diagnosis of arsenic poisoning because symptoms are so varied. If you have concerns about arsenic causing symptoms in yourself or a family member be sure to tell these to your doctor. Tests on blood and urine can quickly establish or "rule out" this diagnosis.

Tests may include the following:

- Blood tests
- Urine tests
- Hair or fingernail analysis

### Treatment

There is no effective treatment for arsenic toxicity. There is increasing evidence that treatment with the chelating drug 2,3-dimercapto-1-propanesulfonate (DMPS) may benefit some arsenic poisoned persons. An alternative is succimer. Chelation therapy involves putting a chemical, or *chelating agent* , into the bloodstream. The chelating agent combines with a toxin to help remove it from the body. Chelating agents may be given by pill or by injection.

If chelation is not indicated or is ineffective, your treatment will be designed to help manage and relieve your symptoms.

### Prevention

To help reduce your chances of getting arsenic toxicity, take the following steps:

- If you work with arsenic-treated wood at home, wear a dust mask, gloves, and protective clothing. Do not burn any wood that has been treated with arsenic compounds.
- If you live in an area with high natural levels of arsenic, use cleaner sources of water (eg, bottled or filtered water) and limit contact with soil. If you have well water, have it tested for a variety of contaminants including arsenic.

### RESOURCES:

Agency for Toxic Substances and Disease Registry  
<http://www.atsdr.cdc.gov/>

US Environmental Protection Agency  
<http://www.epa.gov/>

### CANADIAN RESOURCES:

Canadian Centre for Occupational Health and Safety  
<http://www.ccohs.ca/>

Health Canada  
<http://www.hc-sc.gc.ca/index-eng.php/>

### References:

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Last reviewed September 2009 by [Ronald Nath, MD](#)

Please be aware that this information is provided to supplement the care provided by your physician. It is neither intended nor implied to be a substitute for professional medical advice. CALL YOUR HEALTHCARE PROVIDER IMMEDIATELY IF YOU THINK YOU MAY HAVE A MEDICAL EMERGENCY. Always seek the advice of your physician or other qualified health provider prior to starting any new treatment or with any questions you may have regarding a medical condition.

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