

This fact sheet answers the most frequently asked health questions (FAQs) about bromoform and chlorodibromomethane. 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's 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: Small amounts of bromoform and chlorodibromomethane are naturally produced by ocean plant life. They are also formed as by-products when chlorine is added to water-supply systems. High levels of bromoform and chlorodibromomethane can damage the liver and kidneys and affect the brain. Bromoform and chlorodibromomethane have been found at 14 of the 1,177 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are bromoform and chlorodibromomethane?

(Pronounced brō'mō fōrm and klōr'ō di brō'mō mēth'an')

Bromoform and chlorodibromomethane are colorless, nonflammable liquids with a sweet odor. Small amounts are formed naturally by plants in the oceans. They are somewhat soluble in water and readily evaporate into air. Most of the bromoform and chlorodibromomethane that enters the environment is formed as by-products when chlorine is added to drinking water to kill bacteria.

Only small quantities of bromoform and chlorodibromomethane currently are produced in the United States. These chemicals were used in the past as solvents and flame retardants, or to make other chemicals, but now they are used mainly as laboratory reagents.

What happens to bromoform and chlorodibromomethane when they enter the environment?

- When released to air, bromoform and chlorodibromomethane are slowly broken down by reactions with other chemicals and sunlight or can be removed by rain.
- In water, these chemicals will evaporate to the air and/or be broken down slowly by bacteria.

- When released to soil, most will evaporate to the air, some will be broken down by bacteria, and some may filter into the groundwater.
- Bromoform and chlorodibromomethane do not build up in the food chain.

How might I be exposed to bromoform and chlorodibromomethane?

- The most likely way people are exposed to bromoform and chlorodibromomethane is by drinking chlorinated water.
- You may breathe vapors released from chlorinated water in a swimming pool or in the home (cooking, washing dishes, bathing, etc.).
- Some bromoform and chlorodibromomethane may enter your body directly through your skin while bathing or swimming.
- People that live near a waste site containing bromoform or chlorodibromomethane could be exposed by drinking contaminated groundwater or breathing vapors released to the air.
- Exposure could occur by breathing bromoform and chlorodibromomethane in the air in or near a laboratory or factory that makes or uses this chemical; however, this is not likely for most people.

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

How can bromoform and chlorodibromomethane affect my health?

No studies are available about health effects in people exposed to chlorodibromomethane. Bromoform was used as a sedative to treat children with whooping cough during the early 1900s. Several recorded cases of overdose indicate that high doses affect the central nervous system causing unconsciousness, loss of reflexes, shallow breathing, erratic heart rate, and respiratory failure. Milder cases resulted in rapid breathing, constricted pupils, and tremors.

Animal studies indicate that the liver, kidney, and central nervous system are affected by exposure to bromoform and chlorodibromomethane. The effects on the central nervous system appear quickly after exposure to high doses and include labored breathing, incoordination, sedation, and death. Longer-term exposure to lower doses causes drowsiness, increased liver weight, and liver and kidney damage. We do not know if bromoform and chlorodibromomethane cause birth defects or infertility.

How likely are bromoform and chlorodibromomethane to cause cancer?

There is evidence that ingestion of bromoform causes intestinal cancer in rats and ingestion of chlorodibromomethane causes liver cancer in mice. It is not known if they cause cancer in people. The International Agency for Research on Cancer (IARC) has determined that the human carcinogenicity of bromoform and chlorodibromomethane is not classifiable.

Is there a medical test to show whether I've been exposed to bromoform or chlorodibromomethane?

Methods are available to measure low levels of bromoform and chlorodibromomethane in human blood, breath, and fat, but not enough information is available to use such tests to

predict if any health effects might occur. Because special equipment is needed, these tests are not usually done in the doctors' office.

Has the federal government made recommendations to protect human health?

The EPA has set a Maximum Contaminant Level (MCL) of 0.1 parts per million (0.1 ppm) for the combination of bromoform and chlorodibromomethane and a group of similar compounds (called trihalomethanes) that occur in chlorinated water.

The EPA recommends that levels of halomethanes in lakes and streams should be limited to 0.19 ppm to prevent possible human health effects from drinking water or eating fish contaminated with this group of chemicals. Any release to the environment greater than 100 pounds of bromoform or chlorodibromomethane must be reported to the EPA.

Because chlorodibromomethane has such a limited use in industry, the Occupational Safety and Health Administration (OSHA) has not set limits of exposure for workplace air. OSHA has set a workplace air concentration limit of 0.5 ppm for bromoform over an 8-hour workday, 40-hour workweek.

The federal recommendations have been updated as of July 1999.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1989. Toxicological profile for bromoform and chlorodibromomethane. 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.

