ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

HEXACHLOROBENZENE

CAS # 118-74-1

Division of Toxicology ToxFAQs™ **September 2002**

This fact sheet answers the most frequently asked health questions (FAQs) about hexachlorobenzene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to hexachlorobenzene occurs primarily from eating low levels in contaminated food. Much lower exposures can occur from drinking water and breathing air contaminated with hexachlorobenzene. The main health effect from eating highly contaminated food is a liver disease. Hexachlorobenzene has been found in at least 106 of the 1,613 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is hexachlorobenzene?

Hexachlorobenzene was widely used as a pesticide to protect the seeds of onions and sorghum, wheat, and other grains against fungus until 1965. It was also used to make fireworks, ammunition, and synthetic rubber. Currently, hexachlorobenzene is not used commercially in the United States.

Hexachlorobenzene is a white crystalline solid, that does not occur naturally in the environment. It is formed as a by-product during the manufacture of other chemicals. Small amounts can also be produced during combustion of municipal waste.

What happens to hexachlorobenzene when it enters the environment?

❑ Hexachlorobenzene can remain in the environment for a long time. It breaks down very slowly.
❑ It sticks strongly to soil. Half of the hexachlorobenzene in soil will disappear in 3-6 years.
❑ It does not dissolve easily in water. Once in water, it binds to sediments and settles to the bottom.
❑ Half of the hexachlorobenzene in surface water will disappear in 3-6 years.
❑ Under ordinary conditions not much evaporates into the air. Once in air, it can be carried out long distances.
❑ Hexachlorobenzene can build up in fish and other aquatic animals.

How might I be exposed to hexachlorobenzene?

❑ Eating low levels in contaminated food (e.g, fish, meat, milk, dairy products) or drinking small amounts in contaminated water.
❑ Breathing low levels in contaminated air.
❑ Eating or touching contaminated soil.
❑ For babies, drinking contaminated breast milk from exposed mothers.
❑ Working in a factory that uses or produces it as a by-product.

How can hexachlorobenzene affect my health?

A study of people in Turkey who ate, over a long time, bread accidentally contaminated with hexachlorobenzene suffered from a liver disease called porphyria cutanea tarda. This disease can cause red-colored urine, skin sores, change in skin color, arthritis, and problems of the liver, nervous system, and stomach.

Studies in animals show that eating hexachlorobenzene for a long time can damage the liver, thyroid gland, nervous system, bones, kidneys, blood, and immune and endocrine systems.

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The immune system of rats that breathed hexachlorobenzene for a few weeks was harmed.

How likely is hexachlorobenzene to cause cancer?

Studies in humans have provided inconclusive evidence of carcinogenicity for hexachlorobenzene. The Department of Health and Human Services (DHHS) has determined that hexachlorobenzene may reasonable be anticipated to be a human carcinogen. The International Agency for Research on Cancer (IARC) has determined that hexachlorobenzene is possibly carcinogenic to humans. The EPA haas concluded that hexachlorobenzene is a probable human carcinogen.

Studies in animals suggest that eating this substance for months or years can cause cancer of the liver, kidney, and thyroid.

How can hexachlorobenzene affect children?

Breast-fed infants of mothers known to have eaten bread contaminated with hexachlorobenzene developed a disease that produced skin lesions known as "pink sore." Other symptoms were weakness and convulsions. Many of the sickened infants died from this disease. Young children older than 2 years of age did not get pink sore, but they developed numerous skin, nervous system, and bone abnormalities later in life.

Studies in animals suggest that young animals are especially sensitive to hexachlorobenzene. Effects on the liver, nervous system, and immune system occurred at lower doses in the young developing animals than in adults.

How can families reduce the risk of exposure to hexachlorobenzene?

❑ The main way people are exposed to hexachlorobenzene is through food, especially fatty foods (e.g., dairy products, some fish).

❑ If hexachlorobenzene is produced in your place of work, make sure you do not carry the chemical home in your clothing, skin, hair, tools, or other objects from the workplace.

Is there a medical test to show whether I've been exposed to hexachlorobenzene?

Blood, breast milk, urine, and feces may be tested to determine if you have ever been exposed to hexachlorobenzene. Because hexachlorobenzene can collect and remain in breast milk, the test for this substance in breast milk can tell you that you have been exposed, but not when or to how much. The levels in blood, urine, and feces indicate more recent exposure, but will not tell whether harmful health effects will occur. The tests are not routinely available at the doctor's office because they require special equipment.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level of 0.001 milligram per liter (0.001 mg/L) of drinking water. The EPA also recommends that hexachlorobenzene do not exceed 0.05 mg/L in water that children drink for periods of up 10 days.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2002. Toxicological Profile for Hexachlorobenzene (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.