



# Trichloroethylene (TCE)

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## Agency for Toxic Substances and Disease Registry

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*This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information 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.*

**HIGHLIGHTS:** Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

### What is trichloroethylene?

Trichloroethylene is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it is present in most underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

### What happens to trichloroethylene when it enters the environment?

- Trichloroethylene easily dissolves in water, and it remains there for a long time.
- Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- Trichloroethylene evaporates less easily from the soil, where it may stick to particles and remain for a long time.
- Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.

- Trichloroethylene does not build up significantly in plants and animals.

### **How might I be exposed to trichloroethylene?**

- Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment

### **How can trichloroethylene affect my health?**

Animal testing is sometimes necessary to find out how toxic substances might harm people or to treat those who have been exposed. Laws today protect the welfare of research animals and scientists must follow strict guidelines.

Breathing large amounts of trichloroethylene may cause impaired heart function, coma, and death. Breathing it for long periods may cause nerve, lung, kidney, and liver damage. Breathing small amounts for short periods of time may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Drinking large amounts of trichloroethylene may cause nausea, liver and kidney damage, convulsions, impaired heart function, coma, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, nervous system effects, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

### **How likely is trichloroethylene to cause cancer?**

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. However, these results are inconclusive because the cancer could have been caused by other chemicals.

The **International Agency for Research on Cancer (IARC)** has determined that trichloroethylene is not classifiable as to human carcinogenicity.

### **Is there a medical test to show whether I've been exposed to trichloroethylene?**

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

### **Has the federal government made recommendations to protect human health?**

The **EPA** has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L).

The **EPA** has also developed regulations for the handling and disposal of trichloroethylene.

The **Occupational Safety and Health Administration (OSHA)** has set an exposure limit of 100 parts of trichloroethylene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

### **Reference**

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for trichloroethylene (update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

### **Where can I get more information?**

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.

### **For more information, contact:**

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