



# LT2ESWTR Source Water Monitoring for Systems Serving Less Than 10,000 People Factsheet

## WHAT IS THE LT2ESWTR?

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The U.S. Environmental Protection Agency (EPA) published the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) on January 5, 2006. The LT2ESWTR improves control of microbial pathogens. The LT2ESWTR requires source water monitoring at public water systems (PWSs) that use surface water or ground water under the direct influence of surface water (GWUDI) (i.e., Subpart H PWSs). Based on system size and filtration type, systems need to monitor for *Cryptosporidium*, *E. coli*, and turbidity. This factsheet is for systems that serve less than 10,000 people. **Note, if you sell water to a system that serves greater than 10,000 people or are part of a combined distribution system and one of the consecutive systems has a population greater than 10,000 people, please refer to the *LT2ESWTR Source Water Monitoring for Systems Serving At Least 10,000 People Factsheet* (EPA 816-F-06-017).**

## WHAT IS THE PURPOSE OF SOURCE WATER MONITORING?

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Source water monitoring data will be used to categorize the source water *Cryptosporidium* concentration in to one of four "bin" classifications that have associated treatment requirements. The LT2ESWTR provides other options for systems to comply with the initial source water monitoring requirements:

- Submit data from *Cryptosporidium* samples collected before the system must begin source water monitoring and the data must meet certain requirements.
- Filtered systems may skip source water monitoring and commit to provide a total of at least 5.5 log of treatment for *Cryptosporidium*, equivalent to meeting the treatment requirement of Bin 4. Unfiltered systems skip source water monitoring and commit to provide a total of at least 3-log *Cryptosporidium* inactivation, which is equal to meeting the treatment requirements for unfiltered systems with a mean *Cryptosporidium* concentration of greater than 0.01 oocysts/L. Systems that decide to skip monitoring and provide maximum treatment must notify the state in writing.

A second round of source water monitoring will follow 6 years after the system makes its initial bin determination. Grandfathering is not available for the second round of source water monitoring.

## WHAT ARE THE INITIAL SOURCE WATER MONITORING REQUIREMENTS?

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The source water monitoring requirements of LT2ESWTR apply to all Subpart H PWSs. You are subject to initial source water monitoring requirements if you do not have prior monitoring data that meets grandfathering requirements. For more information on source water monitoring requirements see EPA's *Source Water Monitoring Guidance Manual for Public Water Systems for the Final Long Term 2 Enhanced Surface Water Treatment Rule* (EPA 815-R06-005 February 2006), available at [www.epa.gov/safewater/disinfection/lt2/compliance.html](http://www.epa.gov/safewater/disinfection/lt2/compliance.html).

Prior to beginning initial source water monitoring, you must submit a sampling schedule that specifies the calendar dates when you will collect the required source water samples. The samples must be evenly spaced throughout the monitoring period (e.g., monthly on the 15<sup>th</sup> of each month). However, the schedule may be altered to take into account holidays, weekends, or other events. All the samples must be taken within a 5-day window (i.e., you can take the sample up to 2 days before or 2 days after the date indicated in the schedule). In addition, you

Two options systems serving less than 10,000 people have to comply with the source water monitoring requirements are:

- Conduct *E. coli* monitoring first and based on those results, the system may or may not need to conduct *Cryptosporidium* monitoring, or
- Systems may go directly to *Cryptosporidium* monitoring.

must submit a description of the intended sampling location in relation to the source and any treatment processes, as well as a description of any points of chemical addition, and filter backwash recycle.

**FILTERED SYSTEMS SERVING LESS THAN 10,000 PEOPLE** - You should collect *E. coli* samples at least once every 2 weeks for 12 months. You will then be required to monitor for *Cryptosporidium* at least twice per month for 12 months, or at least once per month for 24 months, if either of the following conditions are met:

- For systems using lakes or reservoirs, if the mean annual *E. coli* concentration is greater than 10 *E. coli*/100 mL. This also applies to GWUDI systems if the nearest surface water body is a lake or reservoir.
- For systems using flowing stream sources, if the mean annual *E. coli* concentration is greater than 50 *E. coli*/100 mL. This also applies to GWUDI systems if the nearest surface water body is a flowing stream, or if there is no nearby surface water.

A system may choose to notify EPA or the state it will not collect the *E. coli* samples, but you will collect *Cryptosporidium* samples at least twice per month for 12 months, or at least once per month for 24 months.

**UNFILTERED SYSTEMS SERVING LESS THAN 10,000 PEOPLE** - You must sample for *Cryptosporidium* at least twice per month for 12 months, or at least once per month for 24 months.

## WHEN MUST I COMPLY WITH THE MONITORING REQUIREMENTS?

The system compliance schedule is based on the population served by your system. A PWS must conduct monitoring based on the requirements of the largest system in the combined distribution system. The interconnected wholesale/consecutive systems relationships have been determined by the state.

Systems that serve...	< 10,000 and monitor for <i>E. coli</i> <sup>1</sup>	< 10,000 and monitor for <i>Cryptosporidium</i> <sup>2</sup>
Submit: Sample Schedule and Sample Location Description	July 1, 2008	January 1, 2010
Must begin the first round of source water monitoring by...	October 2008	April 2010
Submit Grandfathered Data (if applicable)	December 1, 2008	June 1, 2010
Submit Bin Classification (Filtered) or Mean <i>Cryptosporidium</i> Level (Unfiltered)		September 2012
Comply with additional LT2ESWTR treatment technique requirements <sup>3</sup>		October 1, 2014
Must begin the second round of source water monitoring by...	October 1, 2017	April 1, 2019

<sup>1</sup> Applies only to filtered systems.

<sup>2</sup> Applies to filtered systems that exceed the *E. coli* trigger or do not monitor for *E. coli* and to unfiltered systems.

<sup>3</sup> State may allow up to an additional 2 years for capital improvements to comply with the treatment technique.

## WHAT IS A BIN CLASSIFICATION?

**FILTERED SYSTEMS SERVING LESS THAN 10,000 PEOPLE** - You will be classified into a “bin” based on the results of your source water monitoring. Your bin classification determines whether further treatment for *Cryptosporidium* is required. A second round of source water monitoring is required 6 years after your initial bin classification and may affect your bin classification.

For systems that are:	Mean <i>Cryptosporidium</i> Concentration <sup>1</sup>	Bin Classification
...required to monitor for <i>Cryptosporidium</i>	< 0.075 oocysts/L	Bin 1
	from 0.075 to < 1.0 oocysts/L	Bin 2
	from 1.0 to < 3.0 oocysts/L	Bin 3
	≥ 3.0 oocysts/L	Bin 4
... not required to monitor for <i>Cryptosporidium</i> <sup>2</sup>	N/A	Bin 1

<sup>1</sup> Samples must be analyzed by an approved laboratory and use EPA method 1622 or 1623.

<sup>2</sup> Only for systems that do not exceed the *E. coli* trigger level.

**ADDITIONAL TREATMENT REQUIREMENTS FOR FILTERED SYSTEMS** - Additional treatment may be required based on your bin classification. Refer to the table below for the additional *Cryptosporidium* treatment requirements.

Bin Classification	If the system uses the following filtration treatment in full compliance with existing requirements, then the <u>additional</u> <i>Cryptosporidium</i> treatment requirements are...			
	Conventional filtration treatment (including softening)	Direct filtration	Slow sand or diatomaceous earth filtration	Alternative filtration technologies
Bin 1	No additional treatment	No additional treatment	No additional treatment	No additional treatment
Bin 2	1-log treatment	1.5-log treatment	1-log treatment	(1)
Bin 3	2-log treatment	2.5-log treatment	2-log treatment	(2)
Bin 4	2.5-log treatment	3-log treatment	2.5-log treatment	(3)

(1) As determined by the state such that the total *Cryptosporidium* removal and inactivation is at least 4.0-log.

(2) As determined by the state such that the total *Cryptosporidium* removal and inactivation is at least 5.0-log.

(3) As determined by the state such that the total *Cryptosporidium* removal and inactivation is at least 5.5-log.

For information on the toolbox options that can be used to achieve additional log removal requirements, see the *Long Term 2 Enhanced Surface Water Treatment Rule Toolbox Guidance Manual* (draft version anticipated late 2006).

**UNFILTERED SYSTEMS SERVING LESS THAN 10,000 PEOPLE** - You must calculate an arithmetic mean of all *Cryptosporidium* samples concentrations required. Following completion of the second round of source water monitoring, you must provide a level of inactivation for *Cryptosporidium* based on the arithmetic mean of your *Cryptosporidium* sample concentrations.

For systems that are:	Mean <i>Cryptosporidium</i> Concentration <sup>1</sup>	<i>Cryptosporidium</i> inactivation
Unfiltered	≤ 0.01 oocysts/L	2-log
	> 0.01 oocysts/L	3-log

<sup>1</sup> Samples must be analyzed by an approved laboratory and use EPA method 1622 or 1623.

## ARE YOU CONSIDERING MAKING A CHANGE TO YOUR DISINFECTION PRACTICES?

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After completing the initial round of source water monitoring, systems that plan to make a significant change to their disinfection practice must notify the state, develop disinfection profiles, and calculate disinfection benchmarks for *Giardia lamblia* and viruses. To develop a profile and benchmark, PWSs must monitor at least weekly for a period of 12 consecutive months to determine the total log inactivation for *Giardia lamblia* and viruses. The disinfection benchmark is an indicator of disinfection effectiveness based on the inactivation of *Giardia lamblia* or viruses. The benchmark is determined by calculating the average daily inactivation value for each of 12 consecutive months. The lowest monthly average becomes the disinfection benchmark. If the PWS has data from more than 1 year, the benchmark is the average of the lowest monthly average value for each of the years. The Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) Disinfection Profiling and Benchmarking Technical Guidance Manual (EPA 816-R-03-004, May 2003), provides guidance for developing a disinfection profile and benchmark. EPA has developed two tools for systems to determine their disinfection profile and calculate the benchmark at the following website: [www.epa.gov/safewater/mdbp/lt1eswtr.html](http://www.epa.gov/safewater/mdbp/lt1eswtr.html).

## ADDITIONAL GUIDANCE MATERIALS

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The following guidance document addresses the source water monitoring requirements for the LT2ESWTR:

- *Source Water Monitoring Guidance Manual for Public Water Systems for the Final Long Term 2 Enhanced Surface Water Treatment Rule* (EPA 815-R06-005 February 2006) - Provides surface water systems, laboratories, states, and Tribes with a review of the source water monitoring provisions. The source water monitoring guidance manual provides direction to the systems on how, where and when to monitor, how to report the data, how to submit "grandfathered" data (e.g., previously collected data), and how the data can be evaluated and used to determine risk bin classification.

For additional guidance on implementing the LT2ESWTR, you may refer to the following existing and future EPA materials:

- LT2ESWTR Quick Reference Guides (Schedule 4)
- On-line Microscopy Training Module
- On-line Sample Collection Module
- *Microbial Laboratory Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule* (EPA 815-R06-006 February 2006)
- *Membrane Filtration Guidance Manual* (EPA 815-R-06-009 November 2005)
- Membrane Filtration Guidance Manual: Overview and Summary Factsheet ([www.epa.gov/safewater/disinfection/lt2/pdfs/guide\\_lt2\\_membranefiltration\\_fs\\_final.pdf](http://www.epa.gov/safewater/disinfection/lt2/pdfs/guide_lt2_membranefiltration_fs_final.pdf))
- *Ultraviolet Disinfection Guidance Manual and Workbook* (final version anticipated mid-2006)
- *Simultaneous Compliance Guidance Manual for Stage 2 Rules* (draft version anticipated mid-2006)
- *Small Entity Compliance Guidance* (draft version anticipated mid-2006)
- *Long Term 2 Enhanced Surface Water Treatment Rule Toolbox Guidance Manual* (draft version anticipated late 2006)

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For additional information, please contact the Safe Drinking Water Hotline at 1-800-426-4791, send an email to [stage2mdbp@epa.gov](mailto:stage2mdbp@epa.gov), or visit [www.epa.gov/safewater/disinfection/lt2](http://www.epa.gov/safewater/disinfection/lt2).