



Tetrachloroethylene

General Information

Key Points

- tetrachloroethylene is a colourless, volatile liquid with a sweet odour
- it is mainly used within the dry cleaning industry
- it can also be present in paint removers and adhesives
- long term inhalation exposure can cause damage to the kidneys and nervous system
- inhaled low doses of tetrachloroethylene can cause nose irritation, while larger doses can cause dizziness, drowsiness and loss of co-ordination
- consuming tetrachloroethylene can cause burning of the mouth and throat, nausea and vomiting
- severe exposures may cause coma and in some cases death
- tetrachloroethylene has been classified as probably having the ability to cause cancer

Public Health Questions

What is tetrachloroethylene?

Tetrachloroethylene is a colourless, volatile liquid with a sweet odour. Other names for tetrachloroethylene include tetracap, tetrachloroethene and perchloroethylene (PCE).

What is tetrachloroethylene used for?

Tetrachloroethylene is mainly used as a solvent for dry cleaning. It is also used for metal degreasing and cleaning and as a chemical intermediate in the manufacture of refrigerants. In the past, tetrachloroethylene was used as an anthelmintic in the treatment of hookworm and other nematode infestations.

How does tetrachloroethylene get into the environment?

Tetrachloroethylene is released into the environment as a result of its use. The majority of tetrachloroethylene released enters the air, but it may also occur at low levels in soil, ground water and surface water.

Naturally occurring tetrachloroethylene has been found in some algae.

How might I be exposed to tetrachloroethylene?

The general public is only exposed to low levels of tetrachloroethylene as a contaminant in air, food or water, or from dry cleaned clothes. Individuals working in the dry-cleaning or metal degreasing industries may be exposed to higher levels of tetrachloroethylene, although safe limits are enforced to protect the employees. Such levels are below those that are thought to cause harmful effects.

If I am exposed to tetrachloroethylene how might it affect my health?

The presence of tetrachloroethylene in the environment does not always lead to exposure. In order for it to cause any adverse health effects, you must come into contact with it. You may be exposed by breathing, eating, or drinking the substance or by skin contact. Following exposure to any chemical, the adverse health effects, you may encounter depend on several factors, including the amount to which you are exposed (dose), the way you are exposed, the duration of exposure, the form of the chemical and if you were exposed to any other chemicals.

Breathing air contaminated with tetrachloroethylene may cause irritation to the nose, throat and lungs. Ingestion of tetrachloroethylene can cause burning in the mouth and throat, stomach pain, nausea and vomiting. Skin contact with tetrachloroethylene can cause irritation, reds skin and a rash. It can also be irritating to the eyes.

Tetrachloroethylene can be absorbed into the body following inhalation, ingestion or skin contact. This can cause excitement, headache and dizziness followed by drowsiness and loss of coordination. In severe cases it can cause an abnormal heart rate and coma.

Long-term inhalation exposure to tetrachloroethylene can cause damage to the kidneys, liver and nervous system.

Can tetrachloroethylene cause cancer?

The International Agency for Research on Cancer (IARC) has concluded that there is enough evidence in animals, but limited evidence in humans that tetrachloroethylene can cause cancer. Therefore, it has classified tetrachloroethylene as probably having the ability to cause cancer in humans.

Does tetrachloroethylene affect pregnancy or the unborn child?

Available evidence does not indicate that exposure to tetrachloroethylene during pregnancy will have a direct effect on the unborn child. However, if the exposure to tetrachloroethylene causes the mother to become unwell this may affect the health of the unborn child.

How might tetrachloroethylene affect children?

Children will be affected by tetrachloroethylene in the same way as adults.

Are certain groups more vulnerable to the harmful effects of tetrachloroethylene?

People with breathing problems such as asthma may be more sensitive to the effects of tetrachloroethylene.

What should I do if I am exposed to tetrachloroethylene?

It is very unlikely that the general population will be exposed to a level of tetrachloroethylene high enough to cause adverse health effects. If you have any health concerns regarding exposure to tetrachloroethylene seek guidance from your GP or contact NHS 111.

Additional sources of information

UKTIS. Best use of Medicines in Pregnancy: <http://www.medicinesinpregnancy.org/>

This information contained in this document from the PHE Centre for Radiation, Chemical and Environmental Hazards is correct at the time of its publication.

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For queries relating to this document, please contact: chemcompendium@phe.gov.uk

For all other enquiries, please contact: phe.enquiries@phe.gov.uk

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