

Acetochlor OXA and Drinking Water

Summary

Acetochlor oxanilic acid (OXA) is an herbicide breakdown product (degradate) that has been detected in Minnesota water. Detections of acetochlor OXA in Minnesota groundwater and surface water have been below the Minnesota Department of Health (MDH) guidance value of 90 micrograms per liter (parts per billion [ppb]). Minnesotans are not likely to experience harmful health effects from the levels of acetochlor OXA found in the environment.

Acetochlor OXA

Acetochlor OXA is a breakdown product of an herbicide called acetochlor. Large amounts of acetochlor are used in U.S. agriculture. Acetochlor is widely used on corn crops in Minnesota and sometimes on soybean crops.¹ Minnesota Department of Agriculture (MDA) sales data show acetochlor sales increased in Minnesota between 2009 and 2014.²

Acetochlor OXA in Minnesota Waters

MDA detected acetochlor OXA in fewer than 10 percent of the routine groundwater samples it collected from 2012 through 2015. The highest level of acetochlor OXA detected in groundwater was 29.4 ppb.³ MDA has detected acetochlor OXA in surface water at levels up to 5.26 ppb.⁴

Some drinking water systems were tested for acetochlor OXA as a part of a one-time monitoring effort between 2008 and 2010 (Unregulated Contaminant Monitoring Rule 2). Acetochlor OXA was not detected in any of the 59 samples collected.⁵ In a 2015 study of wells considered to be at high risk of pesticide contamination, acetochlor OXA was detected in 7 community public drinking water system wells at levels up to 0.09 ppb.⁶

MDH Guidance Value

Based on available information, MDH developed a guidance value of 90 ppb for acetochlor OXA in drinking water. A person drinking water at or below the guidance value would have little or no risk of harmful health effects.

Potential Health Effects

There are limited laboratory studies about the potential health effects of acetochlor OXA. In animal studies, exposure to acetochlor OXA led to changes in thyroid hormones and decreases in both body weight gain and body weight. Based on animal studies, acetochlor OXA appears less potent than the parent compound acetochlor but more potent than the other common degradate—acetochlor ESA.

Potential Exposure to Acetochlor OXA

You may come in contact with small amounts of acetochlor OXA by drinking contaminated water. The amount of acetochlor OXA in drinking water is not likely a health risk for Minnesotans.

Acetochlor OXA in the Environment

Acetochlor OXA enters the environment when its parent compound, acetochlor, breaks down. Acetochlor enters the environment when it is used for weed control on agricultural crops, such as corn, potatoes, sugar beets, and sunflowers. Once in the soil, acetochlor OXA can move easily. It takes a few days to weeks for acetochlor OXA to biodegrade.

Potential Environment Impacts of Acetochlor OXA

Because acetochlor is an herbicide designed to control plant growth, terrestrial and aquatic plants and algae are most likely to be affected by acetochlor OXA in the environment. Toxicity of acetochlor OXA to aquatic organisms is considerably less than its parent compound acetochlor. Effects to aquatic organisms from exposure to acetochlor OXA are not expected at concentrations that have been detected in Minnesota.

Health Risk Assessment Unit

The MDH Health Risk Assessment Unit evaluates the health risks from contaminants in drinking water sources and develops health-based guidance values for drinking water. 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

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