

Dieldrin and Drinking Water

Summary

Dieldrin is a human-made chemical that was used as an insecticide from the 1950s until 1987.¹ Dieldrin has been detected rarely and at low levels in Minnesota drinking water. Exposure to even low levels of dieldrin can increase a person's risk of cancer.

Dieldrin

Dieldrin is an insecticide and a breakdown product of another insecticide called aldrin. Dieldrin and aldrin were widely used on crops like cotton and corn from the 1950s to 1970. The U.S. Department of Agriculture cancelled all uses of Aldrin and dieldrin in 1970. In 1972, the U.S. Environmental Protection Agency (EPA) approved aldrin and dieldrin for killing termites. The manufacturer of aldrin and dieldrin cancelled the insecticides' registration for termite control in 1987.¹ Since then, aldrin and dieldrin have not been used in the U.S. In general, levels of aldrin and dieldrin in drinking water are very low.²

Dieldrin in Minnesota Waters

Dieldrin is not commonly detected in Minnesota waters. The National Water Quality Monitoring Council reports that dieldrin was detected in 32 of Minnesota surface water samples (3 percent) since 1970. Detections ranged from 0.01 to 0.9 micrograms per liter (parts per billion [ppb]).³ The highest levels of dieldrin in Minnesota waters were detected in the 1970s. In 1995 dieldrin was detected one time in surface water that is used as a source of drinking water. It was detected at 0.7 ppb.⁴

MDH Guidance Value

Based on available information, MDH developed a guidance value of 0.006 ppb for dieldrin in drinking water. A person drinking water at or below the guidance value would have little or no risk for health effects.

Potential Exposure to Dieldrin

Because it is illegal to use dieldrin in the U.S. and many other countries, exposure to dieldrin is very unlikely. Dieldrin can still be found in some foods, wildlife, water, and air, but at very low levels. Levels of dieldrin detected in Minnesota water do not present a health concern.

Potential Health Effects

Dieldrin is classified by the US Environmental Protection Agency as a likely human carcinogen.⁵ There is concern that low level exposure for extended periods of time could increase the risk for developing cancer. Dieldrin has also been shown to cause increased liver weight, decreased immune system functioning, and decreased pup viability in animal studies.

Using Dieldrin Safely

It is illegal to use dieldrin in the U.S. If you have old containers of dieldrin, contact the [MDA Waste Pesticide Collection Program](#) to find out how you can safely get rid of the chemical.

Dieldrin in the Environment

Dieldrin enters the environment from spills or leaks from old dieldrin containers at landfills and private properties. Because aldrin and dieldrin last for a long time in the environment, the chemicals are still in the environment from when they were used as insecticides for crops and to kill termites before 1987.¹ You may find aldrin and dieldrin in soil, water, or homes where the chemicals were used. Dieldrin does not break down quickly in soil or water. It may take many years for large deposits of dieldrin to break down in soil. Dieldrin also builds up in the fatty tissues of animals, humans, and can be absorbed by plants.¹

Health Risk Assessment Unit

The MDH Health Risk Assessment Unit evaluates the health risks from contaminants in groundwater. MDH works in collaboration with the Minnesota Pollution Control Agency and the Minnesota Department of Agriculture to understand the occurrence and environmental effects of contaminants in water.

References

1. Agency for Toxic Substances and Disease Registry (ATSDR). 2002a. [Public Health Statement for Aldrin/Dieldrin](https://www.atsdr.cdc.gov/PHS/PHS.asp?id=315&tid=56) (<https://www.atsdr.cdc.gov/PHS/PHS.asp?id=315&tid=56>). Accessed October 2016.
2. ATSDR. 2002b. [Toxicological Profile for Alrin/Dieldrin](https://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=317&tid=56) (<https://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=317&tid=56>). Accessed 2016.
3. National Water Quality Monitoring Council. [Water Quality Data](http://waterqualitydata.us/portal/) (<http://waterqualitydata.us/portal/>) Queried “dieldrin” detections in Minnesota from 1970 to 2016. Accessed October 2016.
4. Minnesota Drinking Water Information System (MNDWIS). 2016. Accessed by MDH staff July 2016.
5. United States Environmental Protection Agency (USEPA) – Integrated Risk Information System (IRIS). 1998. “Dieldrin: IRIS Chemical Assessment Summary” from https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0225_summary.pdf

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