

Cryptosporidium

What is Cryptosporidium?

Cryptosporidium is a protozoan—a slightly more complex type of organism than a bacterium or virus. It can live in the intestines of humans or animals. Of the six known species of *Cryptosporidium*, *Cryptosporidium parvum* is thought to pose the greatest threat of human infection.

Outside of the body, *Cryptosporidium* is protected by an outer shell called an oocyst. Once the oocyst is consumed—in food or water—the organism can emerge from the shell and infect the lining of the intestine, causing an illness called cryptosporidiosis. The symptoms include diarrhea, nausea, vomiting, and abdominal cramping. The illness usually begins two to ten days after infection and generally lasts for no more than several weeks for people with normal immune systems. However, for people with compromised immune systems, the illness may be more persistent and more severe—even fatal. People with compromised immune systems can include those living with HIV or AIDS, as well as cancer patients receiving chemotherapy.

The principal source of *Cryptosporidium* contamination is believed to be animals, both domestic and wild. *Cryptosporidium* is relatively widespread in the environment and is commonly found in rivers and lakes—especially when the water is contaminated with animal wastes. It is likely that some amount of *Cryptosporidium* contamination can probably be detected in most water supply systems. This is based on the results of national sampling and testing efforts, if the water is from surface water sources (lakes, rivers, or streams) and if enough samples are taken.

What's being done to protect our drinking water in Minnesota?

Most public water systems in Minnesota use wells to get their water from under the ground. These groundwater systems have a built-in advantage in the fight against *Cryptosporidium*: the ground itself serves as a natural filter as the water percolates from the surface down to the aquifer.

Twenty-four community water systems and approximately 60 noncommunity water systems in Minnesota use surface water as their source of drinking water. Surface water is open to the environment and more susceptible to contamination. *Cryptosporidium* oocysts can survive chlorine treatment, which means they resist conventional disinfection methods so additional treatment is required. The water must be filtered in order to remove *Cryptosporidium*.

All surface water systems in Minnesota use filtration—which removes *Cryptosporidium*—as part of the treatment process. Monitoring requirements must be met, and the water system must be operating at optimum levels at all times so that a breakdown does not occur at this critical point in the treatment process.

There are regulations in place for public water systems that use a surface water source. These regulations aim to improve public health protection through the control of microbial contaminants by focusing on systems with elevated *Cryptosporidium* risk. To determine if a surface water source is vulnerable to contamination, surface water systems are required to

monitor their source water for *Cryptosporidium*. Based on the annual average of these results, additional treatment may be required. However, due to the high cost of *Cryptosporidium* analysis, surface water systems serving less than 10,000 people are eligible to conduct *E. coli* monitoring in lieu of *Cryptosporidium* monitoring. If the annual average of the *E. coli* results exceeds specific trigger levels, then *Cryptosporidium* monitoring will be required to determine if additional treatment is required.

The Minnesota Department of Health (MDH) is one of ten program sites in the United States chosen to participate in a federally funded Emerging Infections Program. As part of this program, MDH is conducting surveillance for cryptosporidiosis so that if outbreaks occur, they can be detected early.

Water system operators are responsible for making sure their treatment facilities are functioning efficiently and effectively at all times. To protect against *Cryptosporidium* and other waterborne diseases, the public water systems use a multi-part strategy that includes:

- Protecting the source water and supporting watershed management efforts;
- Using the most effective possible treatment methods;
- Making sure the water distribution system is properly maintained; and
- Conducting the required water quality monitoring for the treated water and the distribution system.

What can you do to protect yourself?

People with compromised immune systems may want to consult with their clinicians and consider special precautions, such as those listed below, any time there are questions regarding the safety of their drinking water.

- Boiling the water for one minute (and allowing it to cool before drinking) is the best extra measure that can be taken to make sure water is free of *Cryptosporidium* and any other germs.
 - Alternatives to boiling water include switching to bottled water or installing point-of-use water treatment devices. Bottled water is subject to fewer regulatory safeguards than water from your public water supply system, however, and its quality can vary. Unless it has been distilled or pasteurized, bottled water may not be any safer than tap water. If the bottling company gets its water from a properly designed and operated groundwater system, it's unlikely that there will be any *Cryptosporidium* in the water.
- Point-of-use filters are effective against *Cryptosporidium* if they are capable of removing particles one micrometer or less in diameter. Also, devices that use ultraviolet technology can be effective for inactivating the organism.
 - When selecting a treatment system for the removal of *Cryptosporidium*, be sure to select a device that is ANSI/NSF certified for cyst reduction or inactivation. Also, when using any type of treatment device, it is important to maintain it properly and when using a filtration device, change the filters at regular intervals. Failing to maintain a

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treatment unit will reduce its effectiveness and may even make contamination problems worse.

- People should also avoid drinking or accidentally swallowing water from rivers, lakes, streams, or swimming pools. People with compromised immune systems should avoid swimming in rivers, lakes, and perhaps even swimming pools (oocysts are not killed by chlorine) since accidental water ingestion often occurs with swimming.

For more information

- [Water Quality Association \(wqa.org\)](http://wqa.org)
- [Minnesota Water Quality Association \(https://www.mwqa.com/\)](https://www.mwqa.com/)
- [NSF International | The Public Health and Safety Organization \(https://www.nsf.org/\)](https://www.nsf.org/)

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