

# **GROUND WATER UNDER THE DIRECT INFLUENCE (GWUDI) - PATHOGEN INFORMATION SHEET:**

## **Microorganisms Found in Surface Water**

### **INFORMATION ON BACTERIA**

Some bacteria, such as *Escherichia coli* (*E. coli*) and other coliforms (in the same family as *E. coli*), are used as indicators of more serious contamination from human and animal waste. The most common way to kill bacteria in water is to use chlorine.

### **INFORMATION ON CRYPTOSPORIDIUM**

*Cryptosporidium* is a microbial pathogen found in surface water and groundwater under the influence of surface water. Although filtration removes *Cryptosporidium*, the most commonly-used filtration methods cannot guarantee 100 percent removal. Chlorination has not been shown to be effective on *Cryptosporidium*. Ingestion of *Cryptosporidium* may cause cryptosporidiosis, a gastrointestinal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome disease within a few weeks. However, immunocompromised people are at greater risk of developing life-threatening illness. We encourage immunocompromised individuals to consult their health care provider regarding appropriate precautions to take to avoid infection. *Cryptosporidium* must be ingested to cause disease, and it may be spread through means other than drinking water.

### **INFORMATION ON GIARDIA**

*Giardia* is a microbial pathogen present in varying concentrations in many surface waters and groundwater under the influence of surface water. *Giardia* is removed/inactivated through a combination of filtration and disinfection or by disinfection with adequate chlorine contact time. Ingestion of *Giardia* may cause giardiasis, an intestinal illness. People exposed to *Giardia* may experience mild or severe diarrhea, or in some instances no symptoms at all. Fever is rarely present. Occasionally, some individuals will have chronic diarrhea over several weeks or a month, with significant weight loss. Giardiasis can be treated with anti-parasitic medication. Individuals with weakened immune systems should consult with their health care providers about what steps would best reduce their risks of becoming infected with giardiasis. Individuals who think that they may have been exposed to giardiasis should contact their health care providers immediately. The *Giardia* parasite is passed in the feces of an infected person or animal and may contaminate water or food. Person to person transmission may also occur in day care centers or other settings where handwashing practices are poor.

### **INFORMATION ON VIRUSES**

This category includes infectious agents such as Hepatitis A, rotavirus and a general group of viruses called 'enteroviruses'. Most viruses are susceptible to chlorination and proper water treatment can remove or kill them. Generally, viral diseases usually run their course and are not life threatening. However, infants and people with weakened immune systems who develop symptoms must have their symptoms treated and consult with their health care provider to avoid serious complications. Usually, dehydration due to diarrhea is the major concern with illnesses caused by waterborne viruses.

*Some people may be more vulnerable to disease causing microorganisms or pathogens in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice from their health care provider about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia and other microbial pathogens are available from the Safe Drinking Water Hotline (800-426-4791).*