

Diethyl phthalate and drinking water

What is diethyl phthalate and where does it come from?

Diethyl phthalate is the most commonly used compound from a group of manmade chemicals known as phthalates. Diethyl phthalate is used to add flexibility to plastic products. Exposure to diethyl phthalate occurs through ingestion of water or food contaminated with diethyl phthalates.¹ Diethyl phthalate gets into water sources mainly through discharge from chemical factories, runoff from land where biosolids were applied and components of piping, pumps or parts of a well.²

How can diethyl phthalate affect my health?

Diethyl phthalate is a health hazard. Populations particularly vulnerable to the health effects of diethyl phthalates are the elderly and very young.¹ Pregnant women should avoid drinking water with high levels of diethyl phthalate because it can lead to health effects in their developing babies, such as:¹

- Stunted growth
- Liver and kidney enlargement
- Male reproductive organ malformations
- Increased risk of cancer

When does diethyl phthalate in drinking water become a health concern?

Diethyl phthalate is measured in parts per billion (ppb). The federal government has established the safe drinking water standard (also called maximum contaminant level) for diethyl phthalate as 6 ppb.

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

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 diethyl phthalate levels are significantly above the drinking water limit.

Can I wash my food with diethyl phthalate-contaminated water?

If diethyl phthalate levels in your water are above 6 ppb, you should use drinking water from an alternative safe source to wash and cook food.

Can I irrigate or water my garden with diethyl phthalate-contaminated water?

Diethyl phthalate can be taken up by plants, however microbes in the soil break down diethyl phthalate into less toxic components. Unless your water has levels higher than the 6 ppb standard, it is generally safe to use diethyl phthalate-contaminated water to irrigate your garden.³

What about bathing and showering?

Diethyl phthalate does not easily enter the body through the skin. Bathing, swimming and showering with diethyl phthalate-contaminated water is safe as long as the water is not swallowed. Supervise small children when they are bathing and brushing their teeth to ensure they do not swallow the water.

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 diethyl phthalate 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. Because these articles are not placed in the mouth, water having diethyl phthalate can be safely used for general cleaning and washing of clothing, bedding and linens.

What about my pets?

Animals should not drink water with diethyl phthalate levels above 6 ppb.

Learning about diethyl phthalate levels in your drinking water

For people on municipal or public water systems:

Public drinking water providers must monitor for diethyl phthalate and ensure levels remain below the drinking water standard of 6 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 diethyl phthalate 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 diethyl phthalate from drinking water

Don't boil the water!

There is no evidence that boiling removes diethyl phthalate.

For operators of public drinking water systems:

Avoid using piping or pump components that may contain diethyl phthalates to prevent contamination. Diethyl phthalate can be reduced to below 6 ppb in drinking water using granular activated carbon filtration. 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. 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:

Avoid using piping or pump components that may contain diethyl phthalates to prevent contamination. Treatment options are available to remove diethyl phthalate from well water. The most common method of treatment is called granular activated carbon filtration.³ 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 diethyl phthalate 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 diethyl phthalate in their water can call 971-673-0400 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 Di(2-ethylhexyl) phthalate in drinking water

References

1. ATSDR. (ed U.S. Department of Health and Human Services) Agency for Toxic Substances and Disease Registry. (1995).
2. Cao, X. L. Phthalate esters in foods: sources, occurrence, and analytical methods. *Comprehensive reviews in food science and food safety*. 9:21-43 (2010).
3. USEPA. Basic Information about Di(2-ethylhexyl) phthalate in Drinking Water. http://water.epa.gov/drink/contaminants/basicinformation/di_2-ethylhexyl_phthalate.cfm#one (2013).



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.