TCE in Drinking Water

Trichloroethylene (TCE) is a common environmental contaminant that dissolves in water and readily evaporates from soil and water into the air. If spilled on the ground, TCE can move through soil and into groundwater where it may pollute private and public drinking water wells.

TCE is...
- a nonflammable, colorless liquid or gas
- sweet-smelling at high concentrations, but odorless at lower levels
- used in industry for degreasing metal parts and has been used as a dry-cleaning solvent
- also found in household products such as wood finishes, adhesives, paint removers, lubricants, and cleaners

Common Exposures

TCE easily moves from water to air. Besides ingesting TCE in drinking water, breathing can be a significant source of contact with TCE, especially during showering/bathing or other activities such as cooking or running the dishwasher. Small amounts can also be absorbed through the skin.

Health Guidance Values

The Minnesota Department of Health (MDH) develops and uses health guidance values to protect people’s health from contaminants in drinking water. Drinking water that has concentrations higher than the health guidance value may pose a risk of adverse health effects to some people drinking the water. To be protective of all, MDH health guidance values incorporate adjustment factors to account for uncertainties in our understanding of the health risks posed by a chemical. This helps to ensure that our values are protective for all people.

Concentrations in Drinking Water

MDH considers a TCE drinking water concentration of 0.4 micrograms per liter (μg/L or parts per billion) or less safe to consume over an entire lifetime. This concentration is safe for all people at any time during their life, including pregnant women and their fetuses, infants, children, and other sensitive people, including those with impaired immunity. This value also protects people exposed to TCE in drinking water used in any way (ingesting water, showering, cooking, etc.).

At 2 μg/L of TCE in drinking water, all people who are exposed for a lifetime are protected from cancer. At this concentration, the increased risk is estimated to be no more than 1 additional cancer in 100,000 people. This concentration of TCE in drinking water is also safe for healthy adults and protects pregnant women and their developing fetus from heart defects.
Health Concerns

The main health concerns from exposure to TCE at the lowest exposures are the potential for immune system effects such as immunosuppression or autoimmune disease, including increased hypersensitivity. Other effects may be a concern at higher concentrations, such as an increased chance of cancer from long-term exposure and heart defects in the developing fetus if the pregnant mother is exposed in the first trimester. The concentration of TCE that is considered a risk to health depends on many variables, such as the amount of water a person drinks, their size, their age, and whether they have other health conditions, such as an immune condition.

Reducing Your Exposure

Increasing ventilation air while bathing/showering, cooking, and while running the dishwasher or washing machine is an effective way to reduce the amounts of TCE that may have evaporated from household water into indoor air.

A granular activated carbon (GAC) filter is the best way to remove TCE from drinking water. The type of filter that works best for you will depend on how much water you use, available space and plumbing access, and whether or not you intend to protect against exposure to TCE in air.

For more information about selecting and maintaining a filter, visit Water Treatment Using Carbon Filters: GAC Filter Information (https://www.health.state.mn.us/communities/environment/hazardous/topics/gac.html).

Contact with questions or for more information:
Site Assessment and Consultation
Minnesota Department of Health
Phone: 651-201-4897 or toll-free 1-800-657-3908
health.hazard@state.mn.us
www.health.state.mn.us
3/2019

To obtain this information in a different format, call: 651-201-4897. Printed on recycled paper.