1,1,1-Trichloroethane - ToxFAQs™

What is 1,1,1-trichloroethane?

- 1,1,1-Trichloroethane is a man-made chemical that is not found naturally in the environment. It is a colorless liquid, and it smells sweet and sharp. It was primarily used to dissolve glues and paints and to remove oil or grease from industrial parts. It was also used as an ingredient in household products like spot cleaners. Under Section 604 of the Clean Air Act and Montreal Protocol, U.S. production of 1,1,1-trichloroethane was intended to be phased out by January 2002 and ceased by 2012. While the Montreal Protocol did not stop the production of 1,1,1-trichloroethane completely, it significantly reduced the production. This resulted in a steady decline in ambient levels, but some production of 1,1,1-trichloroethane does continue.

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

- 1,1,1-Trichloroethane is found most commonly in the air. It moves easily from water or soil to the air.
- Once in the air, 1,1,1-trichloroethane breaks down slowly. Small amounts are broken down by light to produce chemicals that react with the ozone layer.
- Because 1,1,1-trichloroethane breaks down slowly in the air, it can travel in the air to places far from where it was released.
- 1,1,1-Trichloroethane moves easily in soil.

You are unlikely to be exposed to high levels of 1,1,1-trichloroethane since the manufacture and use of this chemical has significantly decreased in the United States.

How can I be exposed to 1,1,1-trichloroethane?

- You could possibly be exposed to high levels of 1,1,1-trichloroethane from use of older household products. Even though the use of this chemical has significantly decreased in the United States, workers may encounter some exposure in occupational settings where it is made or used.
- In the past, breathing air that contained 1,1,1-trichloroethane was the most likely way that you might be exposed. Small amounts have recently been measured in the air in the United States.
- You could be exposed to small amounts of 1,1,1-trichloroethane in water. Absorption through your skin depends on how you are exposed (immersion or topical application), skin type, and size of exposed area.
- You may be exposed to 1,1,1-trichloroethane from the soil or water under a house or building when it moves up into the air in the house or building.
- You may be exposed to 1,1,1-trichlorethane from groundwater (up to 390 ppb has been detected) and drinking water (up to 500 ppb has been detected).
- Exposure can also occur if you live near a Superfund site where 1,1,1-trichloroethane is found.

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

- Breathing in 1,1,1-trichloroethane leads to increased tiredness. It also causes reduced hand-eye coordination, speed, and reaction time. Nervous system effects have been seen in both humans and animals.
- Based on studies in animals and a few reports in humans, 1,1,1-trichloroethane may lead to liver disease and changes to proteins in the liver. Breathing it in may also cause fatty changes in the liver, swelling of liver cells, and noncancerous tumors.
- Studies in humans and animals also show that breathing in 1,1,1-trichloroethane vapors leads to a drop in blood pressure and can cause changes in the rhythm of the heartbeat.
- Breathing high levels of 1,1,1-trichloroethane can also lead to respiratory failure and death.

1,1,1-Trichloroethane

Can 1,1,1-trichloroethane cause cancer?

The U.S. Department of Health and Human Services (DHHS) does not have enough data to determine if 1,1,1-trichloroethane causes cancer.

The U.S. Environmental Protection Agency (EPA) does not have enough data to determine if 1,1,1-trichloroethane causes cancer.

The International Agency for Research on Cancer (IARC) has classified 1,1,1-trichloroethane as Group2A, meaning that it is probably carcinogenic in humans.

Can I get a medical test to check for 1,1,1-trichloroethane?

There are tests to measure 1,1,1-trichloroethane in human urine, blood, and breath. 1,1,1-Trichloroethane breaks down into its metabolites trichloroethanol and trichloroacetic acid in the body, and these chemicals can also be measured in urine, blood, and breath. However, trichloroacetic acid can also be found in the urine after exposure to other chemicals, not just 1,1,1-trichloroethane. Most 1,1,1-trichloroethane leaves the body within a few days, so these measurements will only be useful for recent suspected exposures. These tests are not routinely performed in a doctor's office. The amount of 1,1,1-trichloroethane in your urine, breath, or blood can be used to determine if you were exposed, but these tests cannot predict whether you will experience any health effects.

How can I protect myself and my family from 1,1,1-trichloroethane exposure?

- Avoid exposure to air, water, or dirt with high levels of 1,1,1-trichloroethane.
- Do not let children play in the dirt near production or hazardous waste sites where 1,1,1-trichloroethane is now or has been manufactured or used.
- Do not intentionally inhale 1,1,1-trichloroethane or products containing it.
- Read and follow all safety instructions on the labels of any consumer products containing 1,1,1-trichloroethane, including use of proper personal protection equipment when handling it.
- Follow all workplace safety and health controls including use of proper protective equipment when working with or near 1,1,1-trichloroethane.

For more information:

Call **CDC-INFO** at 1-800-232-4636, or submit your question online at https://wwwn.cdc.gov/dcs/ContactUs/Form

Go to ATSDR's Toxicological Profile for 1,1,1-Trichloroethane: https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=432&tid=76

Go to ATSDR's Toxic Substances Portal: https://wwwn.cdc.gov/TSP/index.aspx

Find & contact your ATSDR Regional Representative at http://www.atsdr.cdc.gov/DRO/dro_org.html