



**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 toluene typically found in drinking water wells.*

## Toluene

### What is toluene?

Toluene is a clear, colorless liquid with a distinctive smell. It occurs naturally in crude oil and in the Tolu tree. Making gasoline and other fuels from crude oil produces toluene. So does making coke from coal.

Manufacturers use toluene to make paints, paint thinners, fingernail polish, lacquers, adhesives and rubber. Some printing and leather tanning processes also require toluene.

### How might exposure to toluene in drinking water occur?

- Drinking contaminated well water
- Living near uncontrolled hazardous waste sites containing toluene products

### What is the standard for toluene in drinking water?

The Florida Department of Environmental Protection drinking water standard for toluene is 1,000 micrograms per liter (1,000 ug/L). Concentrations above 40 ug/L can give the water a bad taste or smell. There is no required sampling of private drinking water wells.

### How can toluene affect my health?

To protect 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 standard, 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 does not cause illness. Then, to be on the safe side, scientists typically set drinking water standard 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. 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?

At levels well above the drinking water standard, toluene may affect the nervous system causing tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, hearing loss, and color vision loss. These symptoms usually disappear when exposure stops.

#### **How likely is toluene to cause cancer?**

Studies in humans and animals generally indicate that toluene does not cause cancer.

#### **Is there a medical test for toluene exposures?**

Exhaled air, urine, and blood tests can measure the level of toluene or its breakdown products in your body. To determine exposure, tests of your urine or blood must occur within 12 hours. Several other chemicals also change into the same breakdown products as toluene, so some of these tests are not specific for it.

#### **Is it safe to keep drinking water with toluene in it?**

Levels of toluene less than the drinking water standard of 1,000 ug/L are not likely to cause illness. Drinking water with levels slightly above the drinking water 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](http://www.floridahealth.gov/environmental-health/drinking-water/Chemicals-HALs.html)

**For more information about the health effects from exposure to toluene in different situations and at higher levels than those usually found in drinking water wells**, please see the ATSDR ToxFAQs for toluene at [www.atsdr.cdc.gov/toxfaqs/tfacts56.pdf](http://www.atsdr.cdc.gov/toxfaqs/tfacts56.pdf)