

Cyanazine in Drinking Water

INFORMATION FOR PRIVATE WELL USERS

Cyanazine is a pesticide that was mainly used on corn crops until it was banned in 2002. Cyanazine plus its breakdown products (together called “total cyanazine”) have been detected in surface water and groundwater in Minnesota, including private wells. Consuming water with levels of total cyanazine over 1 microgram per liter ($\mu\text{g/L}$) may present a health risk.

Potential Health Effects

The best evidence on potential health effects of cyanazine comes from animal studies. Animals that consumed high doses of cyanazine had changes in their food intake, bodyweight, reproduction, and development. Cyanazine might also affect the endocrine and nervous systems. Some cyanazine breakdown products cause the same toxic effects as cyanazine itself.

How to Protect Yourself and Your Family

The Minnesota Department of Health (MDH) develops guidance values to protect people’s health from contaminants in drinking water. MDH’s long-term guidance value for total cyanazine in drinking water is $1 \mu\text{g/L}$ *. A person drinking water with a total cyanazine concentration at or below $1 \mu\text{g/L}$ over the long-term would have little or no risk for health effects. MDH’s short-term guidance value is $3 \mu\text{g/L}$. Drinking water with a total cyanazine concentration at or below $3 \mu\text{g/L}$ over a short period of time presents little or no risk for health effects. MDH adds the concentrations of cyanazine and cyanazine breakdown products together into one sum (total cyanazine) to compare to its drinking water guidance values.

*One microgram per liter ($\mu\text{g/L}$) is the same as 1 part per billion.

What you can do if total cyanazine was detected in your private well water

If your total cyanazine result was	Do you need to do anything to protect your household’s health?
1 $\mu\text{g/L}$ or less	No. This level is safe for everyone in your home.
Between 1 $\mu\text{g/L}$ and 3 $\mu\text{g/L}$	Yes. Install home water treatment for the water you use for drinking and cooking. This will reduce your risk of health effects caused by drinking the water over the long-term. Untreated water is safe for other uses, including washing dishes and clothes, brushing teeth, bathing, and watering plants.
Higher than 3 $\mu\text{g/L}$	Yes. Use water from a safe alternative source (such as bottled water) for drinking and cooking until you are able to install home water treatment for the water you use for drinking and cooking. This will reduce your risk of short-term health effects. Installing treatment is more cost effective than buying bottled water over the long-term. Untreated water is safe for other uses, including washing dishes and clothes, brushing teeth, bathing, and watering plants.

Home water treatment options

MDH currently recommends reverse osmosis to treat household drinking water with a total cyanazine concentration over 1 µg/L. While there are no treatment units certified by the Water Quality Association (WQA), NSF, or Underwriter's Laboratory (UL) to remove cyanazine breakdown products, Minnesota Department of Agriculture (MDA) water testing shows reverse osmosis is an effective way to remove them. Based on certifications to remove other pesticides, distillation and some granular activated carbon filters may also be effective.

Learn about grant and loan programs to help pay for treatment at [Home Water Treatment](http://www.health.state.mn.us/communities/environment/water/factsheet/hometreatment) (www.health.state.mn.us/communities/environment/water/factsheet/hometreatment).

If you are on a private well and do not know if cyanazine is in your water

Since the MDA just began testing for total cyanazine, it will take time to understand which areas of Minnesota are more likely to have cyanazine in groundwater. In general, cyanazine may be present in your well water if you are in an area that grows or used to grow corn and where groundwater is vulnerable to contamination. To find out if groundwater in your area is considered vulnerable, enter your address into the MDA's [Vulnerable Groundwater Area Map](http://www.mda.state.mn.us/vulnerableareamap) (www.mda.state.mn.us/vulnerableareamap). Vulnerable areas are shown in purple.

Currently, there is only one laboratory in the U.S. that can test private well water for cyanazine and its breakdown products. At this time, testing your water may cost more than purchasing reverse osmosis home water treatment that would remove nearly all pesticides when properly maintained. If you are concerned about cyanazine and other pesticides in your well water and want to take action now, MDH recommends installing a reverse osmosis system. Over the next few years, MDH and the MDA expect to have more information on where cyanazine occurs and there will likely be more laboratories that can test for cyanazine breakdown products at a reasonable cost.

If you are on a public water system

When the MDA locates an area with increased levels of cyanazine in private wells, MDH works with the MDA to test nearby public water supplies that may be affected. Contact your public water supplier for more information.

Background on Cyanazine

Cyanazine (commonly sold as Bladex®) was used on corn in Minnesota to control weeds starting in the early 1970s. In 2002, the U.S. Environmental Protection Agency prohibited its use because of environmental and human health concerns. After cyanazine is applied, it can travel down through the soil into groundwater. As it moves through soil, cyanazine breaks down into chemicals that are similar in form (cyanazine breakdown products). These breakdown products can remain in groundwater for a long time. The breakdown products that are a part of "total cyanazine" are cyanazine amide, cyanazine acid, deethylcyanazine, deethylcyanazine acid, deethylcyanazine amide, deisopropylatrazine, and atrazine desethyl deisopropyl (DEDI atrazine).

What the State is Doing

The MDA tests private wells for pesticides in townships that are vulnerable to nitrate contamination as part of the Private Well Pesticide Sampling Project (www.mda.state.mn.us/pesticide-fertilizer/private-well-pesticide-sampling-project). The goal of the project is to provide information to private well owners about the presence of pesticides in their drinking water. The MDA also uses the sampling results to guide pesticide management decision-making to protect groundwater. The MDA added cyanazine and its breakdown products to the list of pesticides it tests for in spring 2019.

The MDA is also working to encourage commercial laboratories to develop and offer a lower cost test for cyanazine and its breakdown products. MDH will share this information when it becomes available.

MDH assesses the health risks related to cyanazine and other pesticides in drinking water. MDH works with the MDA to inform residents of the health risks pesticides pose in well water and how to protect their health. MDH also collaborates with the MDA to test public water systems for unregulated pesticides, including cyanazine.

Contact Us

Questions about monitoring

MDA Pesticide & Fertilizer Management
651-201-6000 or 800-967-2474
Agricultural Chemical Monitoring and Assessment (www.mda.state.mn.us/pesticide-fertilizer/agricultural-chemical-monitoring-and-assessment)

Questions about health effects

MDH Health Risk Assessment Unit
651-201-4606
health.risk@state.mn.us

Questions about well water treatment

MDH Well Management
651-201-4600 or 800-383-9808
health.wells@state.mn.us