



# Guidance for People with Severely Weakened Immune Systems

(co-released with the Centers for Disease Control and Prevention, 1995)

## INTRODUCTION

*Cryptosporidium* is a parasite commonly found in lakes and rivers, especially when the water is contaminated with sewage and animal wastes. *Cryptosporidium* is very resistant to disinfection, and even a well-operated water treatment system cannot ensure that drinking water will be completely free of this parasite. Current EPA drinking water standards were not explicitly designed to assure the removal or killing of *Cryptosporidium*. Many large water systems already voluntarily take actions for greater control of *Cryptosporidium* and other microbial contaminants. By 2001, the water systems serving the majority of the United States population (those relying on a surface water source, such as a river, and serving more than 10,000 people) must meet a new EPA standard that strengthens control over microbial contaminants, including *Cryptosporidium*. EPA continues to conduct research on microbial contaminants which will be used for determining priorities for the drinking water program, including setting future standards and reevaluating existing standards.

*Cryptosporidium* has caused several large waterborne disease outbreaks of gastrointestinal illness, with symptoms that include diarrhea, nausea, and/or stomach cramps. People with severely weakened immune systems (that is, severely immunocompromised) are likely to have more severe and more persistent symptoms than healthy individuals. Moreover, *Cryptosporidium* has been a contributing cause of death in some immunocompromised people. Individuals who are severely immunocompromised may include those who are infected with HIV/AIDS, cancer and transplant patients taking immunosuppressive drugs, and people born with a weakened immune system.

## BACKGROUND

Data are not adequate to determine how most people become infected. For example, we do not know the importance of drinking water compared to other possible sources of *Cryptosporidium*, such as exposure to the feces of infected persons or animals, sex involving contact with feces, eating contaminated food, or accidentally swallowing contaminated recreational water.

Thus, in the absence of an outbreak, there are insufficient data to determine whether a severely immunocompromised individual is at a noticeably greater risk than the general public from waterborne *Cryptosporidiosis*. Even a low level of *Cryptosporidium* in water, however, may be of concern for the severely immunocompromised, because the illness can be life-threatening. The risk of a severely immunocompromised individual acquiring *Cryptosporidiosis* from drinking water in the absence of an outbreak is likely to vary from city to city, depending on the quality of the city's water source and the quality of water treatment. Current risk data are not adequate to support a recommendation that severely immunocompromised persons in all U.S. cities boil or avoid drinking tap water.

In the absence of a recognized outbreak, this guidance has been developed for severely immunocompromised people who may wish to take extra precautions to minimize their risk of infection from waterborne *Cryptosporidiosis*. To be effective, the guidance must be followed consistently for all water used for drinking or for mixing beverages. During outbreaks of waterborne *Cryptosporidiosis*, studies have found that people who used precautions only part of the time were just as likely to become ill as people who did not use them at all.

## GUIDANCE

EPA and CDC have developed the following guidance for severely immunocompromised people who may wish to take extra precautions. Such individuals should consult with their health care provider about what measures would be most appropriate and effective for reducing their overall risk of *Cryptosporidium* and other types of infection.

Although data are not sufficient for EPA/CDC to recommend that all severely immunocompromised persons take extra caution with regards to their drinking water, individuals who wish to take extra measures to avoid waterborne Cryptosporidiosis can bring their drinking water to a full boil for one minute. **Boiling water is the most effective way of killing *Cryptosporidium*.** As an alternative to boiling water, people may use the following measures:

] **A point-of-use (personal use, end-of-tap, under-sink) filter.** Only point-of-use filters that remove particles one micrometer or less in diameter should be considered. Filters in this category that provide the greatest assurance of *Cryptosporidium* removal include those that use reverse osmosis, those labeled as "Absolute" one micrometer filters, or those labeled as certified by NSF International under standard 53 for "Cyst Removal." The "Nominal" one micrometer rating is not standardized and many filters in this category may not reliably remove *Cryptosporidium*. As with all filters, people should follow the manufacturer's instructions for filter use and replacement. Water treated with a point-of-use filter that meets the above criteria may not necessarily be free of organisms smaller than *Cryptosporidium* that could pose a health hazard for severely immunocompromised individuals.

] **Bottled water.** Many, but not all, brands of bottled water may provide a reasonable alternative to boiling tap water. The origin of the source water, the types of microorganisms in that water, and the treatment of that water before it is bottled vary considerably among bottled water companies and even among brands of water produced by the same company. Therefore, individuals should not presume that all bottled waters are absolutely free of *Cryptosporidium*. Bottled waters derived from protected well and protected spring water sources are less likely to be contaminated by *Cryptosporidium* than bottled waters containing municipal drinking water derived from less protected sources such as rivers and lakes. Any bottled water treated by distillation or reverse osmosis before bottling assures *Cryptosporidium* removal. Water passed through a commercial filter that meets the above criteria for a point-of-use device before bottling will provide nearly the same level of *Cryptosporidium* removal as distillation or reverse osmosis. Bottled waters meeting the above criteria may not necessarily be free of organisms other than *Cryptosporidium* that could pose a health hazard for severely immunocompromised individuals.

Neither EPA nor CDC maintains a list of point-of-use filters or bottled water brands that meet the above criteria. NSF International can provide a list of filters that meet the NSF criteria. The NSF address is 789 N. Dixboro Road, PO Box 130140, Ann Arbor, Michigan 48113-0140; phone number (877) 8-NSF-HELP (<http://www.nsf.org/>). Individuals who contact bottlers or filter manufacturers for information should request data supporting claims that a brand of bottled water or filter can meet the above criteria.

## FURTHER INFORMATION

When an outbreak of waterborne Cryptosporidiosis is recognized and is determined to be on-going, officials of the public-health department and/or the water utility will normally issue a "boil water" notice to protect both the general public and the immunocompromised.

Current testing methods cannot determine with certainty whether *Cryptosporidium* detected in drinking water is alive or whether it can infect humans. In addition, the current method often requires several days to get results, by which time the tested water has already been used by the public and is no longer in the community's water pipes.

Severely immunocompromised people may face a variety of health risks. Depending on their illness and circumstances, a response by such individuals that focuses too specifically on one health risk may decrease the amount of attention that should be given to other risks. Health care providers can assist severely immunocompromised persons in weighing these risks and in applying this guidance.