



**Chemicals in Private Drinking Water Wells
Fact Sheet
Florida Department of Health, Bureau of Environmental Health**

This fact sheet discusses possible health risks from exposure to low levels of vinyl chloride typically found in 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. Vinyl chloride occurs in ground water when some kinds of solvents break down. Industry uses it to make polyvinyl chloride (PVC).

Other names for vinyl chloride include chloroethene, chloroethylene, and ethylene monochloride.

How might exposure to vinyl chloride in drinking water occur?

- It can get into 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 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 standard for a short time 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 (eating, drinking, or breathing)?

How chemical exposures may affect someone can range widely from one person to the next. The drinking water standard is set to protect the most sensitive individuals. A number of personal factors also determine health effects. 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 chemical exposures to effect someone, in general?

How likely is vinyl chloride to cause cancer?

The U.S. Department of Health and Human Services has determined that vinyl chloride causes cancer. 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 standard are not likely to cause cancer. Drinking water with levels slightly above the standard for a short time does not significantly increase the risk of cancer. However, because the risk of cancer increases with how much of a chemical a person comes into contact with, 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 for exposures to vinyl chloride?

The results of several tests can sometimes show if exposures have occurred. Tests of your breath can measure vinyl chloride, but the test must occur 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, thioglycolic acid, in the urine may give some information about exposure. However, if the test does not occur shortly after exposure, the results may not remain reliable.

Vinyl chloride can bind to genetic material in your body. Tests of your blood and other tissues can measure the amount of this binding. It will give information about an exposure to vinyl chloride, but not precisely enough to predict the effects. These tests are not available at most doctors' offices, but only at special laboratories.

Is it safe to keep drinking water with vinyl chloride in it?

Levels of vinyl chloride less than the drinking water standard are not likely to cause illness. Drinking water with levels slightly above the standard for a short time does not significantly increase the risk of illness. However, because health risks increase as the levels of a chemical (or how long a person drinks it) increases, it is best to drink water that meets standards.

For additional health information, please call the Florida Department of Health at 850-245-4240 or visit us online at <http://www.floridahealth.gov/environmental-health/drinking-water/Chemicals-HALs.html>

For more information about the health effects from exposure to vinyl chloride 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/toxfaqs/tfacts20.pdf