

## Acknowledgement:

This Fact Sheet is one of a series developed by an Interagency Committee with representatives from Saskatchewan Health, Regional Health Authorities, Saskatchewan Watershed Authority, Saskatchewan Agriculture and Food, Agriculture and Agri-Food Canada – PFRA and Saskatchewan Environment.

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Saskatchewan

# Cryptosporidium and Giardia

(For Private Water and Health Regulated Public Water Supplies)

## What Are Cryptosporidium and Giardia?

*Cryptosporidium* and *Giardia* are single-celled microscopic, protozoan parasites. They live in the intestines of infected humans and various other mammals, birds, reptiles and amphibians. Those infected shed the parasites in an encysted (encased) form through their feces. *Cryptosporidium* forms oocysts and *Giardia* forms cysts. *Cryptosporidium* oocysts and *Giardia* cysts are very hardy and can survive in cool surface water for several months.

## How Do Cryptosporidium and Giardia Get Into Water?

The encysted form of these parasites are commonly present in surface water supplies. Droppings from infected wild animals or domestic livestock are either directly deposited into surface water or are washed in with other surface runoff. When sewage from inefficient or improperly operated disposal systems is discharged into surface water, severe contamination can occur.

Groundwater usually does not contain these parasites. Therefore, properly constructed and maintained wells, not under the influence of surface water, should be free from *Cryptosporidium* and *Giardia*.

## How Do Cryptosporidium and Giardia Affect My Health?

The illness that results from ingestion of parasitic oocysts/cysts is a gastrointestinal upset. Only a few oocysts/cysts are required to cause an infection.

Symptoms of *Cryptosporidium* infections include watery diarrhea, headache, abdominal cramps, nausea, vomiting, and low-grade fever. The first symptoms may appear two to 10 days after a person becomes infected and will normally last for about two weeks or less. However, in some individuals after they appear to have recovered, their condition may worsen again. There is currently no effective cure for Cryptosporidiosis.

Symptoms of *Giardia* infections include diarrhea, abdominal cramps, fatigue, bloating and weight loss. Symptoms appear one to four weeks after infection. Without treatment, 50% of adults clear the infection within one to three months. Medical treatment can shorten the illness.

If *Cryptosporidium* and *Giardia* are suspected, visit your doctor as soon as possible and have stool specimens tested for parasites.

## How Can I Remove Cryptosporidium and Giardia From My Drinking Water?

The most reliable way to reduce the risk of infection is the multiple-barrier approach to treatment. This includes watershed or wellhead protection combined with treatment methods that utilize filtration and disinfection. Chlorine alone, used at normal water purification levels, does not kill the oocysts/cysts. Parasitic oocysts/cysts can be removed by passing water through microstraining filters and then chemically treating the water with chlorine or iodine. These filters, including reverse osmosis water treatment, must have a filtering capability of “**one micron absolute**”, which means they will remove particles one micron and larger in size. These microstraining filters work best with clear water. If the water is turbid (cloudy) then it should be pre-filtered. As well, properly designed ozone and ultra violet systems will inactivate the oocysts/cysts. Home treatment systems should carry the National Sanitation Foundation certification for *Cryptosporidia* and *Giardia* removal (NSF Standard 58 for reverse osmosis units, NSF Standard 55 for ultra violet units).

All oocysts/cysts are destroyed when water is boiled for at least one minute, at a rolling boil or distilled.

## What Is The Standard For Cryptosporidium and Giardia In Drinking Water?

Numerical guidelines for the protozoa *Cryptosporidium* and *Giardia* are not proposed at this time. Routine methods available for the detection of protozoan oocysts/cysts suffer from low recovery rates and do not provide any information on their viability or human infectivity. However, until improvements to monitoring and detection methods are made, measures to reduce the risk of illness as much as possible should be implemented. Where viable human-infectious oocysts/cysts are confirmed or suspected to be present in source waters, or if *Cryptosporidium* or *Giardia* has been responsible for past waterborne outbreaks in a community, it is recommended that a treatment regime and a watershed or wellhead protection plan or other measures known to reduce the risk of illness be implemented.

## How Can I Find Out If There Are Cryptosporidium and Giardia In My Water?

The test for identifying *Cryptosporidium* and *Giardia* is expensive and is not feasible for most private water supplies. Furthermore, since parasitic oocysts/cysts can enter exposed water so easily, a negative test result on any given day would not guarantee the continued safety of the water supply. One should remember that untreated surface water may always contain parasitic oocysts/cysts and, therefore, should never be consumed in its raw state.

**If testing is considered, the standard method of detecting oocysts/cysts is to pump a significant amount of water through a filter with openings of less than one micron. The filter is then sent to a specialized laboratory for analysis to determine the presence of oocysts/cysts.**

## Need More Information?

### Health Regulated Public Water Supply

For more information on this Fact Sheet and/or other water quality issues relating to Health Regulated Public Water Supplies contact your local Health Region Public Health Inspector.

### Private Water Supply

For more information on how *Cryptosporidium* and *Giardia* impacts on human health contact your local health region office. For information on how *Cryptosporidium* and *Giardia* impacts agricultural operations contact Saskatchewan Ministry of Agriculture through your Agricultural Business Centre or the Agricultural Knowledge Centre at 1-866-457-2377 or on the internet (<http://www.agriculture.gov.sk.ca/AKC>).

<b>Government of Saskatchewan</b> Water Information website <a href="http://www.SaskH2O.ca">www.SaskH2O.ca</a>	<b>Water Inquiry Line</b> Questions about water? Call 1-866-SASK H2O (1-866-727-5420) to be referred to proper agency.
<b>Saskatchewan Ministry of Health</b> <a href="http://www.health.gov.sk.ca/environmental-health">http://www.health.gov.sk.ca/environmental-health</a> <b>Regional Health Offices</b> Saskatoon: Saskatoon (306) 655-4605 Sunrise: Yorkton (306) 786-0600 Kelsey Trail: Melfort (306) 752-6310 Five Hills: Moose Jaw (306) 691-1500 Sun Country: Weyburn (306) 842-8618 Heartland: Rosetown (306) 882-6413 Prairie North: North Battleford (306) 446-6400 Prince Albert Parkland: Prince Albert (306) 765-6600 Cypress: Swift Current (306) 778-5280 Regina Qu'Appelle: Regina (306) 766-7755 Mamawetan Churchill River: La Ronge (306) 425-8512 Keewatin Yatthe: Buffalo Narrows (306) 235-5811	<b>Saskatchewan Watershed Authority,</b> Head Office, Moose Jaw (306) 694-3900 Website: <a href="http://www.swa.ca">www.swa.ca</a> <i>Regional Offices:</i> <a href="http://www.swa.ca/AboutUs/Contact.asp?type=Offices">http://www.swa.ca/AboutUs/Contact.asp?type=Offices</a> <b>Sask Water Corporation</b> Head Office, Moose Jaw Customer Service 1-888-230-1111 Website: <a href="http://www.saskwater.com">http://www.saskwater.com</a> <b>Prairie Farm Rehabilitation Administration (PFRA) - Agriculture and Agri-Food Canada</b> Website <a href="http://www.agr.gc.ca/pfra/water/intro_e.htm">http://www.agr.gc.ca/pfra/water/intro_e.htm</a> <i>Regional Offices:</i> <a href="http://www.agr.gc.ca/pfra/sask_e.htm">http://www.agr.gc.ca/pfra/sask_e.htm</a>
<b>Saskatchewan Ministry of Health</b> <b>Saskatchewan Disease Control Laboratory, Regina</b> General Inquiry 1-866-450-0000 Phone: (306) 798-2125 // Fax (306) 798-0071 Website: <a href="http://www.health.gov.sk.ca/lab">http://www.health.gov.sk.ca/lab</a>	<b>Saskatchewan Ministry of Agriculture</b> General Inquiry 1-866-457-2377 Agricultural Operations Regina (306) 787-4680 Irrigation Development Outlook (306) 867-5500 Website: <a href="http://www.agriculture.gov.sk.ca">www.agriculture.gov.sk.ca</a>
<b>Health Canada</b> First Nation and Inuit Health Branch, Regina (306) 780-5434 Website: <a href="http://www.hc-sc.gc.ca">http://www.hc-sc.gc.ca</a>	<b>Saskatchewan Ministry of Environment</b> Toll-Free 1-800-567-4224 Spill Emergency Toll-Free 1-800-667-7525 Website: <a href="http://www.environment.gov.sk.ca">http://www.environment.gov.sk.ca</a>