

Chlorinated solvents in groundwater

Chlorinated solvents include tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride. They are industrial chemicals used widely for metal cleaning and in production of thermoplastics, lacquers, perfumes and polyvinylchloride (PVC) products.

In the past, PCE and TCE were used in dry-cleaning, while TCE was also used in many other applications including: removing caffeine from coffee beans in the production of decaffeinated coffee and as an anaesthetic gas in hospitals.

What happens when chlorinated solvents enter the body or the environment?

If chlorinated solvents are taken into the body, they are metabolised (broken down) and eliminated from the body within days.

In the environment chlorinated solvents break down rapidly in air and surface water but much slower in soil and groundwater. PCE breaks down to form TCE, this in turn forms DCE and vinyl chloride which can then degrade to other chemicals.

How can contact with chlorinated solvents occur if they are in groundwater?

Exposure can occur if contaminated groundwater is extracted and consumed or used in cooking, or used in showers, swimming pools or watering gardens.

If the groundwater is shallow enough and there are sufficient concentrations of these chemicals chlorinated solvent vapours can also sometimes penetrate through the soil and contaminate indoor air.

In the past people were exposed from these chemicals being released into the air near where they lived such as from dry cleaners.

How can chlorinated solvents affect health?

The effects on health of these contaminants depend on a number of factors, such as how long a person has been exposed to the chemical(s), what level of chemical (s) is in air or water, how old the person is and whether there are any other illnesses.

Long-term exposure from these chemicals can be harmful if people are exposed to high enough concentrations over a long period of time, usually many years.

Inhaling or ingesting large amounts of PCE or TCE over short periods of time may make you dizzy or sleepy. Inhaling moderate amounts may also result in headaches.

If large amounts of DCE in air are inhaled over short periods of time (hours), you may feel nauseous, drowsy and tired.



Breathing high levels of vinyl chloride over short periods can make you dizzy or sleepy.

Inhaling or ingesting large amounts of these chemicals over a very long period of time, can cause effects to the liver, lungs, kidney, nerve and immune functions.

TCE, PCE are possible carcinogens, while vinyl chloride is a known carcinogen and can be a cause of a rare and specific type of liver cancer.

People have reported health effects when exposed to levels where the odour of the chemicals was noticeable.

Are we exposed to chlorinated solvents in the community?

These chemicals are already found in very small amounts in the environment, due to their use in paints, glues, solvents, dry cleaning and even in cigarette smoke.

For example, vinyl chloride is found in tobacco smoke while TCE can be found in some household products such as typewriter correction fluid and paint or spot removers.

DCE exposure can result from use of perfumes, lacquers and some plastics.

These types of exposures are referred to as "background exposures" and are unlikely to harm anyone.

As exposures to chemicals occur from many sources in our everyday life, it is important that when there is an

opportunity to reduce or prevent exposure that action should be taken.

Translation service

For information in languages other than English, call the Interpreting and Translating Centre and ask them to call the Department of Health. This service is available at no cost to you, contact 8226 1990.

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