

Birth Defect Research for Children

Fact Sheet

Arsenic

What is it? Arsenic is a naturally occurring element in the earth's crust. Pure arsenic is a gray colored metal. Inorganic arsenic is found combined with other elements such as oxygen, chlorine and sulfur. The organic form of arsenic however is much less toxic than the inorganic form of this element. Most inorganic and organic arsenic compounds are white colorless powders that do not evaporate. They have no smell, and most have no taste. Thus, it is usually difficult to tell if arsenic is present in foods, water, or in the air.

What is it used for? Presently about 90% of all arsenic produced is used as a preservative for wood to make it resistant to rotting and decay. The preservative is chromate copper arsenate (CCA) and the treated wood is referred to as "pressure treated". In the past arsenic was widely used as a pesticide in cotton fields and in orchards. Until the 1940's, inorganic arsenic solutions were used in treatment of various diseases, such as syphilis and psoriasis. Inorganic arsenic is still used as an antiparasitic agent in veterinary medicine and in homeopathic and folk remedies in the United States and other countries.

How Are We Exposed to Arsenic? Arsenic is found naturally in the environment where it is released into the air by volcanoes or through the weathering of arsenic containing minerals and ores. Commercial or industrial processes also produce arsenic. The major route of human exposure seems to be arsenic-contaminated food at about (25 to 50 ug/d), with lower amounts coming from drinking water and air.

Acute effects: Inorganic arsenic has been recognized as a human poison since ancient times, and large oral doses (above 60,000 ppb in food or water) can produce death. If lower levels are swallowed, arsenic causes symptoms such as stomachache, nausea, vomiting, and diarrhea. If arsenic is inhaled, it may cause a sore throat, irritated lungs and skin changes.

Chronic Effects: Long-term oral exposure to inorganic arsenic can cause a pattern of skin changes. These include a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles and torso. A small number of the corns may ultimately develop into skin cancer. Other effects may include decreased production of red and white cells which may cause fatigue, a weakened immune system, abnormal heart rhythm, blood-vessel damage resulting in bruising, and impaired nerve function in addition to circulatory disorders.

Reproductive Effects: In animal studies, arsenic exposure has caused offspring to be born with low birth weight, fetal malformation, and even fetal death. Arsenic can cross the placenta and has been found in fetal tissues. Several studies of human exposure to arsenic in drinking water have shown adverse pregnancy outcomes in terms of spontaneous abortion, stillbirth, and preterm births.

Carcinogenic Potential: The Department of Health and Human Services has determined that inorganic arsenic is a known carcinogen. The EPA and the National Toxicology Program (NTP) have also classified inorganic arsenic as a known human carcinogen. Swallowing arsenic has also been reported to increase the risk of cancer in the liver, bladder, kidneys, prostate, lungs and skin.

News Update: The U.S Environmental Protection Agency has reached an agreement with the construction industry to reduce the use of pressure treated wood containing arsenic in homes, playgrounds and other consumer goods. According to an analyst for the Environmental Working Group, "In less than two weeks, an average five-year-old playing on an arsenic-treated play set would exceed the lifetime cancer risk considered acceptable under federal pesticide law." The recent EPA policy change will prevent residents and schoolchildren from exposures to arsenic that may leach from treated wood into surrounding soil, surface and groundwater.

Birth Defect Research for Children, Inc.
930 Woodcock Road, Suite 225
Orlando FL 32803
407-895-0802
www.birthdefects.org