

Cis-1,2-dichloroethylene and drinking water

What is cis-1,2-dichloroethylene and where does it come from?

Cis-1,2-dichloroethylene is an odorless liquid used to produce solvents, pharmaceuticals, waxes, resins and artificial pearls. It is also used in the extraction of rubber and oils and fats from fish and meats, and can be used as a refrigerant.^{1,2} Drinking water can be contaminated by industrial discharge from manufacturers that use or produce cis-1,2-dichloroethylene.¹

How can cis-1,2-dichloroethylene affect my health?

Cis-1,2-dichloroethylene is a health hazard. The elderly and very young are particularly susceptible to the health effects of cis-1,2-dichloroethylene.³ Consuming water with high levels of cis-1,2-dichloroethylene over a long time can cause health effects such as:

- Liver and kidney problems^{1,2}
- Drowsiness and nausea³
- Cardiovascular problems³

When does cis-1,2-dichloroethylene in drinking water become a health concern?

Cis-1,2-dichloroethylene is measured in parts per billion (ppb). The federal government has established the safe drinking water standard (also called maximum contaminant level) for cis-1,2-dichloroethylene as 70 ppb.

What can I still use my water for if it is contaminated with cis-1,2-dichloroethylene?

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 cis-1,2-dichloroethylene levels are significantly above the drinking water limit.

Can I wash my food with cis-1,2-dichloroethylene-contaminated water?

If cis-1,2-dichloroethylene levels in your water are above 70 ppb, you should use water from an alternate source to wash, prepare and cook your food.

Can I irrigate or water my garden with cis-1,2-dichloroethylene-contaminated water?

Cis-1,2-dichloroethylene cannot be taken up by plants, however, cis-1,2-dichloroethylene can travel through soil and contaminate groundwater. Water containing cis-1,2-dichloroethylene above 70 ppb should not be used for irrigating or watering.³

What about bathing and showering?

Cis-1,2-dichloroethylene can enter the body through the skin.⁴ Since cis-1,2-dichloroethylene easily releases from water into the air, bathing and showering with cis-1,2-dichloroethylene-contaminated

water may increase exposure through breathing. It is advised to find an alternate water source to use for showering and bathing.

What about washing dishes, utensils and food preparation areas?

Only a very small amount of water clings to smooth surfaces, such as dishes. Water having cis-1,2-dichloroethylene can be safely used to wash and sanitize dishes, tables and eating utensils.

What about my pets?

Animals should not drink water with cis-1,2-dichloroethylene levels above 70 ppb.

Learning about cis-1,2-dichloroethylene levels in your drinking water

For people on public water systems:

Public drinking water providers must monitor for cis-1,2-dichloroethylene and ensure levels remain below the drinking water standard of 70 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 cis-1,2-dichloroethylene 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 cis-1,2-dichloroethylene from drinking water

Don't boil the water!

There is no evidence that boiling removes cis-1,2-dichloroethylene.

For operators of public drinking water systems:

Cis-1,2-dichloroethylene can be reduced below 70 ppb in drinking water using granular activated carbon filtration or packed tower aeration.¹ Work with a professional engineer to determine the best treatment for your system. Not all kinds of treatment are effective, and no single treatment method can remove all contaminants from water. Alternatives to treatment include developing a different water source or connecting to another safe water source in the area. Before selecting treatment equipment, contact [Oregon Drinking Water Services](#) for regulatory requirements for public water systems.

Private well treatment options:

Treatment options are available to remove cis-1,2-dichloroethylene from well water. The most commonly used is granular activated carbon filtration.¹ 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 breathing risk from showering or bathing from taps not treated with a device.

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

Treatment equipment must be carefully maintained to work properly and might not be effective if cis-1,2-dichloroethylene 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 with health-related questions and concerns about cis-1,2-dichloroethylene 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 cis-1,2-dichloroethylene in drinking water

References

1. USEPA. 2013. Basic Information about cis-1,2-Dichloroethylene in Drinking Water. <http://water.epa.gov/drink/contaminants/basicinformation/cis-1-2-dichloroethylene.cfm>
2. ODHS. 1991. Health effects information (cis 1,2 – dce) cis 1,2 - dichloroethylene. http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Monitoring/Documents/health/dce_cis-1,2-.pdf
3. ATSDR. 1996. Toxicological profile for 1,2-dichloroethene. www.atsdr.cdc.gov/toxprofiles/tp87.pdf
4. OEHHA. 2006. Public health goal for cis- and trans- 1,2-dichloroethylene in drinking water. <http://oehha.ca.gov/water/phg/pdf/PHGcistrans030306.pdf>



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