

Tetrachloroethylene and drinking water

What is tetrachloroethylene and where does it come from?

Tetrachloroethylene is a nonflammable colorless liquid used in industry as a degreaser and as a dry cleaning agent. It is also found in household products like wood finishes, paint strippers, lubricants and adhesives.^{1,3} Tetrachloroethylene can enter drinking water from industrial discharge from factories or dry cleaners.¹

How can tetrachloroethylene affect my health?

Tetrachloroethylene is a health hazard. Newborn infants are particularly susceptible to the health effects of tetrachloroethylene.² Drinking water with high levels of tetrachloroethylene over long periods of time can cause health effects such as:

- Liver, kidney, central nervous system (CNS) dysfunction
- Problems with muscle coordination³
- Increased risk of cancer¹

When does tetrachloroethylene in drinking water become a health concern?

Tetrachloroethylene is measured in parts per billion (ppb). The federal government has established the safe drinking water standard (also called maximum contaminant level) for tetrachloroethylene as 5 ppb.

What can I still use my water for if it is contaminated with tetrachloroethylene?

Water for drinking, beverage-making or food preparation can be obtained from a known safe source and used on a temporary basis. Other uses of water pose much less hazard, but are not entirely safe if tetrachloroethylene levels are significantly above the drinking water limit.

Can I wash my food with tetrachloroethylene-contaminated water?

If tetrachloroethylene levels in your water are above 5 ppb, you should use bottled water or water from a safe source to wash, prepare and cook your food.

Can I irrigate or water my garden with tetrachloroethylene-contaminated water?

Tetrachloroethylene can accumulate in plants.⁴ Tetrachloroethylene can disperse into the air, leach downward or absorb onto organic matter in soil. It has also been shown to transform into other chemicals.^{4,5} Water containing tetrachloroethylene above 5 ppb is not recommended for irrigating or watering.

What about bathing and showering?

It is unknown if tetrachloroethylene can enter the body through the skin.² However, tetrachloroethylene easily releases from water into the air, so bathing and showering with tetrachloroethylene-contaminated water may increase exposure through breathing.¹ Bathing, swimming and showering with tetrachloroethylene-contaminated water is not recommended.

What about washing dishes, utensils and food preparation areas?

Only a very small amount of water clings to smooth surfaces, such as dishes. Water with tetrachloroethylene can be safely used to wash and sanitize dishes, tables and eating utensils. If washing dishes by hand, risk of inhalation of tetrachloroethylene is increased. Using water with tetrachloroethylene above 5 ppb is not recommended for washing dishes by hand.

What about general cleaning and laundry?

Very little water remains on washed surfaces and in laundered fabrics. Water with tetrachloroethylene can be safely used for general cleaning and washing of clothing, bedding and linens.

What about my pets?

Animals should not drink water with tetrachloroethylene levels above 5 ppb.

Learning about tetrachloroethylene levels in your drinking water

For people on public water systems:

Public drinking water providers must monitor for tetrachloroethylene and ensure levels remain below the drinking water standard of 5 ppb. Public water system monitoring results are available on the Oregon Drinking Water Services [Data Online](#) website. If your water comes from a community water system (you pay a water bill), your drinking water provider must provide a [Consumer Confidence Report](#) to its customers every year. This report contains the most recent tetrachloroethylene test results if detected. Contact your drinking water provider to request a copy of the most recent consumer confidence report.

For private well owners:

If your drinking water comes from your own well, you will have to find an accredited laboratory that does water testing for private property owners. These labs can provide information and instructions for getting your well water tested. For a list of accredited laboratories for drinking water in Oregon refer to the following [link](#).

Removing tetrachloroethylene from drinking water

Don't boil the water!

There is no evidence that boiling removes tetrachloroethylene and boiling water with tetrachloroethylene may increase exposure through breathing in contaminated steam.

For operators of public drinking water systems:

Tetrachloroethylene can be reduced below 5 ppb in drinking water using granular activated carbon filtration or packed tower aeration.¹ We recommend that you work with a professional engineer to determine the most appropriate treatment for your system. Treatment has limitations and disadvantages. Not all kinds of treatment are effective, and no single treatment method can remove all contaminants from water. If treatment isn't possible for your system, you should consider developing a different water source or connecting to another safe water source in the area. Before deciding on treatment equipment, contact [Oregon Drinking Water Services](#) for regulatory requirements.

Private well treatment options:

Treatment options are available to remove tetrachloroethylene from well water. The most commonly used is called granular activated carbon filtration. Options include central treatment (at the well or at entry to home) or a point-of-use device (kitchen sink filter). A point-of-use device will not protect against inhalation risk from showering or bathing from taps not treated with a device.

Check to be sure any treatment system to be used is certified by a recognized, third-party testing organization that meets strict testing procedures established by the [American National Standards Institute](#) (ANSI) and [National Sanitation Foundation](#) (NSF) International. Proof of certification should be available from the distributor or manufacturer. Alternatively, NSF certification for various treatment units may be verified through NSF or the [Water Quality Association](#).

Treatment equipment must be carefully maintained in order to work properly and might not be effective if tetrachloroethylene levels are very high. It is recommended that treated water be tested at least once a year. Untreated water should be tested at least every three years.

For more information

- Private well owners that have questions and concerns about tetrachloroethylene in their water can call 971-673-0440 or email general.toxicology@state.or.us.
- For questions about treatment options for your domestic well, contact the drinking water specialist at your local or county health department. Here is a [list of local and county health departments](#) in Oregon with their contact information.
- [U.S. Environmental Protection Agency](#) – Basic information about tetrachloroethylene in drinking water

References

1. USEPA. Basic Information about Tetrachloroethylene in Drinking Water. <http://water.epa.gov/drink/contaminants/basicinformation/tetrachloroethylene.cfm> (2014).
2. ATSDR. Toxicological Profile for Tetrachloroethylene (PERC). www.atsdr.cdc.gov/toxprofiles/TP.asp?id=265&tid=48 (1997).
3. MDH. Tetrachloroethylene (PCE) and Drinking Water. www.health.state.mn.us/divs/eh/risk/guidance/gw/tetpercinfo.pdf (2014).
4. WHO. Tetrachloroethene in Drinking Water. www.who.int/water_sanitation_health/dwq/chemicals/tetrachloroethene.pdf?ua=1 (1996).
5. OEHHA. Public Health Goal for Trichloroethylene in Drinking Water. http://oehha.ca.gov/water/phg/pdf/tce_f.pdf (1999).



This document can be provided upon request in an alternate format for individuals with disabilities or in a language other than English for people with limited English skills. To request this publication in another format or language, contact Drinking Water Services (DWS) at 971-673-0405 or 711 for TTY.