



CHLOROMETHANE

What is chloromethane?

Chloromethane, also known as methyl chloride, is a colorless gas that catches fire easily. It has a faint sweet smell only noticed at potentially toxic levels. Since chloromethane gas is heavier than air, it settles close to the ground, raising the risk level for exposed persons. Chloromethane is usually found in nature but can also be man-made. When grass, wood, charcoal, and coal are burned, or when wood rots, chloromethane gas is released into the environment. Chloromethane is also released from burning plastic, cigarette smoke, the process of dismantling e-waste, interior materials in vehicles, and laundry products. Factories that use chloromethane for manufacturing laboratory and agricultural chemicals, adhesives and sealant chemicals, and silicones can emit this gas.

Where can chloromethane be found and how is it used?

Prior to the wide use of Freon®, chloromethane was used as a refrigerant to keep things cold. Working refrigerators more than 50 years old may still have chloromethane in their cooling units that could cause high-level exposure. It was also used as a foam-blowing agent and as a pesticide or fumigant to kill pests or insects. Today, most chloromethane is used to make other chemicals. By the end of the manufacturing process, little or no chloromethane remains. The production of vinyl chloride could be a source of chloromethane in the environment because an impurity in vinyl chloride breaks down into chloromethane. It is rarely found as a polluting agent in waste streams from treatment plants and factories since it exists mostly as a gas or vapor.

How can people be exposed to chloromethane?

Contact with liquid chloromethane is rare but could occur in a factory accident from a broken metal container. Cigarette smoking, living near hazardous waste sites, or working with chloromethane can expose you to dangerous levels in air.

You could be exposed to chloromethane through:

- **Breathing** air containing chloromethane vapor. If you live near a hazardous waste site, this is the most likely way you would be exposed.
- **Drinking** water contaminated with chloromethane, although this is unlikely to occur since it exists mostly as a gas or vapor.
- **Touching** liquid chloromethane, which is unlikely since chloromethane quickly turns into a gas at room temperature.
- **Eye Contact** if you get chloromethane vapor into your eyes. This could happen if you work with it at your job.

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Frequently Asked Questions

How does chloromethane work?

Chloromethane can enter your body by breathing it or drinking water containing it. When you breathe or drink chloromethane, it enters the bloodstream fast and moves to the liver, kidneys, and brain.

Most chloromethane that enters the body is broken down into other products, which then leaves the body in urine within a few hours or days. The chloromethane that does not change leaves your body in the air you exhale.

How can chloromethane affect my health?

Liquid chloromethane may cause frostbite if it gets on the skin. Exposures to large amounts of chloromethane can affect your brain, nervous system, heart rate, blood pressure, liver, and kidneys. It may cause dizziness, headaches, difficulty speaking, loss of consciousness, or coma.

Studies in animals show that chloromethane exposure may cause reproductive effects like decreased fertility and poorly formed sperm. It is unknown if developmental effects seen in animals, such as serious bone problems, would be seen in humans. Based on a review of available studies, the Agency for the Toxic Substances and Disease Registry reports that liver and nervous system effects are presumed effects of breathing chloromethane, and kidney and reproductive effects are suspected health effects. More information is needed to classify the effects chloromethane has on development and the heart.

How is chloromethane poisoning treated?

There is no treatment for chloromethane poisoning. A doctor will treat the symptoms. A person who has been exposed to chloromethane may seem drunk. They may also have symptoms that are like food poisoning.

What should I do if exposed to chloromethane?

- **If you breathe chloromethane**, get fresh air and rest. Get medical attention.
- **If you get chloromethane on your skin** and feel pain similar to frostbite, wash with plenty of water. Do not remove clothes. Get medical attention.
- **If you get chloromethane in your eyes**, remove contact lenses if you can do it easily. Rinse with plenty of water for several minutes. Get medical attention.
- **If you get chloromethane on your clothes**, rinse clothes with plenty of water.

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What factors limit use or exposure to chloromethane?

You are most likely to be exposed to chloromethane at work. Safe work methods can limit exposure. Safety measures include enclosing operations where chloromethane is used, providing fresh air, and venting air away from the site of chemical release.

Employees should wear respirators if venting is unavailable. Employees should wear protective clothing and wash right after exposure, as well as again at the end of the work shift.

Old refrigerators should be checked for leaks. If the appliance repair worker finds leaks, the refrigerator should be discarded. Do not use chloromethane near a fire or any heated application, such as welding. In the event of a leaking cylinder, if the source of the leak cannot be stopped in place, the leaking cylinder should be moved to a safe place in the open air, and the leak should be repaired or the cylinder should be allowed to empty.

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

There are no medical tests that can show if you have been exposed to chloromethane.

Technical information for chloromethane

CAS Number: 74-87-3

Chemical Formula: CH₃Cl

Carcinogenicity (EPA): Not classifiable as a human carcinogen.

MCL (Drinking Water): There is no MCL for chloromethane.

OSHA Standards: 100 parts per million (ppm) of air. (207mg/m³)

NIOSH Standards: Chloromethane has been designated a potential occupational carcinogen but no numeric standard has been set.

ACGIH: 8 hr. Time Weighted Avg. (TWA): 50 ppm in air

Resources

Agency for Toxic Substances and Disease Registry (ATSDR). 2022. *Toxicological profile for Chloromethane*.

<https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=587&tid=109>

Agency for Toxic Substances and Disease Registry (ATSDR). 2022. *ToxFAQs for Chloromethane*.

<https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=586&toxid=109>

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