

City of Milwaukee Health Department



**Milwaukee  
Water Works**

*Safe, Abundant Drinking Water.*

**Information  
for  
Customers  
of the  
Milwaukee  
Water Works  
with  
Weakened  
Immune  
Systems**

**I**n 1993 diarrhea caused by the parasite *Cryptosporidium* affected thousands of Milwaukee area residents. Fortunately, many things have changed since 1993. The Milwaukee Water Works has improved its drinking water treatment system. The Milwaukee Health Department knows more about how people become infected with *Cryptosporidium*, including risk factors other than drinking water. Improved treatments for HIV/AIDS and other diseases have reduced the risk *Cryptosporidium* poses for many people. However, *Cryptosporidium* infections can still be long lasting and even fatal for people with severe immune system problems. These include HIV/AIDS, cancer or transplantation treatments, and other immune diseases.

However, one thing hasn't changed since the *Cryptosporidium* outbreak in 1993. **Every person with an immune disorder needs to talk with their doctor about what they should do to reduce their risk of *Cryptosporidium* infection.** It is also important to remember that tap water is only one of many possible sources of infection.

Here are some commonly asked questions and answers to share with your doctor about the risk of *Cryptosporidium* infection from drinking Milwaukee Water Works water so you can make decisions that are right for you:

**Is *Cryptosporidium* more common in our source water?** No. *Cryptosporidium* has been found in up to 97% of surveyed surface waters (streams and lakes) in the U.S.

**How does Milwaukee Water Works remove and inactivate *Cryptosporidium*?** Several barriers work together to kill and remove *Cryptosporidium* and other causes of disease. Milwaukee Water Works removes impurities using ozone disinfection, flocculation (to clump impurities), settling, filtration, and chlorination of the distribution system. The water leaving the treatment system is constantly tested for purity and evaluated by Milwaukee Health Department and Milwaukee Water Works staff.

**Is ozone the main protection against *Cryptosporidium*?** No. In 1998 ozone replaced chlorine as the main disinfectant because chlorine does not kill *Cryptosporidium*. (*Cryptosporidium* forms tough "oocysts" to protect itself.) However, the *Cryptosporidium* killing power of ozone in cold water like Lake Michigan may be less than originally predicted. Therefore, each of the barriers to *Cryptosporidium* remains important and is checked constantly. Ozone also has other benefits, including lower levels of chemicals in drinking water and better water taste and smell.

**Does *Cryptosporidium* ever reach my tap water?** Water treatment plant improvements have greatly reduced exposure to *Cryptosporidium* at the tap. *Cryptosporidium* oocysts have been found only six times in water leaving the treatment plants from 1993–2010. Many of these oocysts were damaged, and were believed not to be capable of causing human infection. In addition to testing for *Cryptosporidium*, the Milwaukee Health Department reviews other types of water quality data. The public is warned if an increased risk of disease is suspected.

**Do more people in Milwaukee get sick from *Cryptosporidium* than elsewhere?**

No. About 20 *Cryptosporidium* cases a year are recorded in Milwaukee County since mandatory statewide reporting was initiated in 2000. Other cities and states report rates very similar to Milwaukee's rate of 2.3 *Cryptosporidium* infections for every 100,000 Milwaukee County residents.<sup>1</sup>

**Do most infections occur from drinking water?** Probably not. About two thirds of Milwaukee County *Cryptosporidium* cases<sup>2</sup> report at least one of these other infection risks:

- Swimming and other water recreation activities
- Contact with pets, farm animals or animal waste
- Contact with human waste (caring for the ill, diapered children or sexual contact)
- Use of unsanitary food or water (unpasteurized foods, camping, overseas travel)

**When are public alerts issued?** The Health Department and Water Works issue alerts when there is a clear increase in the risk from drinking tap water. A group of water and health experts (including the Milwaukee Health Department) jointly make the decision on whether an alert is warranted. This decision is made based on treatment processes, disease surveillance and environmental monitoring.<sup>2</sup>

**So, what's the bottom line?** Improvements in Milwaukee Water Works water treatment have greatly reduced, but cannot eliminate, the risk of encountering *Cryptosporidium* in tap water. The current risk of *Cryptosporidium* infection from tap water is very small given: 1) how rarely *Cryptosporidium* is found in finished water, and 2) how rarely human cases are reported. Most of those infections that are reported are believed to be caused by sources other than tap water. Nevertheless you and your doctor should determine how serious a risk *Cryptosporidium* infection is for a person in your condition. Information is available on the CDC web site (as shown below), through the AIDS Resource Center of Wisconsin (please see the list at the end of this document for their phone number) or ask your health care provider. Then you can choose practical ways to reduce your risk. Remember, if you and your doctor decide you should not drink tap water without further treatment (boiling or filtration), this should also apply during travel outside Milwaukee, and to tap water in ice, drinks and foods at home and while dining out. Not all bottled water or filtration systems reduce the risk of *Cryptosporidium* infection. Choose only those recommended in the CDC advisory, found at [http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/factsht\\_crypto\\_prevent\\_ci.htm](http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/factsht_crypto_prevent_ci.htm) or through your local public health agency (please see the list at the end of this brochure). Finally, pay careful attention to *Cryptosporidium* exposure from other sources, like swimming or contact with human or animal waste.

## **Where can my doctor and I find out more about drinking water, *Cryptosporidium* and infections affecting people with immune problems?**

Centers for Disease Control and Prevention: *Cryptosporidium*: A Guide for People with Compromised Immune Systems: [http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/factsht\\_crypto\\_prevent\\_ci.htm](http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/factsht_crypto_prevent_ci.htm).

Centers for Disease Control and Prevention: Cryptosporidiosis: Sources of Infection and Guidelines for Prevention: [http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/crypto\\_sources\\_of\\_infect.htm](http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/crypto_sources_of_infect.htm)

Centers for Disease Control and Prevention/Infectious Diseases Society of America: Guidelines for Preventing Opportunistic Infections Among HIV-Infected Persons—2002: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5108a1.htm>

American Water Works Association and Ogden Medical Center: Recognizing Waterborne Disease and the Health Effects of Water Pollution: Physician On-Line Reference Guide: <http://waterhealthconnection.aomc.org/TableofContents.asp>

AMA-certified Continuing Medical Education:  
<http://www.acpm.org/ehealth/waterborneintro.htm>

**Milwaukee Water Works Customer Service: (414) 286-2830**

**City of Milwaukee Health Department: (414) 286-3521**

[www.milwaukee.gov/health](http://www.milwaukee.gov/health)

**AIDS Resource Center of Wisconsin (ARCW) and  
Wisconsin AIDS Library: (414) 273-1991**

**AIDSLine Wisconsin: (414) 273-2437**

### *Footnotes:*

<sup>1</sup>An eight state collaboration (not including Wisconsin) performing active surveillance for diarrheal disease network yielded the same rate of disease in 1998. (CDC/USDA/FDA Foodnet Foodborne and Diarrheal Diseases Surveillance System Annual Report, 1998).

<sup>2</sup>Of Milwaukee County cases reported from January 2000 to August 2002, 28% had recently been swimming, 21% handled pets or animals, 15% cared for diapered children or sick persons, 15% recently traveled out of the U.S., 8% had been camping, and 4% had consumed unpasteurized animal food products. 8% were associated with other gastrointestinal infections unlikely to originate from drinking Milwaukee tap water. Less than one third of cases had no history of other risk factors (and this includes all patients who could not be interviewed). Only 19% of cases were known to be immunocompromised.

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