



## Tetrachloroethene (PCE)

Office of Land Quality – Science Services Branch

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### Description:

- Tetrachloroethene (PCE) is a manufactured chemical widely used commercially for dry cleaning of fabrics and industrial operations such as metal-degreasing. It is also used as a base material for making other complex chemicals and is used in some consumer products. In residential settings, it may be found in water repellents, silicone lubricants, spot removers, adhesives, and wood cleaners.
- Other names for tetrachloroethene include tetrachloroethylene, perchloroethylene, perc, perclene, and perchlor.
- PCE is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor.

### Environmental Impacts:

- PCE can get into the soil or ground water, mostly because of spills and improper disposal. It may seep into soil, migrate downward, mix with groundwater and contaminate well water.
- PCE, under certain conditions, can vaporize from a groundwater source and travel through soil pores, rock fissures or fractures, and along utility pipes to enter buildings. This is called “vapor intrusion.” This can happen if the foundations have been penetrated with holes for sump pumps or floor drains and cracks in the concrete or through faulty plumbing fixture.
- Microorganisms in groundwater, when exposed to the ideal level of oxygen, can break down PCE into different chemicals such as trichloroethene (TCE) and vinyl chloride (VC).
- Ensuring that PCE is used and disposed of properly protects public health and the environment.

### Health Impacts:

- PCE exposure may occur through:
  - Drinking water from a groundwater source contaminated with PCE.
  - Breathing air containing PCE vapors.
  - Skin contact from handling PCE as a degreaser or spot remover.
- Potential health impacts depend upon how much, how long, how often, and by what way you are exposed.
- The United States Environmental Protection Agency (U.S. EPA) classifies PCE as “likely to be carcinogenic to humans”. Breathing very high levels of PCE for extended periods may cause nerve, kidney and liver damage.
- Drinking high concentrations of PCE for a long time may cause liver and kidney damage, harm the immune system and hematologic system, and may cause adverse effects on development and reproduction.
- Skin contact for a short period of time may cause a rash and skin irritation; prolonged or repeated exposure can cause drying and cracking of the skin with rash, redness, and blisters.
- Breathing high levels of PCE may cause irritation of the upper respiratory tract and eyes, dizziness, headache, sleepiness, confusion, nausea, and difficulty speaking and walking.
- Exposure to PCE at concentrations greater than Indiana Department of Environmental Management (IDEM) published levels may not necessarily lead to adverse health effects. If you suspect your health has been impacted by PCE exposure, please first consult your primary healthcare provider.
- For additional information on TCE’s potential health impacts, please contact the Center for Disease Control’s (CDC) Agency for Toxic Substances and Disease Registry (ATSDR) or visit their website (see below).

### **IDEM's Role:**

- IDEM is responsible for protecting human health and the environment while providing for safe industrial, agricultural, commercial, and governmental operations vital to a prosperous economy. IDEM's published levels are calculated to protect human health of all populations including young children, the elderly, and people with chronic health conditions, who may be more at risk when exposed to PCE.
- IDEM's Office of Water Quality enforces the federal drinking water standard for PCE which is five parts per billion (5 ppb). IDEM suggests that citizens stop drinking water containing more than 5 ppb of PCE.
- IDEM's Office of Air Quality regulates the amount of PCE industries can release into outdoor air.
- IDEM's Office of Land Quality (OLQ) regulates the disposal and cleanup of PCE.
- IDEM OLQ provides cleanup recommendations for PCE and other chlorinated solvents based on potential health effects (see below).
- IDEM OLQ works with U.S. EPA to make sure that facilities are following the rules for PCE use and that they collect groundwater samples when they are cleaning up PCE.

### **Citizen's Role:**

There are actions every citizen can take to reduce their contribution or exposure to PCE:

- Follow the manufacturer's label instructions when you use and dispose of products containing PCE.
- When you bring clothes home from the dry cleaners, keep clothes in a well-ventilated area as they may release small amounts of PCE into the air.
- If you use a private well for your home water supply, routinely test the water to make sure it is safe to drink. For more information, please visit U.S. EPA's website at [epa.gov/privatewells/protect-your-homes-water](http://epa.gov/privatewells/protect-your-homes-water).

### **Additional Information:**

- For more information on PCE, please visit the Agency for Toxic Substances and Disease Registry's (ATSDR) website at [atsdr.cdc.gov/toxfags/tfacts18.pdf](http://atsdr.cdc.gov/toxfags/tfacts18.pdf).
- Alternatively, you can call the CDC-INFO line for ATSDR's information on PCE: 800-232-4636 or TTY 888-232-6348. (Monday through Friday, 8 a.m.–8 p.m. ET. Information is available in English or Spanish.
- Center for Disease Control (CDC) also has information on PCE at [www.cdc.gov/TSP/PHS/PHS.aspx?phsid=263&toxid=48](http://www.cdc.gov/TSP/PHS/PHS.aspx?phsid=263&toxid=48)
- For more information on vapor intrusion please visit IDEM's website at [idem.IN.gov/cleanups/2357.htm](http://idem.IN.gov/cleanups/2357.htm). IDEM has included more specifics in three fact sheets on Vapor Intrusion, Vapor Intrusion Sampling, and Vapor Mitigation at [idem.IN.gov/fact-sheets](http://idem.IN.gov/fact-sheets).
- IDEM does not regulate private wells. However, if you use a private well, it is still important to be aware of health-based recommendations: [idem.IN.gov/cleanwater/2452.htm](http://idem.IN.gov/cleanwater/2452.htm).
- IDEM has a list of household products that contains PCE at IDEM website [idem.IN.gov/cleanups/resources/technical-guidance-for-cleanups](http://idem.IN.gov/cleanups/resources/technical-guidance-for-cleanups). IDEM has provided this information for both vapor intrusion investigation and consumer informational purposes.
- For questions and concerns about PCE contamination or environmental cleanup, contact IDEM's Office of Land Quality at 317-233-6593 or 800-451-6027.
- To report an accidental release or spill, call IDEM's 24-Hour Spill Line at 888-233-7745.