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Tetrachloroethylene (PCE) and Drinking Water

Tetrachloroethylene (also known as PCE or PERC) is a contaminant that has been found in waters that could be used as drinking water sources in Minnesota. The Minnesota Department of Health (MDH) developed a health-based guidance value for PCE in drinking water and, based on this value, does not expect levels of PCE in drinking water to harm Minnesotans.

What is Tetrachloroethylene (PCE)?

PCE is a solvent used in industrial processes, metal cleaning, dry cleaning, and textile processing.

Has PCE been found in Minnesota waters?

PCE is a common contaminant and has been found in Minnesota groundwater at levels ranging from 0.3 parts per billion (ppb) to over 75,000 ppb. The highest levels of PCE have been found at industrial and commercial sites, where monitoring and treatment are in place to improve water quality.

What is the MDH guidance value for PCE in drinking water?

Based on available information, MDH developed a guidance value of 4 parts per billion (ppb) for PCE. A person drinking water at or below the guidance value would have little or no risk of health effects.

Can PCE in drinking water affect my health?

The Environmental Protection Agency (EPA) has classified PCE as a likely human carcinogen.[1] Exposure to PCE can harm the nervous system and negatively impact visual memory, color vision, and the ability to process information. Breathing in PCE, most commonly in an industrial setting such as a dry cleaning operation, can cause headaches, vision problems, and problems with muscle coordination. Breathing in PCE evaporated from contaminated water may cause similar health effects. Drinking water with levels of PCE that are higher than the MDH guidance value over several years could increase the risk of some types of cancer and kidney damage.

How am I exposed to PCE?

You may breathe in small amounts of PCE in air if you bring freshly dry-cleaned fabrics into your home.[2] You may also be exposed by using water repellents, silicone lubricants, fabric finishers, spot removers, adhesives, or wood cleaners that contain PCE.

At a Glance

PCE is…

- a solvent used in industrial processes, metal cleaning, dry cleaning, and textile processing.

PCE enters your body from…

- breathing it in (inhalation).
- drinking water contaminated with PCE (ingestion).

Your exposure to PCE can be reduced by….

- airing out clothing or other household items that have been recently dry cleaned.
- carefully following label instructions when using products that contain PCE.

PCE gets into the environment by….

- spills or improper disposal at industrial sites or landfills.
- releases into the air from water, dry-cleaned fabrics, and other products.

PCE in drinking water is safe if…

the level is lower than the MDH guidance value of 4 ppb.

How can I reduce my exposure to PCE?

A common exposure to PCE is breathing it in from recently dry cleaned clothing or other household items. You can reduce your exposure from recently dry cleaned items by removing the plastic bag and hanging them outside, in a garage, or in a room of your home that is not used often. You can also reduce your exposure to PCE by using products that contain PCE in a well-ventilated space and according to label instructions.

Public water supplies are routinely tested for PCE. If you get your water from a public system, you can check your annual report or contact your water supplier to find out if your water contains PCE. Private wells are tested for PCE when there is reason to suspect that groundwater in the area contains PCE. If you have a private well in an area with known PCE contamination, you should contact the MDH or MPCA for more information about the possibility of contamination.

How does PCE get into the environment and how long does it stay in the environment?

Spills and improper disposal of PCE have resulted in contamination of groundwater at several locations in Minnesota. Under certain conditions, PCE can stay in groundwater for long periods of time.

What are the potential environmental impacts of PCE?

PCE is toxic to fish and other aquatic life. Limited studies also suggest that PCE may affect fish reproduction and development.

What Minnesotans Need to Know . . .

PCE is a widely used industrial chemical that has contaminated some of Minnesota's groundwater. As a result, much is known about areas where well water should be treated and how to effectively remove PCE from drinking water. Minnesotans can reduce their exposure from PCE from other sources by following label directions on any products that contain PCE and by airing out dry cleaned items before bringing them into the home.

The Health Risk Assessment Unit…

Evaluates the health risks from contaminants in groundwater. MDH works in collaboration with the Minnesota Pollution Control Agency and the Minnesota Department of Agriculture to understand the occurrence and environmental effects of contaminants in water.

References

1. U.S. EPA, 2012. Tetrachloroethylene (Perchloroethylene). http://www.epa.gov/ttnatw01/hlthef/tet-ethy.html
2. Agency for Toxic Substance and Disease Registry (ATSDR) 1997. Public Health Statement http://www.atsdr.cdc.gov/phs/phs.asp?id=263&tid=48

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