

SAFE USE OF PCE & CHLORINATED SOLVENTS



Businesses and consumers in Washoe County may be using products containing chlorinated solvents, including PCE (also called tetrachloroethene, tetrachloroethylene, or Perc). The purpose of this fact sheet is to help businesses and consumers understand the human health risks associated with these products. In addition, there are significant environmental risks, such as a groundwater contamination problem that persists in our community from legacy use of PCE and chlorinated solvents dating back to the 1940s.

HUMAN HEALTH RISKS

PCE and many chlorinated solvents are considered probable human carcinogens (cancer causing) by U.S. Environmental Protection Agency (US EPA) and the International Agency for Research on Cancer. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level (NJDH, 2011).

The health risks associated with PCE depend on the concentrations and the length and frequency of exposure. Short-term exposure to PCE may cause dizziness, headaches, sleepiness, confusion, and/or nausea. Long-term exposure to chlorinated solvents like PCE may cause damage to the liver or kidneys, and can cause lasting and permanent impacts to the central nervous system.

TYPE OF EXPOSURE	WAYS TO MINIMIZE HEALTH RISKS
Inhalation is the most common route of exposure to PCE (TURI, 2007). When inhaled, the chemical is readily absorbed to the blood through the lungs.	Ensure there is adequate ventilation , and use respiratory protection . If possible, use in a closed system that captures vapors.
Exposure to PCE vapor can irritate the eyes, nose, and throat. Skin exposure to PCE can result in irritation and blistering. Extended dermal contact can result in second- and third-degree chemical burns.	Avoid contact with PCE. Wear gloves and clothing that cannot be penetrated by the chemical. Wear in-direct vent goggles to protect eyes.
PCE can be ingested through eating, drinking, smoking, applying cosmetics, or using the toilet.	ALWAYS wash hands carefully after handling chlorinated solvents. Do not eat, drink, or smoke in areas where chemicals are being handled, processed, or stored. Wash or shower if skin comes into contact with a hazardous material. Change into clean clothing as soon as it becomes contaminated.

WHAT IS PCE?

PCE is a clear, colorless liquid with a sweet odor that evaporates quickly (US EPA, 2012). It is a chlorinated solvent used to remove oil, grease, and buffing compounds from metal. It is also used for cleaning dirt, oil, and baked-on carbon from automotive parts and brakes. It is often found in aerosol cleaners including brake cleaners and detailing products.

PCE is also found in consumer products including cleaning solutions, paint thinners, pesticides, and adhesives. (United Steelworkers) Additionally, PCE is the most widely used dry cleaning solvent in the United States (TURI, 2007).



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PCE IS A HAZARDOUS WASTE

PCE is a toxic chemical with both human health and environmental concerns. PCE and many other solvent wastes are defined by US EPA as hazardous wastes and, as such, must be handled according to the Resource Conservation and Recovery Act (RCRA) and local regulations. PCE deposited on the ground evaporates to the atmosphere, runs off to surface water and can percolate into groundwater, causing contamination of a water supply.

US EPA and Occupational Safety and Health Administration (OSHA) both regulate PCE. US EPA regulates national air standards for dry cleaning and degreasing operations. US EPA also sets drinking water standards. (TURI, 2007) Some states and municipalities have banned PCE from use in dry cleaning and consumer products. While Nevada, and Washoe County, have not banned the use of PCE, it is important that industrial users understand the potential risks of use and exposure to PCE. OSHA has set mandatory permissible workplace exposure limits for worker exposure to PCE:

- 100 parts per million (ppm) averaged over an 8-hour shift,
- 200 ppm, not to be exceeded during any 15-minute work period,
- 300 ppm as a maximum peak for 5 minutes during any 3-hour period. (NJDH, 2011)

References:

United Steelworkers, July 23, 2014, The Worker Health Protection Program, <http://www.worker-health.org/chlorinatedsolvents.html>

Massachusetts Toxics Use Reduction Institute (TURI), 2007, http://www.turi.org/TURI_Publications/TURI_Chemical_Fact_Sheets/Perchloroethylene_PCE_Fact_Sheet/PCE_Details/PCE-Fact-Sheet-pdf

U.S. Environmental Protection Agency, 2012, http://www.epa.gov/oppt/existingchemicals/pubs/perchloroethylene_fact_sheet.html

New Jersey Department of Health, October 2011, <http://nj.gov/health/eoh/rtkweb/documents/fs/1810.pdf>

Kansas Department of Health and the Environment, 2014, Four Seasons Dry Cleaners Site Fact Sheet, http://www.kdheks.gov/dryclean/download/FourSeasons_FactSheet.pdf

ENVIRONMENTAL EFFECTS & GROUNDWATER CONTAMINATION IN THE TRUCKEE MEADOWS

Chlorinated solvents can readily volatilize, do not break down easily in the environment, and a small amount can contaminate a large area. Because of this, chlorinated solvents can cause significant environmental problems. PCE is a common source of groundwater contamination across the United States.

In Reno and Sparks, historic use of PCE has created widespread groundwater contamination that is managed through the Central Truckee Meadows Remediation District. The Remediation District program is a collaborative effort among City of Sparks, City of Reno, Truckee Meadows Water Authority, Washoe County Community Services Department, Washoe County Health District, and the Nevada Division of Environmental Protection. Cleaning up the environment in cases where a responsible party cannot be held liable, is costly, and may require funds from the taxpaying public. The work of the Remediation District is funded through the collection of fees from municipal water-using parcels in Southern Washoe County. For more information, please visit us at www.washoecounty.us/ctmrd

GOOD HOUSEKEEPING & SELECTING SOLVENT ALTERNATIVES

Good housekeeping practices are crucial, and include making sure chlorinated solvents, are properly labeled, handled, stored, and disposed. These chemicals should NEVER be disposed to the sewer, storm drains, or dumped onto soil. Employees of operations using chlorinated solvents should be provided with hazard information, information specific to the chemicals they are handling or exposed to, and provided training opportunities related to hazardous materials.

There are a number of non-chlorinated solvents available which reduce health risks and are less persistent in the environment. Look for products labeled "non-chlorinated." For information on alternatives to chlorinated solvents, please visit the Toxics Use Reduction Institute at University of Massachusetts, Lowell, at www.cleansolutions.org. It may be useful to talk with product suppliers for their recommendations as well.