

Oregon Department of Human Services

Office of Environmental Public Health
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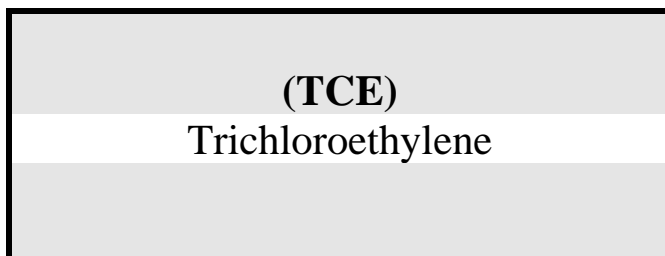
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TECHNICAL BULLETIN

HEALTH EFFECTS INFORMATION

Prepared by:

ENVIRONMENTAL TOXICOLOGY SECTION
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For More Information Contact:

Department of Human Services
Environmental Toxicology Section
(971) 673-0440

Drinking Water Section
(971) 673-0405

SYNONYMS

ethylenetrichloride, trichloroethene

USES

Solvent used in dry cleaning operations and metal degreasing; solvent for fats, greases, waxes. Historically used as an anesthetic, and for removing caffeine from coffee.

CHEMICAL AND PHYSICAL PROPERTIES

Trichloroethylene is a clear, colorless or blue liquid with a sweet chloroform-like odor. It is a nonflammable, volatile liquid with high vapor pressure and is practically insoluble in water. The molecular formula for Trichloroethylene is C_2HCl_3 .

OCCURRENCES AND SOURCES OF TRICHLOROETHYLENE

Trichloroethylene is not known to occur as a natural product in the environment. The releases to the environment are primarily through evaporation, spills and leaks in storage tanks used in many types of industrial operations. TCE has been misused as an ingredient in some septic tank cleaners. Air emissions from metal degreasing plants, and wastewater from metal finishing, paint and ink formulation, electronic component operations, and rubber processing industries can contain measurable levels of TCE. Trichloroethylene may occur as a result of bacterial breakdown of tetrachloroethylene.

ENVIRONMENTAL FATE

TCE released to the atmosphere will exist primarily as vapor, based on its relatively high vapor pressure. It is removed by ultraviolet radiation fairly rapidly, with an atmospheric residence time of approximately 5 days. TCE is not broken down by water under normal conditions, and biodegrades very slowly. Spills or releases to water are primarily removed by evaporation with a half-life of minutes to hours depending on water turbulence. Accumulation in tissues of aquatic organisms is not significant. TCE will not significantly accumulate in or adsorb to soil. It is very mobile in soil, so releases onto the ground readily migrate through the soil to ground water.

DRINKING WATER STANDARDS

The USEPA has set a Maximum Contaminant Level (MCL) for MCL of 0.005 mg/l. This regulatory standard applies only to public drinking water supplies. Owners of private drinking water wells containing levels of TCE above this standard may wish to consider methods to reduce their level of exposure, such as utilizing an alternative source of drinking water or an appropriate water treatment method.

REMOVING TRICHLOROETHYLENE FROM DRINKING WATER

Treatment methods that will remove TCE from drinking water include in-home treatment such as boiling, and devices using granular activated carbon (GAC) adsorption and/or aeration. No one treatment method is able to remove all of the substances that may be present in drinking water. There are limitations, advantages and disadvantages to in-house, as well as large scale treatment systems. Before deciding on the need for water treatment, more information can be obtained from the Department of Human Services, Drinking Water Section at 971-673-0405.