



1,1,1-TRICHLOROETHANE

What is 1,1,1-trichloroethane

1,1,1-Trichloroethane (1,1,1-TCE) is a man-made chemical. It is a colorless liquid at room temperature with a chloroform-like odor. This chemical is also called methylchloroform, methyltrichloromethane, trichloromethylmethane, and trichloromethane. Its registered trade names are chloroethene NU[®] and Aerothene TT[®].

Where can 1,1,1-TCE be found and how is it used?

In the past, 1,1,1-TCE was used as an industrial and home solvent to dissolve glues and paints or to remove oil or grease from metal parts. Other household uses include spot cleaners and aerosol sprays. 1,1,1-TCE was banned for consumer use after January 1, 2002 since it depletes the ozone layer. The ozone layer protects the earth from harmful radiation from the sun.

1,1,1-TCE was found in air samples worldwide. In the United States, it was found in city air. Smaller amounts were found in rural air. Since products containing 1,1,1-TCE were used to build homes and offices, much more 1,1,1-TCE was found inside buildings. 1,1,1-TCE is found in rivers, lakes, and soil. It can be found in drinking water and in drinking water from underground wells. Certain foods you eat and water used for drinking or bathing may contain 1,1,1-TCE.

How can people be exposed to 1,1,1-TCE?

You could be exposed to 1,1,1-TCE through:

- **Breathing** 1,1,1-TCE vapors. In the past, 1,1,1-TCE was in many workplace and consumer products such as glues, household cleaners, aerosol sprays, and products to remove grease from metal. Today it is unlikely to be exposed through products in the home or at work. If you live near a hazardous waste site, you might have breathed in 1,1,1-TCE vapors. Some people seeking a “high” breathe in the vapors on purpose, such as sniffing glue.
- **Drinking** water with 1,1,1-TCE in it.
- **Touching** 1,1,1-TCE at work. This could happen if you used paints, glues, and cleaning products that had 1,1,1-TCE in them. Today it is unlikely to be exposed through products in the home or at work.
- **Eye contact** by getting 1,1,1-TCE vapors or liquid in your eyes when working with 1,1,1-TCE. Today it is unlikely to be exposed through products in the home or at work.

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Frequently Asked Questions

How does 1,1,1-TCE work?

1,1,1-TCE enters your body fast if you breathe it in air, or if you touch it. It can also enter your body if you drink water or eat food with 1,1,1-TCE in it. If you spill 1,1,1-TCE on your skin, most of it quickly vaporizes. No matter how 1,1,1-TCE enters your body, most of it leaves your body fast when you exhale. The small amount not exhaled changes into substances called metabolites, which leave your body in the urine or breath within a few days.

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

Breathing air with high levels of 1,1,1-TCE causes dizziness, loss of coordination, lowered blood pressure, unconsciousness, or heart failure. It is not known if breathing low levels of 1,1,1-TCE for a long time is harmful. Animal studies show that breathing air with very high levels of 1,1,1-TCE affects the nervous system and damages the airways. It also causes mild effects in the liver. Inhaling very large amounts may be deadly.

There are no studies in humans that prove the dangers of eating food or drinking water containing 1,1,1-TCE. In animal studies, large amounts of 1,1,1-TCE were placed in the stomachs of animals to determine the effects to their nervous system and mild liver damage. Some animals became unconscious and others died. If your skin contacts 1,1,1-TCE, it might become red or sore.

How is 1,1,1-TCE poisoning treated?

There is no treatment for 1,1,1-TCE poisoning. Emergency room staff will examine the patient. If the patient is coughing, they may receive oxygen. If the patient is alert, and the poisoning happened during the last 30 minutes, medical providers may give the patient something to help him vomit to expel the 1,1,1-TCE.

What should I do if exposed to 1,1,1-TCE?

- **If you breathe 1,1,1-TCE**, get fresh air and rest. Then seek medical help.
- **If you touch 1,1,1-TCE**, rinse your skin with plenty of water or shower. Get medical help.
- **If you get 1,1,1-TCE** in your eyes, rinse with plenty of water for several minutes. Remove your contact lenses if you can do it easily. Get medical help.

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What factors limit use or exposure to 1,1,1-TCE?

Household products such as adhesives and cleaners can contain 1,1,1-TCE. Keep them out of children's reach. To reduce accidental poisonings or misuse, always store household chemicals in their original labeled containers. Teach older children that sniffing household chemicals can be deadly.

Is there a medical test to show whether I've been exposed to 1,1,1-TCE?

Samples of your breath, blood and urine can be tested for 1,1,1-TCE. Sometimes, these tests can estimate how much 1,1,1-TCE entered your body. These tests must be done within hours or days after exposure. The tests will not tell you if you will have health effects from being exposed.

Technical information for 1,1,1-TCE

CAS Number: 71-55-6

Chemical Formula: CH₃CCl₃

Carcinogenicity (EPA): inadequate information to assess carcinogenic potential.

MCL (Drinking Water): 0.2mg/L

OSHA Standards: 350 ppm of air 8-hour workday

NIOSH Standards: 350 ppm of air 8-hour workday

ACGIH: 350 ppm of air 8-hour workday

Resources

Agency for Toxic Substances and Disease Registry (ATSDR). 2006. *Toxicological profile for 1,1,1-TCE*. Atlanta, GA: U.S. Department of Health and Human Services. <https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=432&tid=76>

American Conference of Governmental Industrial Hygienists (ACGIH). 2003. *Guide to Occupational Exposure Values*. Cincinnati, OH.

NIOSH *Pocket Guide to Chemical Hazards*. 2003. Atlanta, GA: U.S. Department of Health and Human Services.

New Jersey Department of Health and Senior Services, Right to Know Hazardous Substances Fact Sheets, 1,1,1-Trichloroethane, <http://nj.gov/health/eoh/rtkweb/documents/fs/1237.pdf>

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