

VOCs and well water: *What you need to know*



What are VOCs?

Volatile organic chemicals (VOCs) are liquid or solid chemicals that can easily evaporate into gases. VOCs are a significant source of pollution in the environment, sometimes found in the groundwater beneath certain industrial businesses such as dry cleaners and gas stations. VOCs get into the environment through industrial dumping, leaks, spills or from the use and improper disposal of household products that contain these chemicals.

VOCs in groundwater can cause problems for people who depend on well water for domestic and irrigation purposes. In this fact sheet, water from domestic wells is assumed to be used for drinking, cooking, laundry and other household uses inside the home; irrigation wells are primarily used for outdoor purposes. Some homes may use city water within the household and well water for irrigation and other outdoor purposes.

How can VOCs harm my health?

Some VOCs — including benzene, PCE and TCE — can increase your risk for cancer if swallowed, or breathed in large amounts over a long period of time. At very high levels, they can cause damage to the nervous and immune systems and to the kidneys and liver. Children are especially vulnerable because of their smaller size and developing brains and bodies.

What are safe levels of VOCs in water?

The Environmental Protection Agency (EPA) has established safe drinking water standards. The standards for many of the VOCs commonly found in water, measured in parts per billion (ppb), are listed in the table to the right.

Chemical name	Drinking water standard (ppb)
Benzene	5
Dichloromethane (methylene chloride)	5
Trichloroethylene (TCE)	5
Perchloroethylene (PCE; tetrachloroethylene)	5
Toluene	100
1,1,1-trichloroethane (TCA)	20



What do I do if my well has VOC levels above the safe drinking water standard?

If your domestic well has VOC levels above the safe drinking water standards, you should not drink or cook with the well water, and you should arrange for an alternate water supply such as bottled water. Boiling the water is not recommended because VOCs will escape into the air where they can be inhaled.

Depending on the VOC levels in your domestic well, you may need to stop using your water, or use caution with certain household activities, like bathing, showering, hand washing, doing dishes and using appliances such as dishwashers or laundry machines. This is because VOCs will escape into the air, where they can be breathed in by people in the room or immediate area.

Ventilating indoor areas (e.g., bathrooms) by opening windows or using exhaust fans while you are using your water will reduce the amount of VOCs present in the air you breathe.

Is there a way to filter VOCs out of my water?

Some filtration systems can filter VOCs out of your water. The most common types of filtration used are activated carbon filter systems. These can be installed at the faucet (point-of-use systems), or where water enters your home (point-of-entry systems). Point-of-entry systems provide a safe water supply for all household uses, including bathing and laundry. Anytime you choose a filtration system, make sure it is National Sanitation Foundation (NSF)-certified and approved to remove the chemicals in your water. Keep in mind that filtration systems require regular maintenance in order to work properly.



Can I still use my irrigation well if it's contaminated?

Irrigation wells that are contaminated with VOCs may be safe for some uses if these guidelines are followed:

Ways of using the water	How you can protect your health
Watering lawns, washing cars, gardening or playing in the sprinkler	<ul style="list-style-type: none">• Cold water releases fewer VOCs, and using the water outdoors allows remaining VOCs to escape into the air where they are diluted and cannot be breathed in as easily.• Avoid drinking or accidentally swallowing the water. Children and pets can accidentally swallow large amounts of water and should be supervised.• Some plants may be harmed by VOCs in irrigation water.
Filling private pools, spas and wading pools	<ul style="list-style-type: none">• Wait 30 minutes to one hour after filling the pool before using it. This will allow some of the VOCs to escape into the outside air.• Make sure the pool is kept outside and not covered.• Avoid drinking or swallowing the water. Supervise children and pets.
Using the water in indoor shops or garages, greenhouses or other enclosed areas	<ul style="list-style-type: none">• VOCs will "off-gas" into the indoor air, which means that you can breathe in the chemicals.• Keep the time spent in the area where the water is used to a minimum.• Make sure the area is well ventilated by keeping doors and windows open, and using exhaust fans if possible.
Watering animals, pets and birds	<ul style="list-style-type: none">• This is not recommended if any VOCs exceed drinking water standards.





How can I find out if my well water is contaminated with VOCs?

To find out if your well is contaminated with VOCs, get a sample of your water analyzed by an accredited laboratory. There are many accredited laboratories throughout Oregon that can give you the information and instructions you need to get your well water tested.

For a list of accredited laboratories in Oregon, call the Department of Human Services Laboratory Accreditation Program at **503-693-4122** or visit <http://oregon.gov/DHS/ph/orelap/docs/acclab.pdf>.

For more information:

For questions and concerns about the contaminants in your well and on safe uses of your well water, please call the Oregon Department of Human Services Public Health Division at **971-673-0977**.

Visit these Web sites for more information on the following topics:

EPA's Office of Ground Water and Private Drinking Water Wells:
www.epa.gov/safewater/privatewells/index2.html.

Oregon State University Well Water Program:
<http://wellwater.oregonstate.edu>.

VOCs in groundwater and treatment options:
www.watersystemscouncil.org/VAiWebDocs/WSCDocs/1499903VOCs_Updated_May_2007.pdf.

American Association for Laboratory Accreditation:
www.A2LA.org.

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