

This fact sheet answers the most frequently asked health questions (FAQs) about carbon tetrachloride. 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. This information is important 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.

SUMMARY: Exposure to carbon tetrachloride results mostly from breathing air, drinking water, or coming in contact with soil that is contaminated with it. This is most likely to occur around hazardous waste sites or in the workplace. In people, exposure to very high amounts of carbon tetrachloride can damage the liver, kidneys, and nervous system. This chemical has been found in at least 326 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

What is carbon tetrachloride?

(Pronounced kār'bən tēt'rə klōr'id')

Carbon tetrachloride is a manufactured compound that does not occur naturally. It's a clear liquid with a sweet smell that can be detected at low levels. It's also called carbon chloride, methane tetrachloride, perchloromethane, tetrachloroethane, or benziform. Trade names include Benzinoform, Freon 10, Halon 104, Tetraform, or Tetrasol.

Carbon tetrachloride is most often found as a colorless gas. It's not flammable and doesn't dissolve in water very easily. It was used in the production of refrigeration fluid and propellants for aerosol cans, as a pesticide, as a cleaning fluid and degreasing agent, in fire extinguishers, and in spot removers. Because of its harmful effects, these uses are now banned and it is only used in some industrial applications.

What happens to carbon tetrachloride when it enters the environment?

- It moves very quickly into the air upon release, so most of it is in the air.
- It evaporates very quickly from soil and surface water.
- Only a small amount sticks to soil particles; the rest evaporates or moves into the groundwater.
- It is very stable in air (lifetime of 30-100 years).

- It can be broken down or transformed in soil and water within several days.
- When it does break down, it forms chemicals that can destroy ozone in the upper atmosphere.
- It doesn't build up in animals. We do not know if it builds up in plants.

How might I be exposed to carbon tetrachloride?

- Breathing contaminated air near manufacturing plants or waste sites.
- Breathing workplace air when it is used.
- Drinking contaminated water near manufacturing plants and waste sites.
- Breathing contaminated air and skin contact with water while showering or cooking with contaminated water.
- Swimming or bathing in contaminated water.
- Contact with or eating contaminated soil at waste sites.

How can carbon tetrachloride affect my health?

High exposure to carbon tetrachloride can cause liver, kidney, and central nervous system damage. These effects result from either eating, drinking, or breathing it, and possibly from exposure to the skin. The liver is especially sensitive to carbon tetrachloride because it swells and cells

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are damaged or destroyed. Kidneys are also damaged, causing a buildup of wastes in the blood. If exposure is low and then stops, the liver and kidneys can repair the damaged cells and function normally again.

If exposure is very high, the nervous system, including the brain, is affected. People may feel intoxicated and experience headaches, dizziness, sleepiness, and nausea and vomiting. These effects may subside if exposure is stopped, but in severe cases, coma and even death can occur.

There have been no studies in people on carbon tetrachloride's effects on reproduction or development, but studies in rats showed no adverse effects.

How likely is carbon tetrachloride to cause cancer?

The Department of Health and Human Services has determined that carbon tetrachloride may reasonably be anticipated to be a carcinogen.

Animals that ingested carbon tetrachloride over a long time developed liver cancer. We do not know if breathing carbon tetrachloride causes cancer in animals. We also do not know if breathing or ingesting it will cause cancer in people.

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

Several sensitive and specific tests are available to measure the amount of carbon tetrachloride in your breath, blood, urine, and body tissues. The tests can't tell you how much carbon tetrachloride you were exposed to or whether there will be any effects on your health. The tests must be done soon after exposure because it leaves your body quickly. These tests aren't routinely performed in doctors' offices, but your doctor can tell you where to obtain such a test.

Has the federal government made recommendations to protect human health?

The Environmental Protection Agency (EPA) has set a limit of 0.005 parts of carbon tetrachloride per million parts of drinking water (0.005 ppm). The EPA recommends that drinking water exposures should not exceed 0.3 ppm for adults and 0.07 ppm for children for long periods of time (7 years).

The EPA has also set limits on how much carbon tetrachloride can be released from an industrial plant into wastewater and is preparing to set limits on how much can be released into outside air.

The Occupational Safety and Health Administration (OSHA) set a maximum concentration limit in workplace air of 10 ppm for an 8-hour workday over a 40-hour workweek.

Glossary

Carcinogen: A substance that can cause cancer.

Evaporate: To change into a vapor or a gas.

Ingesting: Taking food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1994. Toxicological profile for carbon tetrachloride. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Agency for Toxic Substances and Disease Registry (ATSDR). 1992. Case studies in environmental medicine. Carbon tetrachloride toxicity. 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.

