



# Proposed Long Term 2 Enhanced Surface Water Treatment Rule

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## Summary

EPA is proposing the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) to reduce disease incidence associated with *Cryptosporidium* and other pathogenic microorganisms in drinking water. The LT2ESWTR will supplement existing regulations by targeting additional *Cryptosporidium* treatment requirements to higher risk systems. This regulation also contains provisions to mitigate risks from uncovered finished water storage facilities and to ensure that systems maintain microbial protection as they take steps to reduce the formation of disinfection byproducts (DBPs).

## Background

*Cryptosporidium* is a protozoan parasite that is of particular concern in drinking water because it is resistant to disinfectants like chlorine and it has been associated with waterborne disease outbreaks. Ingestion of *Cryptosporidium* can cause acute gastrointestinal illness, and health effects in sensitive subpopulations (e.g., infants, AIDS patients, the elderly) may be severe, including the risk of death.

Existing drinking water regulations require public water systems (systems) that use surface water sources and provide filtration to achieve at least a 99 percent (2-log) removal of *Cryptosporidium*. New data on *Cryptosporidium* infectivity, occurrence, and treatment indicate that current treatment requirements are adequate for the majority of systems, but there is a subset of systems with higher vulnerability to *Cryptosporidium* where additional treatment is necessary. This vulnerable subset includes those filtered systems with the highest source water *Cryptosporidium* levels, along with unfiltered systems (systems that use surface water sources and do not provide filtration).

## About this Regulation

The LT2ESWTR will protect public health by supplementing existing drinking water regulations with additional risk-targeted treatment requirements for *Cryptosporidium*. This regulation will apply to all systems that use surface water or ground water under the direct influence of surface water.

***Cryptosporidium* treatment:** Under the LT2ESWTR, systems initially conduct source water monitoring for *Cryptosporidium* to determine their treatment requirements. Filtered systems will be classified in one of four risk bins based on their monitoring results. EPA projects that the majority of systems will be classified in the lowest risk bin, which carries no additional treatment requirements. Systems classified in higher risk bins must provide 90 to 99.7 percent (1.0 to 2.5-log) additional reduction of *Cryptosporidium* levels. The regulation specifies a range of treatment and management strategies, collectively termed the “microbial toolbox,” that systems may select to meet their additional treatment requirements. All unfiltered systems must provide at least 99 or 99.9 percent (2 or 3-log) inactivation of *Cryptosporidium*, depending on the results of their monitoring.

**Monitoring:** *Cryptosporidium* monitoring by large systems (serving at least 10,000 people) will begin six months after the LT2ESWTR is finalized and will last for a duration of two years. Small systems (serving less than 10,000 people) are on a delayed schedule and will start monitoring when the required large system monitoring is finished. To reduce monitoring costs, small filtered systems will initially conduct one year of monitoring for *E. coli*, which is a bacterium that is less expensive to analyze than *Cryptosporidium*. These systems will be required to monitor for *Cryptosporidium* for

one year only if their *E. coli* results exceed specified triggering concentrations. Systems must conduct a second round of monitoring beginning six years after the initial bin classification. Systems may grandfather equivalent previously collected data in lieu of conducting new monitoring, and systems are not required to monitor if they provide the maximum level of treatment required under the rule.

**Other requirements:** The LT2ESWTR proposal also contains disinfection profiling requirements to ensure that systems maintain protection against microbial pathogens as they take steps to reduce the formation of DBPs. These requirements are needed because EPA is concurrently developing a Stage 2 Disinfection Byproducts Rule that will establish more stringent standards for certain DBPs. Disinfection profiling involves systems assessing the level of disinfection they currently provide and then determining the impact that a proposed change in their disinfection practice would have on this level. Additionally, the proposed LT2ESWTR has requirements that address risk in uncovered finished water storage facilities, which are subject to contamination if not properly managed or treated.

The LT2ESWTR proposal reflects a consensus Agreement in Principle of the Stage 2 Microbial and Disinfection Byproducts Federal Advisory Committee.

### **Environmental and Public Health Benefits**

The LT2ESWTR will improve the control of *Cryptosporidium* and other microbiological pathogens in drinking water systems with the highest risk levels. EPA estimates that full implementation of the LT2ESWTR will reduce the incidence of cryptosporidiosis - the gastrointestinal illness caused by ingestion of *Cryptosporidium* - by 256,000 to 1,019,000 cases per year, with an associated reduction of 37 to 141 premature deaths. The additional *Cryptosporidium* treatment requirements of the LT2ESWTR will also reduce exposure to other microbial pathogens, such as *Giardia*, that co-occur with *Cryptosporidium*. Additional protection from microbial pathogens will come from the provisions of this regulation that address disinfection profiling and uncovered finished water storage facilities, though these benefits have not been quantified.

### **Cost of the Regulation**

The LT2ESWTR will result in increased costs to public water systems and States. The mean annualized present value costs of the LT2ESWTR are estimated to range from approximately \$73.5 to \$111 million (using a three percent discount rate). Public water systems will bear approximately 99 percent of this total cost (\$72.5 to \$110 million total annualized), with States incurring the remaining 1 percent (\$0.9 to \$1.0 million total annualized). The average annual household cost is estimated to be \$1.07 to \$1.68 per year, with 98 to 99 percent of households experiencing annual costs of less than \$12 per year.

### **How to Get Additional Information**

For general information on the LT2ESWTR, contact the Safe Drinking Water Hotline, at (800) 426-4791. For copies of the Federal Register notice of the proposed regulation or technical fact sheets, visit the EPA Safewater website, [www.epa.gov/safewater/lt2/index.html](http://www.epa.gov/safewater/lt2/index.html). The Safe Drinking Water Hotline is open Monday through Friday, excluding legal holidays, from 9:00 a.m. to 5:30 p.m. Eastern Time.