



## 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 thallium typically found in private drinking water wells.*

# Thallium

### What is thallium?

Pure thallium is a bluish-white metal that is found in trace amounts in the earth's crust. In the past, thallium was obtained as a by-product from smelting other metals; however, it has not been produced in the United States since 1984. Currently, all the thallium is obtained from imports and from thallium reserves.

In its pure form, thallium is odorless and tasteless. It can be found combined with other substances such as bromine, chlorine, fluorine, and iodine. When it's combined, it appears colorless-to-white or yellow.

Thallium is used mostly in manufacturing electronic devices, switches, and closures, primarily for the semiconductor industry. It also has limited use in the manufacture of special glass and for certain medical procedures. It is a component of cigarette smoke.

### How might I be exposed to thallium in my drinking water?

- By living near hazardous waste sites containing thallium that has contaminated well water.
- Eating homegrown fruits and vegetables contaminated with thallium from well water.

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

The Florida Department of Environmental Protection (DEP) drinking water standard for thallium is 2 micrograms per liter (2 ug/L). There is no required sampling of private drinking water wells.

### How can thallium 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 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 is the person?
- What gender is the person?
- Is the person generally healthy or have other health problems?
- What are the person's health habits? (For instance, does the person drink alcohol or smoke tobacco?)
- How likely is the person to be affected by exposure to a chemical, in general?

It is not known what the effects are from ingesting low levels of thallium over a long time. Birth defects were not reported in the children of mothers exposed to low levels from eating vegetables and fruits contaminated with thallium.

It is not known if breathing or ingesting thallium affects human reproduction. Studies showed rats that ingested thallium for several weeks had some adverse reproductive effects. Animal data suggest that the male reproductive system may be susceptible to damage by low levels of thallium.

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

The Department of Health and Human Services, the International Agency for Research on Cancer, and the Environmental Protection Agency (EPA) have not classified thallium as to its human carcinogenicity. No studies are available in people or animals on the carcinogenic effects of breathing, ingesting, or touching thallium.

#### **Is there a medical test to see if you have been exposed to thallium?**

There are medical tests available to measure levels of thallium in urine and hair. Thallium can also be measured in blood; however, this is not a good indicator of exposure since thallium only stays in blood a very short time. These tests are not routinely available at the doctor's office because they require special equipment. These tests cannot determine if adverse health effects will occur from the exposure to thallium.

#### **Should I continue to use my drinking water if thallium is found?**

Levels of thallium less than the drinking water standard 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. Because the risk of illness does, however, increase as the level of chemical increases and the length of time you drink the water increases, you should seek drinking water that meets the drinking water standard.

**For additional 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](http://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 thallium at: <http://www.atsdr.cdc.gov/tfacts54.pdf>