



**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 1,4-dioxane potentially found in drinking water wells.

1,4-dioxane

What is 1,4-dioxane?

1,4-dioxane (*p*-dioxane or dioxane) is a man-made synthetic industrial chemical used as a stabilizer in many solvents and cleaners. It is used in the manufacture of some dyes, adhesives, and lubricants. It has also been found as an impurity in some consumer products, such as antifreeze, shampoos, laundry detergents and cosmetics.

How might exposure to 1,4-dioxane occur?

- Drinking water containing 1,4-dioxane.
- Breathing ambient air containing 1,4-dioxane (higher in workplaces which make products containing).
- Contact with water or soaps containing 1,4-dioxane while showering or washing.

What is the safe level for 1,4-dioxane in drinking water?

The Florida Department of Health has set a Health Advisory Level (HAL) for 1,4-dioxane of 0.35 micrograms per liter (0.35 µg/L). This level is set to be protective for both cancer and non-cancer effects over a 70-year lifetime. There is no required routine sampling of public or private drinking water wells for this chemical.

To set a HAL, scientists review reports of people exposed to chemicals, if available. They also study reports of laboratory experiments. From these reports, they determine a “no-effect level” or level that is highly unlikely to cause illness. Then, in an abundance of caution, scientists set HALs hundreds or thousands of times less than the “no-effect level.”

How can 1,4-dioxane affect my health?

Health effects from drinking high levels of 1,4-dioxane can include liver damage, kidney damage, and certain cancers.

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

- What concentration of the chemical was someone exposed to?
- How long did the exposure last?
- What was the route of exposure (drinking, breathing, bathing)?

The health effect of a chemical exposure can range widely from one person to the next. A number of personal factors also contribute to the health effects. These include age, gender, other existing health conditions and lifestyle habits.

Can 1,4-dioxane cause cancer?

The U.S. EPA has determined that 1,4-dioxane is a likely human carcinogen. Animal studies imply that drinking water with high levels of 1,4-dioxane may lead to cancers in the liver, kidneys, nasal passages, or breast.

Is there a medical test for 1,4-dioxane exposure?

Special tests are available that can determine if you have been exposed to 1,4-dioxane. When 1,4-dioxane enters your body, it breaks down into other chemicals very quickly. Because of this, these tests should be done shortly after the exposure. These tests cannot tell you whether harmful health effects will occur. You should consult with your doctor prior to making any decisions on testing.

Does the presence of 1,4-dioxane mean water is unsafe to drink?

Drinking water every day with concentrations of 1,4-dioxane at or below the HAL for your entire lifetime is unlikely to cause illness. Drinking water with levels slightly above the HAL 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, the public health goal is to stop the pathway of exposure for 1,4 dioxane as soon as possible.

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 1,4-dioxane, please see the ATSDR ToxFAQs for 1,4-dioxane at <https://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=954&tid=199>