DEPARTMENT OF HEALTH

Cyanazine in Drinking Water

INFORMATION FOR PRIVATE WELL USERS

Cyanazine is an herbicide that was mainly used on corn crops in Minnesota until its registration was canceled in 2002. As cyanazine moves through soil, it breaks down into chemicals that are similar in form—these are called breakdown products. 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 concentrations of total cyanazine over 1 microgram per liter (µg/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, liver, kidneys, 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 has short-term and long-term guidance values for total cyanazine in drinking water:

- **Short-term guidance value is 3 micrograms per liter (µg/L)***. Drinking water with a total cyanazine concentration at or below 3 µg/L for around thirty or fewer days presents little or no risk for health effects.
- **Long-term guidance value is 1 µg/L**. A person drinking water with a total cyanazine concentration at or below 1 µg/L over a lifetime would have little or no risk for health effects.

*One microgram per liter (µg/L) is the same as 1 part per billion (ppb).

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

If your total cyanazine result was	Do you need to do anything to protect your household's health?
1 µg/L or less	**No**. This concentration is safe for everyone in your home.
Between 1 µg/L and 3 µg/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.

If your total cyanazine result was	Do you need to do anything to protect your household's health?
Higher than 3 µg/L	**Yes**. Use water from a safe alternative source (such as bottled water) for drinking and cooking until you install home water treatment for the water used 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 total cyanazine. Based on certifications to remove other pesticides, distillation and some granular activated carbon filters may also be effective. **All treatment systems require proper maintenance to be effective.** See Home Water Treatment (www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html).

If you are on a private well

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. MDA began testing for total cyanazine in 2019 and has found wells with total cyanazine concentrations above 1 µg/L. Most of these detections have been in southeastern Minnesota; some detections have been in the central and western parts of the state. Over the next few years, MDH and the MDA expect to have more information on where cyanazine breakdown products occur in groundwater.

- **MDA testing results**: Cyanazine Monitoring (www.mda.state.mn.us/cyanazine-monitoring).
- Find out if your groundwater is vulnerable to contamination at **Vulnerable Groundwater Area Map** (www.mda.state.mn.us/chemicals/fertilizers/nutrient-mgmt/nitrogenplan/mitigation/wrpr/wrprpart1/vulnerableareamap).

If you are concerned about total cyanazine in your private well

Currently, there are two known commercial laboratories in the U.S. that can test private well water for cyanazine breakdown products; they are listed in the table below. If you want to test your well water for cyanazine, contact the laboratory to make sure they accept samples from homeowners and to get sample collection information and costs.

Laboratory	City	State	Phone
Eurofins	South Bend	IN	574-233-4777
Weck	City of Industry	CA	626-336-2634

If you want to test for other pesticides in addition to cyanazine, it is likely testing will cost more than installing reverse osmosis home water treatment. If you are concerned about total cyanazine and other pesticides in your well water and want to act now, MDH recommends installing a reverse osmosis system.

If you are on a public water system

When the MDA locates an area with increased concentrations of cyanazine in private wells, MDH works with the MDA to test nearby public water supplies that may be affected. At this point, no public water system has had a total cyanazine concentration above the long-term guidance value of 1 µg/L. Public water systems will let their customers know if there is a concentration of total cyanazine detected above 1 µg/L.

Background on Cyanazine

Cyanazine (often sold as Bladex®) was commonly 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. 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 didealkylatrazine.

What the State is Doing

The MDA continues testing private wells for cyanazine and its breakdown products in townships that are vulnerable to nitrate contamination. The goal of the project is to provide information to private well owners about the presence of cyanazine-related pesticides in their drinking water. In 2023, the MDA plans to expand testing to additional wells in the counties where cyanazine has been detected above 1 µg/L.

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 and its breakdown products.

Contact Us

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