Environmental Health Division
625 Robert St. N, P.O. Box 64975
St. Paul, MN 55164-0975
www.health.state.mn.us/eh

Dimethenamid and Drinking Water

Dimethenamid is a contaminant that has been found in waters that could be used as drinking water sources in Minnesota. The Minnesota Department of Health (MDH) developed a health-based guidance value for dimethenamid in drinking water and, based on this value and the levels found in groundwater, does not expect levels of dimethenamid in drinking water to harm Minnesotans.

What is dimethenamid?

Dimethenamid herbicides are used to control grasses, broad-leaf weeds, and sedges. Almost all dimethenamid products contain dimethenamid-p as the primary ingredient. It is used primarily on agricultural land but may also be used in some non-agricultural settings. In Minnesota, sales of dimethenamid products in 2011 totaled 443,000 pounds. Most dimethenamid is used in crop production, with a very small amount (less than 0.02 percent) sold for non-agricultural weed control. Dimethenamid ranked 9th out of all pesticides sold for crop production in Minnesota between 2005 and 2009.[1]

What is the MDH guidance value for dimethenamid?

MDH developed new drinking water guidance for dimethenamid and related chemicals in 2013. The new guidance value for dimethenamid (including dimethenamid-p, and the dimethenamid degradates ESA and OXA) is 300 ppb (parts per billion). Exposure to dimethenamid in drinking water at or below these levels over a lifetime will pose little or no risk of health effects.

How much dimethenamid is in Minnesota waters?

Even in highly agricultural areas of the state, very little to no dimethenamid has been found in groundwater. Trace amounts of dimethenamid ESA and OXA were found in 2 percent of 83 samples in a 2010 study of community wells.[2] Dimethenamid was detected in 1 percent of 275 total samples from another study of private and monitoring wells in 2011; all detections were below 1 ppb.[3] The ESA and OXA degradates were detected more frequently during sampling. ESA was detected in 13 percent of 276 samples at a maximum concentration of 11 ppb and OXA was detected in 5 percent of samples at a maximum concentration of 7.5 ppb.

At a Glance

Dimethenamid is…

- An herbicide used to control weeds.

Dimethenamid enters your body from…

- Drinking water that contains dimethenamid.
- Eating foods that contain dimethenamid residue.
- Breathing it in or getting it on skin when entering an area where it has been recently applied on crops.

How does dimethenamid get into the environment?

Dimethenamid gets into the environment primarily through use as an herbicide on crops.

Dimethenamid in drinking water is safe if…

The level is lower than the MDH guidance value of 300 ppb.

Low levels of dimethenamid and its degradates have also been found in surface water in early summer. Maximum concentrations during storm runoff from agricultural fields have been 3 ppb or lower. These seasonal detections in surface water are more frequent than those in groundwater. Dimethenamid was detected in 47 percent of 263 random, statewide samples, with a maximum of 1.43 ppb.[3]

Can dimethenamid in drinking water affect my health?

Adverse health effects from exposure to dimethenamid have not been reported in humans but have been reported in animal toxicity studies. Adverse effects in animal studies include impacts to the liver, changes in body weights in both young and adult animals, and impacts on the female reproductive system. Humans are not likely to experience harmful health effects from exposure to dimethenamid at levels commonly found in the environment.

How can I be exposed to dimethenamid?

Minnesotans could be exposed by eating food containing dimethenamid pesticide residues, though it is rarely found in food supplies. Drinking water from a supply that contains dimethenamid can also result in exposure. Inhalation or skin exposures may also occur after applying dimethenamid, or after entering an agricultural field within 24 hours following the application of dimethenamid to crops.

How can exposure to dimethenamid be reduced?

Though dimethenamid residues are generally not found on food, washing fresh fruits and vegetables or consuming organic food is a way to reduce exposure to all synthetic pesticides. Using an appropriate filter may reduce dimethenamid when it is found in drinking water. Avoiding agricultural areas for 24 hours after dimethenamid has been sprayed on crops is another way to reduce exposure.

What are the potential environmental impacts of dimethenamid?

In addition to killing targeted weeds in farm fields, some plants living near the edge of fields may be harmed as a result of dimethenamid applications. Aquatic plants may also be harmed. Harm to plants could affect fish and other wildlife that depend on aquatic plants for food and habitat. However, widespread harm to plants and wildlife has not been observed and is not expected.

For more information contact:

Health Risk Assessment
Phone: (651) 201-4899
Website: http://www.health.state.mn.us/risk
E-mail: health.risk@state.mn.us

The 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

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