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## Spotlight on Arsenic

Arsenic is a naturally occurring element distributed in small amounts throughout the Earth's crust. In the past, arsenic was used in pesticides, as a wood preservative, a pigment in paint, and a treatment for a variety of ailments. In its organic form, arsenic is still used in some pesticides, but its use as a wood preservative is being phased out. Although one form of arsenic is an approved treatment for a specific type of leukemia, arsenic historically has been used in large doses as a homicidal poison, thus earning the name "King of Poisons."

### How People Are Exposed to Arsenic

People are most likely to be exposed to inorganic arsenic through drinking water. Some natural water sources have higher levels of arsenic than others. Smoking, as well as smoke from burning arsenic-treated wood, is another source of inorganic arsenic. Children playing on wood treated with chromated copper arsenate (for example, as found in decks or playground sets) may have increased exposure. Workers in specific industries, such as in the semiconductor or smelting industry, can occasionally be exposed to special types of arsenic. Another major source of exposure is the non-toxic organic forms of arsenic found in seafood.

### How Arsenic Affects People's Health

Large doses of inorganic arsenic disrupt many of the body's cellular functions and 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 risks for diabetes, high blood pressure, and several types of cancer.

### Levels of Arsenic in the U.S. Population

During 2003-2004, CDC scientists tested the urine of 2,557 people aged six years and older who took part in a nationwide survey, called the National Health and Nutrition Examination Survey (NHANES).

- Of the seven forms of arsenic that the study examined, dimethylarsinic acid (DMA), and arsenobetaine were the major contributors to the total urinary arsenic levels. DMA is mainly a metabolite of ingested inorganic arsenic and arsenobetaine is an ingested organic form of arsenic found in seafood. At higher levels of total urinary

arsenic, arsenobetaine is the primary contributor, while at lower levels, DMA is the primary contributor.

- Total urinary arsenic levels and total DMA levels were greater in Mexican-American males than in other groups. Among non-Hispanic participants, females had higher levels of total urinary arsenic than males.
- For both total urinary arsenic and total DMA levels, the 12- to 19-year-old age group had lower levels than either the 6- to 11-year-old age group or the 20 years and older age group.
- Results obtained in this study affirm results described in other smaller studies of typical human exposure to arsenic.

#### **For More Information**

- U.S. Department of Health and Human Services  
**Toxicological Profile for Arsenic**  
Detailed information about arsenic and public health is available at <http://www.atsdr.cdc.gov/toxprofiles/tp2.html>
- National Center for Environmental Health  
**Environmental Public Health Tracking and Biomonitoring**  
Examples of EPHT/State Laboratory collaborative activities  
<http://www.cdc.gov/nceh/tracking/trackbiomon.htm#eg>

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