



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 1,1-dichloroethylene typically found in drinking water wells.

1,1-Dichloroethylene (1,1-DCE)

What is 1,1-dichloroethylene?

1,1-Dichloroethylene (1,1-DCE) is a synthetic liquid also called 1,1-dichloroethene. 1,1-DCE has a mild, sweet smell similar to chloroform. Nearly all the 1,1-DCE industry uses goes to make solvents/degreasers, adhesives, synthetic fibers, refrigerants, food packaging, and coating resins.

During the early 1980s, the United States produced about 90,700 tons per year of 1,1-DCE. Evaporation during production of 1,1-DCE or in wastewater may release 1,1-DCE. It can also release into the air when used to make plastic wrap, adhesives, and synthetic fiber. 1,1-DCE may also exist in groundwater as the result of the breakdown of other similar chemicals.

How might exposure to 1,1-DCE in drinking water occur?

- Usually found in ground water as breakdown product of closely related chemicals.
- Drinking water may contain 1,1-DCE as a result of improper disposal of wastes.

What is the standard for 1,1-DCE in drinking water?

The Florida Department of Environmental Protection's drinking water standard for 1,1-DCE is 7 micrograms per liter (7 ug/L). There is no required sampling of private drinking water wells.

How can 1,1-DCE affect my health?

Drinking water standards are set at very low levels. Drinking water every day at or below the drinking water 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 drinking standard 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 (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?

Drinking water with levels of 1,1-DCE well above the drinking water standard for a long time increases the risk of liver and kidney damage.

How likely is 1,1-DCE to cause cancer?

The ability of 1,1-DCE to cause cancer in humans is unknown. The International Agency for Research on Cancer has determined that 1,1-DCE is not classifiable as to its ability to cause cancer in humans. The U.S. Environmental Protection Agency has determined that 1,1-DCE could possibly cause cancer in humans. The drinking water standard is set to protect against the risk of cancer.

Is there a medical test for 1,1-DCE exposures?

Tests can detect 1,1-DCE in the breath, urine, blood, and body tissues. Breath tests are now the most common way to show recent exposures. These tests require specialized equipment, so are not available at all doctor offices. Your physician can tell you where to get these tests.

Tests can assess damage to systems including the lung, liver and kidney function. However, the tests cannot pinpoint the cause of the damage. Seek medical advice if you have any symptoms that you think relate to chemical exposure.

Is it safe to keep drinking water with 1,1-DCE in it?

Levels of 1,1-DCE less than the drinking water standard of 7 ug/L are not likely to cause illness. Drinking water with levels slightly above the standard for a short time period 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 www.floridahealth.gov/environmental-health/drinking-water/Chemicals-HALs.html

For more information about the health effects from exposure to 1,1-DCE in different situations and at higher levels than those usually found in drinking water wells, please see the U.S. EPA Consumer Fact Sheet for 1,1-dichloroethylene at <http://water.epa.gov/drink/contaminants/basicinformation/1-1-dichloroethylene.cfm>