

1,1-Dichloroethylene and drinking water

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

1,1-Dichloroethylene is a clear, synthetic, sweet smelling liquid used to make refrigerants, food packaging adhesives, synthetic fibers and coating resins.¹ It can enter drinking water through releases during production and manufacturing.²

How can 1,1-dichloroethylene affect my health?

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

- Liver problems¹
- Central nervous system depression⁴
- Increased risk of cancer²

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

1,1-Dichloroethylene is measured in parts per billion (ppb). The federal government has established the safe drinking water standard (also called maximum contaminant level) for 1,1-dichloroethylene as 7 ppb.

What can I still use my water for if it is contaminated with 1,1-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 1,1-dichloroethylene levels are significantly above the drinking water limit.

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

If 1,1-dichloroethylene levels in your water are above 7 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 1,1-dichloroethylene-contaminated water?

1,1-Dichloroethylene cannot be taken up by plants or stay in soil for long periods of time, therefore water containing 1,1-dichloroethylene above 7 ppb can be used for irrigating or watering.⁵

What about bathing and showering?

1,1-Dichloroethylene does not easily enter the body through the skin. However, 1,1-dichloroethylene easily releases from water into the air, so bathing and showering with 1,1-dichloroethylene-contaminated water may increase exposure through breathing. An alternate source of water should be used for showering and bathing when water is contaminated with 1,1-dichloroethylene above 7 ppb.

What about washing dishes, utensils and food preparation areas?

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

What about general cleaning and laundry?

Very little water remains on washed surfaces and in laundered fabrics. Water having 1,1-dichloroethylene can be safely used for general cleaning and washing of clothing, bedding and linens.

What about my pets?

Animals should not drink water with 1,1-dichloroethylene levels above 7 ppb.

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

For people on public water systems:

Public drinking water providers must monitor for 1,1-dichloroethylene and ensure levels remain below the drinking water standard of 7 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 1,1-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 1,1-dichloroethylene from drinking water

Don't boil the water!

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

For operators of public drinking water systems:

1,1-Dichloroethylene can be reduced below 7 ppb in drinking water using granular activated carbon filtration or packed tower aeration. 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. To prevent contamination, avoid using water for drinking water that may contain industrial discharge. Before deciding on treatment equipment, contact [Oregon Drinking Water Services](#) for regulatory requirements for public water systems.

Private well treatment options:

Treatment options are available to remove 1,1-dichloroethylene from well water. The most commonly used is called granular activated carbon filtration. Options include central treatment (at the well or 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 1,1-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 1,1-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 1,1-dichloroethylene in drinking water

References

1. USEPA. 2013. Basic Information about 1,1-Dichloroethylene in Drinking Water.
2. ODHS. 1989. Health Effects Information.
3. ATSDR. 1994. Toxicological Profile for 1,1-Dichloroethene.
4. WHO. 1996. 1,1-Dichloroethane in Drinking-water.
5. OEHHA Pesticide and Environmental Toxicology Section. 2003. Public Health Goal for 1,1-Dichloroethane in Drinking Water.



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.