



Chemicals in Private Drinking Water Wells Fact Sheet

Florida Department of Health, Division of Environmental Health

This fact sheet discusses possible health risk from exposure to low levels of vinyl chloride typically found in private drinking water wells.

Vinyl Chloride

What is vinyl chloride?

Vinyl chloride is a synthetic, colorless gas. It burns easily. It is not stable at high temperatures. Vinyl chloride has a mild, sweet odor. It can be found in ground water from the breakdown of some kinds of solvents. Vinyl chloride is used to make polyvinyl chloride (PVC).

Vinyl chloride is also known as chloroethene, chloroethylene, and ethylene monochloride.

How might I be exposed to vinyl chloride in my drinking water?

- It is found in groundwater when disposed of improperly.
- As a liquid, vinyl chloride evaporates easily.

What is the standard for vinyl chloride in drinking water?

The Florida Department of Environmental Protection (DEP) drinking water standard for vinyl chloride is 1 microgram per liter (1 ug/L). There is no required sampling of private drinking water wells.

How can vinyl chloride affect my health?

To protect health, drinking water standards are set at very low levels. Drinking water every day at or below the standard for your entire lifetime is unlikely to cause illness.

To set drinking water standards, scientists study reports of people exposed to chemicals at work. They also study reports of experiments with animals. From these reports, they determine a "no-effect level" or level that doesn't cause illness. Then, to be on the safe side, scientists set drinking water standards hundreds or thousands of times less than the "no-effect level." Therefore, drinking water with levels slightly above the MCL for a short time period does not significantly increase the risk of illness. The risk of illness, however, increases as the level of chemical increases and the length of time you drink the water increases.

The type and severity of health effects associated with exposure to a particular chemical depends on a number of factors:

- How much of the chemical was someone exposed to each time?
- How long did the exposure last?
- How often did the exposure occur?
- What was the route of exposure? (Did someone eat, drink or breathe the chemical into their body?)

Health effects are also determined by a number of personal factors. From person to person, how someone is affected by a chemical exposure ranges widely. The drinking water standard is set to protect the most sensitive individuals. Health effects are also determined by a number of personal factors. These include:

- How old are they?

- What gender are they?
- Is the person generally healthy or do they already have other health problems?
- What are their health habits? (For instance, do they drink alcohol or smoke tobacco?)
- How likely are they to be affected by exposure to a chemical, in general?

How likely is vinyl chloride to cause cancer?

The U.S. Department of Health and Human Services has determined that vinyl chloride is a known carcinogen. Studies in workers who have breathed it over many years showed an increased risk of several kinds of cancer:

- Liver
- Brain
- Lung and
- Some cancers of the blood

The drinking water standard is set to protect against the risk of cancer. Levels of vinyl chloride less than the drinking water standard are not likely to cause cancer. Drinking water with levels slightly above the drinking water standard for a short time period does not significantly increase the risk of cancer. However, because the risk of cancer increases with how much of a chemical a person is exposed to, how often an exposure occurs and how long the exposure lasts, you should seek drinking water that meets the drinking water standard.

Is there a medical test to see if I have been exposed to vinyl chloride?

The results of several tests can sometimes show if you have been exposed to vinyl chloride. Vinyl chloride can be measured in your breath, but the test must be done shortly after exposure. This is not helpful for measuring very low levels of vinyl chloride. The amount of the major breakdown product of vinyl chloride, thiodiglycolic acid, in the urine may give some information about exposure. However, this test must be done shortly after exposure and does not reliably indicate the level of exposure.

Vinyl chloride can bind to genetic material in your body. The amount of this binding can be measured by sampling your blood and other tissues. This measurement will give information about whether you have been exposed to vinyl chloride, but it is not sensitive enough to determine the effects on the genetic material resulting from exposure. These tests are not available at most doctors' offices, but can only be done at special laboratories.

Should I continue to use my drinking water if vinyl chloride is found?

Levels of vinyl chloride less than the drinking water standard are not likely to cause illness. Drinking water with levels slightly above the MCL for a short time period does not significantly increase the risk of illness. However, because the risk of illness increases with how much of a chemical a person is exposed to, how often an exposure occurs and how long the exposure lasts, you should seek drinking water that meets the MCL.

Who can you contact for more health information?

Please call the Florida Department of Health toll-free help line 877-798-2772 weekdays from 10:00 a.m. to 7:00 pm. Outside of Florida, please call 850-245-4299 between 8:00 a.m. and 5:00 p.m. Or visit us online at: www.myfloridaeh.com

For more information about the health effects from exposure to this chemical in different situations and at higher levels than those usually found in drinking water wells, please see the ATSDR ToxFAQs for vinyl chloride at: www.atsdr.cdc.gov/tfacts20.pdf