
ENVIRONMENTAL Fact Sheet



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Cryptosporidium in Drinking Water Wells

What is Cryptosporidiosis? Cryptosporidiosis (crip-toe-spor-id-ee-o-sis) is a disease caused by *Cryptosporidium*, which, as late as 1976, was not known to cause disease in humans. Since then more than 20 species and 40 genotypes of *Cryptosporidium* have been identified, some of which are far more infectious to humans than others. The scientific understanding of these organisms continues to evolve. *Cryptosporidium* is a single-celled, protozoan parasite found in the waste of humans and other warm-blooded animals infected with the organism. It can be found in the environment in rivers, lakes, streams and reservoirs. Until recently, little has been known about its disease producing capabilities. *Cryptosporidium* is too small to be seen with the naked eye.

How is Cryptosporidiosis Spread? Infection with the disease can occur via ingestion of contaminated food or water. The disease is easily spread through hand-to-mouth contact. A person can become infected by drinking contaminated water, eating raw or undercooked food, direct contact with the droppings of infected animals or stool of infected humans or hand-to-mouth transfer of the organism from surfaces that may have become contaminated with microscopic amounts of stool from an infected person or animal. The infectious form of the parasite is called an oocyst, which is an egg-like form of the parasite and is highly resistant to chlorine.

What are the Symptoms of Cryptosporidiosis? The symptoms of Cryptosporidiosis are diarrhea, headache, abdominal cramps, nausea, vomiting and low-grade fever. Onset typically occurs within two to 10 days after exposure. There is no treatment for Cryptosporidiosis. In an otherwise healthy person, Cryptosporidiosis symptoms usually last one to two weeks by which time the body's immune system is able to overcome the infection.

In persons with compromised immune systems, such as those persons who have been receiving chemotherapy treatment, people with AIDS or those taking immune suppressant drugs, and the very young or old, the infection may continue and become life-threatening. See your doctor to determine whether symptoms are caused by *Cryptosporidium*, and what actions to take.

Presence in Water Supplies. *Cryptosporidium* can enter water supplies via runoff from the watershed, cattle feed lots, and grazing operations all of which represent significant contributors to contamination through runoff. It can also enter water supplies through direct discharge of sewage or through body-contact recreation. *Cryptosporidium* can be transmitted by water and may be present in any unfiltered surface water. *Cryptosporidium* could also be present in poorly constructed wells that allow the direct and immediate entry of raw surface water.

Water Quality Testing. The DES laboratory does **not** analyze water samples for *Cryptosporidium*. A partial list of commercial laboratories performing this test is provided below. Laboratory testing of water for *Cryptosporidium* is very expensive and time consuming. The collection procedure consists of filtering approximately 500 gallons of water through a cartridge-type particle filter, a process that takes

approximately six hours. When collection is completed, the cartridge sample must be refrigerated and delivered to the laboratory within 24 hours. Actual processing of the cartridge by the laboratory takes additional time. Commercial laboratory testing for *Cryptosporidium* typically costs hundreds of dollars per sample.

To find a list of laboratories that perform analyses for *Cryptosporidium*, visit the Environmental Protection Agency website at http://water.epa.gov/lawsregs/rulesregs/sdwa/lt2/lab_home.cfm.

Well Construction. *Cryptosporidium* are approximately twice as large as coliform bacteria. Thus if your well can resist the entry of minute organisms such as coliform bacteria, it certainly should be able to resist larger organisms such as *Cryptosporidium*. Rather than conduct costly water testing for *Cryptosporidium*, DES recommends the following more practical approach to gauge whether your well is at risk to *Cryptosporidium*.

1. Inspect your well for proper construction. Carefully inspect the cover and exposed sides of your well for a broken casing or leaking cover. Look for any construction weaknesses where animal waste, insects or unfiltered surface water could enter the well. Repair as necessary. If you need further information concerning good well construction, consult DES fact sheets concerning “Bedrock Well Design” on our webpage at <http://www.des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm> and scroll to WD-DWGB-1-2 or 1-4.
2. Once the well’s defects have been repaired and the well has been disinfected, take samples for coliform bacteria. These samples should be taken after a heavy rain and spaced out over weeks or months. We suggest taking three or four coliform bacteria samples and evaluating the results.

If Bacteria Are Absent. There is no direct relationship between coliform bacteria and *Cryptosporidium*. If your well is properly constructed and the aquifer provides adequate filtration, then *Cryptosporidium* should not be present in groundwater. Where no coliform bacteria are detected after multiple samples, one can reasonably conclude that the well’s construction and the aquifer’s filtration are adequate to prevent the entry of *Cryptosporidium*.

If Bacteria Are Present. Where coliform bacteria are detected, the well must be judged as at risk to *Cryptosporidium* and other potentially harmful organisms. In such cases, the well’s construction or aquifer’s filtration must be further evaluated.

Where the well’s construction is judged to be sufficient but bacteria continue to be present, other actions should be taken. Options include drilling another well or installing a continuous disinfection system. Please note that *Cryptosporidium* is particularly hardy and resistant to disinfection by chlorine.

FOR MORE INFORMATION

Please contact the Drinking Water and Groundwater Bureau and the New Hampshire Water Well Board at (603) 271-2513 or dwgbinfo@des.nh.gov or visit our website at <http://www.des.nh.gov/organization/divisions/water/dwgb/index.htm>. All of the bureau’s fact sheets are online at <http://www.des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm>.