

1,1,1-Trichloroethane (1,1,1-TCA)

Answers to Frequently Asked Health Questions

What is 1,1,1-TCA?

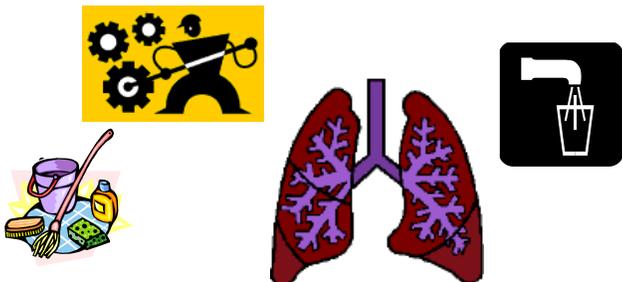
1,1,1-TCA, also called methyl chloroform, is a man-made chemical that you will not find naturally in the environment. It is a colorless liquid with a sweet, sharp odor. 1,1,1-TCA dissolves very little in water and quickly evaporates (turns into a gas) when exposed to the air. 1,1,1-TCA burns easily when it comes in contact with a spark or flame.

Note: After January 1, 2002, no 1,1,1-TCA is to be manufactured for use in the U.S. because it may affect the earth's ozone layer.

How does 1,1,1-TCA get into the environment?

1,1,1-TCA can be found in soil, water and air. Because it evaporates easily, it is most commonly found in the air. 1,1,1-TCA will also evaporate quickly from water and soil. It does not bind (stick) to soils, so it may easily leak into the underground water (groundwater). Many cities in Ohio use groundwater as their drinking water supply. 1,1,1-TCA does not appear to build up in plants, animals or fish.

What happens to 1,1,1-TCA in the environment?



Most of the 1,1,1-TCA released into the environment enters the air. Once in the air,

it can travel to the upper part of the earth's atmosphere, called the stratosphere (also called the ozone layer). There, sunlight breaks it down into other chemicals that may reduce the Earth's protective ozone layer.

How can 1,1,1-TCA enter and leave my body?

1,1,1-TCA can quickly enter your body if you breathe contaminated air (inhalation) and/or drink and eat contaminated food or water (ingestion). Very small amounts can be absorbed by skin contact (dermal).

1,1,1-TCA has been found in air samples taken from all over the world. However, normally you are not exposed to large enough amounts to cause health problems. Because 1,1,1-TCA was used so frequently in home and office products, much higher levels were found in the air inside the home or office than in the outdoor air.

If 1,1,1-TCA is released to surface and ground-water, individuals may be exposed through contaminated drinking water.

Occupational (worker) exposure to 1,1,1-TCA can occur during the use of metal degreasing agents, paints, glues and cleaning products.

Regardless of how 1,1,1-TCA enters your body, nearly all of it quickly leaves your body in the air you breath out (exhale). The small amount that is not breathed out can be changed in your body into other substances, known as metabolites. Most of the metabolites leave your body in the urine and breath within a few days.

Can 1,1,1-TCA make you sick?

Yes, you can get sick. But getting sick will depend on the contact (exposure) you had with the chemical.

Exposure:

- How much you were exposed to (dose).
- How long you were exposed (duration).
- How often you were exposed (frequency).
- General Health, Age, Lifestyle Young children, the elderly and people with chronic (on-going) health problems are more at risk to chemical exposures.

How can 1,1,1-TCA affect my health?

If you breathe high levels of 1,1,1-TCA for a short time, you may become dizzy, lightheaded and possibly lose your balance and coordination. These health effects quickly end when you stop breathing the contaminated air. If you breathe much higher levels of 1,1,1-TCA, you may become unconscious, your blood pressure may lower to dangerously low levels and your heart may stop beating.

We do not know if breathing low levels of 1,1,1-TCA for a long time causes harmful effects. Animals studies (mice and rats) show that breathing very high levels of 1,1,1-TCA damages the breathing passages, causes mild effects in the liver and affects the nervous system. There are no human studies that show that eating food or drinking water contaminated with 1,1,1-TCA could harm health.

The likelihood is very low that exposure to 1,1,1-TCA levels found near most hazardous waste sites would cause significant health effects.

Does 1,1,1-TCA cause cancer (carcinogen)?

The EPA has classified 1,1,1-TCA as a Group D chemical, not classifiable as to human carcinogenicity. The Group D classification is based on no reported human data and inadequate animal data to suggest that exposure to this chemical can cause cancer.

The International Agency for Research on Cancer (IARC) has also determined that exposure to 1,1,1-TCA has not resulted in cancer in humans.

Is there a medical test to show whether you have been exposed to 1,1,1-TCA?

Samples of your breath, blood and urine can be tested to determine if you have recently been exposed to 1,1,1-TCA. To be of any value, samples of your breath or blood have to be taken within hours after the exposure and the urine samples have to be taken within 2 days after exposure.

In some cases, these tests can estimate how much 1,1,1-TCA has entered your body. However, these tests will not tell you whether your health will be affected by the exposure to 1,1,1-TCA.

These tests are not routinely done in your doctor's office, hospital and/or clinics because they require special lab equipment.

What recommendations has the federal government made to protect human health?

The U.S. Environmental Protection Agency (U.S. EPA) has established a "maximum contaminant level" (MCL) for chemicals in water. If chemicals are found to be above the MCL, your water supplier must take steps to reduce the amount of chemicals so it falls below the level established by the EPA. **Note:** The MCL for 1,1,1-TCA is 200 parts per billion (ppb). In other words: 200 parts of 1,1,1-TCA per one billion parts of water.

After January 1, 2002, no 1,1,1-TCA is to be manufactured for use in the U.S. because it may affect the earth's ozone layer.

References:

Agency for Toxic Substances and Disease Registry (ATSDR). *Toxicological Profile for 1,1,1-Trichloroethane. (Update)*. U.S. Public

Health Service, U.S. Department of Health and Human Services, Atlanta, GA. July, 2006

U.S. Environmental Protection Agency.
Consumer Factsheet on: 1,1,1-Trichloroethane. Groundwater & Drinking Water. November 2006.

U.S. Environmental Protection Agency.
Methyl chloroform (1,1,1-Trichloroethane) 71-55-6. Technology Transfer Network Air Toxics Website. Rev. January 2000.

Where Can I Get More Information?

Ohio Department of Health
Bureau of Environmental Health and Radiation Protection
Radiological Health and Safety Section
246 N. High Street
Columbus, Ohio 43215
Phone: (614) 644-2727

This fact sheet was developed in cooperation with the Agency for Toxic Substances and Disease Registry