

Trichloroethylene (TCE)

Trichloroethylene is man-made chemical commonly called TCE. At room temperature, it is a colorless liquid with a somewhat sweet odor. TCE evaporates very quickly. Originally developed as an anesthetic for surgery, TCE is commonly used as an industrial cleaner to remove greases from metal parts

TCE is also used in many consumer products, including typewriter correction fluid, paint removers, paint strippers, adhesive glues, spot removers, cleaning fluids for rugs, and metal cleaners.



What happens to trichloroethylene in the environment?

TCE is not found naturally in the environment. Industrial processes are the main sources of TCE released into the environment. It is commonly found in air, soil, and water. Once it is released into the air, TCE will break down within a few weeks. TCE breaks down more slowly in water and soil than in air, and it can pass through the soil into underground water.

How are people exposed to trichloroethylene?

Most exposures to TCE occur in the workplace. The general public is typically exposed to very low levels of TCE. Exposure of the general populations to TCE is mainly through breathing industrial emissions, drinking water that contains TCE, breathing indoor air containing TCE vapor originated from contaminated soil and groundwater, under the buildings or using consumer products containing low levels.

TCE does not accumulate in the cells of plants or animals, so it is not normally found in our food chain. Therefore for most people, the level of exposure to TCE through food, beverages, or drinking water is very low. Higher exposure can result from drinking well water contaminated with TCE, from nearby landfills or waste sites.





If you use city or municipal drinking water exposure to TCE through your water should be low. The United States Environmental Protection Agency (EPA) as well as state and local governments regulate and monitor these public water supplies to ensure they are safe to drink.

EPA has established a drinking water standard of 5 parts per billion (ppb) of TCE.

Can trichloroethylene affect my health?

The health effects from TCE exposure differ depending on the amount of TCE to which a person is exposed and how long the exposure lasts. Health effects similar to those described below may be observed in people exposed to high levels of TCE.

Dizziness, headache, slowed reaction time, sleepiness, facial numbness and irritation of eyes, nose, and throat have occurred in workers breathing TCE or in people who use TCE-containing products in small, poorly ventilated areas. These effects on the central nervous system have also been seen in people who accidentally drank several ounces of undiluted TCE. More severe effects on the central nervous system, such as unconsciousness and possibly death, can occur from drinking or breathing higher levels of TCE.

Concentrations causing these effects are higher than the allowable occupational exposure level (100 parts per million set by the Occupational Safety and Health Administration (OSHA)). In general:

- The effects that result from one or several exposures to TCE disappear when exposure ends, and
- Levels of TCE in most homes and workplaces, or the outdoors are typically well below levels that would cause these types of health effects.

Studies in animals show that ingesting or breathing levels of TCE that are higher than typical environmental levels can produce negative impacts on the nervous system; liver and kidney damage; effects on the blood system; tumors of the liver, kidney, lung, and male sex organs; and possibly cancer of the tissues that form the white blood cells (leukemia). Results of a few studies in some pregnant animals exposed to TCE in air or food show effects in unborn animals or in newborns. None of these effects have been shown to occur in humans.

The EPA is currently reevaluating the carcinogenic classification for TCE. The International Agency for Research on Cancer has determined that TCE is a probable human carcinogen based on limited human data and sufficient data in experimental animals. The American Conference of Governmental Industrial Hygienists has determined that TCE is not suspected as a human carcinogen.

For more information:

If you have questions regarding the information in this fact sheet, please contact the Navy and Marine Corps Public Health Center, Environmental Programs Directorate at (757) 953-0932. Additional web resources are available at the following links:

U. S. Environmental Protection Agency
<http://www.epa.gov/safewater/dwh/c-voc/trichlor.html>
[http://www.clu-in.org/contaminantfocus/default.focus/sec/Trichloroethylene_\(TCE\)/cat/Overview/](http://www.clu-in.org/contaminantfocus/default.focus/sec/Trichloroethylene_(TCE)/cat/Overview/)

Centers for Disease Control and Prevention
<http://www.atsdr.cdc.gov/tfacts19.html>