

Xylene and drinking water

What is xylene and where does it come from?

Xylene is a sweet-smelling, clear solvent that is used as a component of many consumer products including pharmaceuticals, detergents, solvents, paints, inks, adhesives, polyester fibers and films. It is also used to produce insecticides and is blended into gasoline. It can enter drinking water by contamination from industrial discharge.¹⁻³

How can xylene affect my health?

Xylene is a health hazard. Drinking water with high levels of xylene can cause health effects when consumed over long periods of time such as:

- Central nervous system damage
- Liver and kidney damage
- Balance and coordination disturbance⁴

When does xylene in drinking water become a health concern?

Xylene is measured in parts per million (ppm). The federal government has established the safe drinking water standard (also called maximum contaminant level) for xylene as 10 ppm.⁵

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

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 xylene levels are significantly above the drinking water limit.

Can I wash my food with xylene-contaminated water?

If xylene levels in your water are above 10 ppm, 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 xylene-contaminated water?

Yes, only a small amount of xylene is taken up by plants and it quickly breaks down in soil.⁶

What about bathing and showering?

Xylene can be absorbed by the skin.⁷ Since xylene easily releases from water into the air, bathing and showering with xylene-contaminated water may increase exposure through inhalation.⁸ Bathing, swimming and showering with water containing xylene above 10 ppm is not advised.

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 xylene 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 with xylene can be safely used for general cleaning and washing clothes, bedding and linens.

What about my pets?

Animals should not drink water with xylene levels above 10 ppm.

Learning about xylene levels in your drinking water

For people on public water systems:

Public drinking water providers must monitor for xylene and ensure levels remain below the drinking water standard of 10 ppm. 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 xylene 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 xylene from drinking water

Don't boil the water!

There is no evidence that boiling removes xylene and boiling water may increase exposure by breathing in xylene during the boiling process.

For operators of public drinking water systems:

Xylene can be reduced below 10 ppm in drinking water using granular activated carbon filtration and packed tower aeration.⁵ Work with a professional engineer to determine the most appropriate 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 xylene from well water. The most common treatment method 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 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 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 to work properly and might not be effective if xylene 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 health-related questions about xylene 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 xylene in drinking water

References

1. International Agency for Research on Cancer. Some organic solvents, resin monomers and related compounds, pigments and occupational exposures in paint manufacture and painting. IARC monographs on the evaluation of carcinogenic risks to humans. 47 (1990).
2. USEPA. Basic Information about Xylenes in Drinking Water. <http://water.epa.gov/drink/contaminants/basicinformation/xylenes.cfm> (2014).
3. USEPA. USEPA Office of Drinking Water health advisories. Reviews of environmental contamination and toxicology. 106:189-203 (1998).
4. USEPA. Technical Factsheets on: Xylenes. www.epa.gov/safewater/pdfs/factsheets/voc/tech/xylenes.pdf (n.d.).
5. USEPA. Consumer Factsheet on: Xylenes. www.epa.gov/ogwdw/pdfs/factsheets/voc/xylenes.pdf (n.d.).
6. ATSDR. Toxic Substances Portal-Xylene. www.atsdr.cdc.gov/toxfaqs/TF.asp?id=295&tid=53 (2007).
7. Loizou, GD, Jones, K, Akrill, P, Dyne, D, Cocker, J. Estimation of the dermal absorption of m-xylene vapor in humans using breath sampling and physiologically based pharmacokinetic analysis. Toxicological Sciences. 48:170-179 (1999).
8. Brown, HS, Bishop, DR, Rowan, CA. The role of skin absorption as a route of exposure for volatile organic compounds (VOCs) in drinking water. American Journal of Public Health. 74:479-484 (1984).