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 dieldrin typically found in drinking water wells.

Dieldrin

What is Dieldrin?

Dieldrin is a synthetic chemical used to kill insects. It has a chemical structure similar to aldrin. Aldrin quickly breaks down to dieldrin. Pure aldrin and dieldrin are white powders with a mild chemical odor. The less pure commercial powders have a tan color.

From the 1950s until 1970, wide use of dieldrin on corn and cotton occurred. Because of concerns about damage to the environment and potentially to human health, the U.S. Environmental Protection Agency (EPA) banned all uses of aldrin and dieldrin in 1974, except to control termites. In 1987, the U.S. EPA banned all uses.

How might exposure to dieldrin in drinking water occur?

- It is everywhere in the environment, but at very low levels.
- In drinking water, it breaks down very slowly.

What is the standard for dieldrin in drinking water?

The Florida Department of Health drinking water guideline for dieldrin is 0.002 micrograms per liter (0.002 ug/L). There is no required sampling of private drinking water wells.

How can dieldrin affect my health?

Drinking water guidelines are set at very low levels. Drinking water every day at or below the guideline for your entire lifetime is unlikely to cause illness.

To set drinking water guidelines, 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 these guidelines hundreds or thousands of times less than the “no-effect level.” Therefore, drinking water with levels slightly above the guideline 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?

Little information is available about what kind of health risks are likely from drinking water with low levels of dieldrin. Other types of dieldrin exposure at higher levels, like applying pesticides, has provided more knowledge about what health effects might occur.

How likely is dieldrin to cause cancer?

The ability of dieldrin to cause cancer in humans is unknown. Dieldrin causes liver cancer in mice. The International Agency for Research on Cancer has determined dieldrin is not classifiable as to whether it causes cancer in humans. The U.S. EPA has determined that dieldrin is a probable human carcinogen. The drinking water guideline is set to protect against the risk of cancer.

Is there a medical test for dieldrin exposures?

There are laboratory tests that can measure dieldrin in your blood, urine, and body tissues. Dieldrin stays in the body for months. The tests cannot tell you whether harmful health effects will occur. These tests are not routinely available at the doctor's office because they require special equipment.

Is it safe to keep drinking water with dieldrin in it?

Levels of dieldrin less than the drinking water guideline are not likely to cause illness. Drinking water with levels slightly about the drinking water guideline 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 www.floridahealth.gov/environmental-health/drinking-water/Chemicals-HALs.html

For more information about the health effects from exposure to dieldrin in different situations and at higher levels than those usually found in drinking water wells, please see the ATSDR ToxFAQs for aldrin/dieldrin at www.atsdr.cdc.gov/toxfaqs/tfacts1.pdf