

Cryptosporidium in water systems

By Ron Perrin, SHEP.

There are many species of cryptosporidium that infect animals, some of which also infect humans. The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very tolerant to chlorine disinfection.

While this parasite can be spread in several different ways, water (drinking water and recreational water) is the most common way to spread the parasite. Cryptosporidium is a leading cause of waterborne disease among humans in the United States.

In 1993 there was a widespread outbreak of acute watery diarrhea among the residents of Milwaukee. According to Wikipedia:

At least 69 people died as a result of the outbreak. The city of Milwaukee has spent upwards of \$510 million in repairs, upgrades, and outreach to citizens.

Two Milwaukee water-treatment plants gathered data from clinical laboratories on the results of tests for enteric pathogens and examined ice made during the time of the outbreak for Cryptosporidium oocysts. The residents were surveyed that had confirmed cryptosporidium infection and a sample of those with acute watery diarrhea consistent with cryptosporidium infection. To estimate the magnitude of the outbreak, they also conducted a survey using randomly selected telephone numbers in Milwaukee and four surrounding counties.

There were marked increases in the turbidity of treated water at the city's southern water treatment plant from March 23 until April 9, when the plant was shut down. Cryptosporidium oocysts were identified in water from ice made in southern Milwaukee during these weeks.

The rates of isolation of other enteric pathogens remained stable, but there was more than a 100-fold increase in the rate of isolation of cryptosporidium. The median duration of illness was 9 days. Among 285 people surveyed who had laboratory-confirmed cryptosporidiosis, the clinical manifestations included watery diarrhea (93 percent), abdominal cramps (in 84 percent), fever (in 57 percent), and vomiting (in 48 percent). It was estimated that 403,000 people had watery diarrhea attributable to this outbreak.

This massive outbreak of watery diarrhea was caused by cryptosporidium oocysts that passed through the filtration system of one of the city's water treatment plants. Water-quality standards and the testing of patients for cryptosporidium were not adequate to detect this outbreak.

The Centers for Disease Control and Prevention list cryptosporidium as one of the top 10 Causes of outbreaks in public water systems. The best way to ensure that cryptosporidium or other contaminants will not invade your tank sediment is to remove it. Clean your water storage tanks then maintain them by getting them on a cleaning schedule.

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