

Appendix F

Enhanced Surface Water Treatment Rules (ESWTR)

The Surface Water Treatment Rule (SWTR) has been amended by the Interim Enhanced Surface Water Treatment Rule (IESWTR) which applies to surface water PWSs and GWUDI of surface water systems serving at least 10,000 people, and by the Long Term 1 Enhanced Surface Water Treatment Rule which applies to systems serving fewer than 10,000 people. These two rules lower the Maximum Contaminant Level for combined filter turbidity from 0.5 NTU to 0.3 NTU in 95% of samples each month and lower the maximum turbidity limit from 5 NTU to 1 NTU for systems using conventional filtration.

To strength microbial protections, these rules include provisions specifically to address Cryptosporidium, and to address risk tradeoffs with disinfection by products. In addition to meeting the requirements of the SWTR for Giardia lamblia and Viruses, systems also required to meet the treatment requirements for Cryptosporidium. Specific provisions of these rules include:

- Maximum contaminant level goal (MCLG) of zero for Cryptosporidium
- 2-log Cryptosporidium removal requirements for systems that filter
- Strengthened combined filter effluent turbidity performance standards
- Individual filter turbidity monitoring provisions
- Disinfection profiling and benchmarking provisions
- Systems using ground water under the direct influence of surface water now subject to the new rules dealing with Cryptosporidium
- Inclusion of Cryptosporidium in the watershed control requirements for unfiltered PWSs
- Requirements for covers on new finished water reservoirs
- Sanitary surveys, conducted by States, for all surface water systems regardless of size

These rules, with tightened turbidity performance criteria and individual filter monitoring requirements, are designed to optimize treatment reliability and to enhance physical removal efficiencies to minimize Cryptosporidium levels in finished water. Turbidity requirements for combined filter effluent remain at least every four hours, but continuous monitoring is required for individual filters. In addition, these rules include disinfection profiling and bench marking provision to assure continued levels of microbial protection while facilities take necessary steps to comply with the disinfection byproduct standards.

IESWTR

A. Key Dates of the Rules

Al. Key Dates for the IESWTR

The compliance date for the Interim Enhanced Surface Water Treatment Rule (IESWTR) is January 1, 2002. Several provisions, including disinfection profiling and benchmarking and restrictions on uncovered finished water storage facilities, however, will require compliance before the primary compliance date. The timetable for the IESWTR is presented in Figure 1.

Figure 1: PWS Timetable for the IESWTR Requirements

Date from Rule Publication	IESWTR Requirement
December 16, 1998	Rule is published in Federal Register [63 FR 241 69478].
February 16, 1999	60-day legal challenge period ends.
February 16, 1999	Construction of uncovered finished water storage reservoirs is prohibited [§141.170(c)].
March 1999	TTHM and HAA5 monitoring must begin for systems that do not have ICR or occurrence data and wish to determine if they must develop a disinfection profile [§141.172(a)(2)(iii)].
April 1999	Systems that have 4 consecutive quarters of HAA5 occurrence data that meet the TTHM monitoring requirements must submit those data to the State to determine if they must develop a disinfection profile [§141.172(a)(5)(ii)].
December 16, 2000	Final primacy applications must be submitted to EPA unless granted an extension [§141.12(b)(i)].
December 31, 1999	TTHM and HAA5 data are due for those systems that collected data under the ICR to determine if they must develop a disinfection profile [§141.172(a)(5)(i)].
December 31, 1999	Systems that elect to profile without conducting 4 quarters of TTHM and HAA5 monitoring must notify the State of their election [§141.172(a)(5)(iv)].
December 31, 1999	Systems that wish to request State approval of “a more representative annual data set” than the ICR data set to determine if they must develop a disinfection profile must do so in writing [§141.172(a)(5)(v)].
March 31, 2000	TTHM and HAA5 and monitoring must be complete for systems determining if they must develop a disinfection profile [§141.172(a)(2)(iii)].
March 31, 2000	Systems determining if they must develop a disinfection profile must submit their TTHM and HAA5 data to the State [§141.172(a)(5)(iii)(A)].
April 1, 2000	Systems must begin developing a disinfection profile if either their annual average TTHM \geq 0.064 mg/L or their annual average HAA5 \geq 0.048 mg/L [§141.172(b)(2)].
April 1, 2000	If system is using 3 years of existing operational data to develop the disinfection profile, the profile generated from these data and a request for State approval must be submitted [§141.172(b)(3)(i)].
April 1, 2001	Disinfection profile is complete [§141.172(b)(ii)].
December 31, 2001	Systems that were required to develop a disinfection profile that wish to make a significant change to their disinfection practice after this date must first calculate a disinfection benchmark and consult with the State [§141.170(a)].

Stage 1 DBPR

A2. Key Dates for the Stage 1 DBPR

The compliance dates for the Stage 1 Disinfectants/Disinfection Byproducts Rule (Stage 1 DBPR) are January 1, 2002 and January 1, 2004. Surface water systems and systems using ground water under the direct influence (GWUDI) of surface water that serve 10,000 or more people will have to comply with the provisions of the rule beginning January 1, 2002. Surface water and GWUDI systems that serve fewer than 10,000 people and all ground water systems will have to comply with the provisions of the rule beginning January 1, 2004. The timetable for the Stage 1 DBPR is presented in Figure 2.

Figure 2: PWS Timetable for the Stage 1 DBPR Requirements

Date from Rule Publication	DBPR Requirement
December 16, 1998	Rule is published in Federal Register [63 FR 241 69390].
February 16, 1999	60-day legal challenge period ends.
February 16, 1999	Methods specified in §141.131 for analyzing disinfection byproducts, disinfection residuals, and DBP precursors must be used [§141.131(a)].
December 2000	Large surface water and GWUDI (Subpart H) systems may begin monitoring to determine Step 1 TOC removals before the compliance date.
January 1, 2002	Large Subpart H CWSs and NTNCWSs must comply with the MCLs for TTHM, HAA5, bromate, and chlorite [§141.64(b)(1)].
January 1, 2002	Large Subpart H CWSs and NTNCWSs must comply with the MRDLs for chlorine, chloramines, and chlorine dioxide [§141.65(b)(1)]
January 1, 2002	Large Subpart H TNCWSs that use chlorine dioxide must comply with the MRDL for chlorine dioxide [§141.65(b)(2)].
January 1, 2002	Requirements of Subpart L generally apply to large Subpart H CWSs and NTNCWs [§141.130(b)(1)]. <ul style="list-style-type: none"> • Monitoring requirements • Reporting and recordkeeping requirements • Compliance • Treatment technique for control of DBP precursors
January 1, 2002	Large Subpart H TNCWSs that use chlorine dioxide must comply with requirements for chlorine dioxide and chlorite [§141.65(b)(2)].
January 1, 2002	Small Subpart H systems may begin monitoring to determine Step 1 TOC removals before the compliance date.
January 1, 2004	Small Subpart H and ground water CWSs and NTNCWSs must comply with the MCLs for TTHM, HAA5, bromate, and chlorite [§141.64(b)(1)].
January 1, 2004	Small Subpart H and ground water CWSs and NTNCWSs must comply with the MRDLs for chlorine, chloramines, and chlorine dioxide [§141.65(b)(1)].
January 1, 2004	Small Subpart H and ground water TNCWSs that use chlorine dioxide must comply with the MRDL for chlorine dioxide [§141.65(b)(2)].

IESWTR

B. Rule Executive Summaries

B1. IESWTR

Purpose

The purpose of this summary is to acquaint State decision-makers and public health officials with the Interim Enhanced Surface Water Treatment Rule (IESWTR). The IESWTR, published in the Federal Register on December 16, 1998 (63 FR 69477; www.epa.gov/OGWDW/mdbp/ieswtrfr.html), is the first part of a series of rules, the “Microbial-Disinfectants/Disinfection Byproducts Cluster” (M-DBP Cluster), to be published over the next several years that are intended to control microbial pathogens while minimizing the public health risks of disinfectants and disinfection byproducts (DBPs). The IESWTR is designed to address the health risks from microbial contaminants without significantly increasing the potential risks from chemical contaminants. This rule was published concurrently with the Stage 1 Disinfectants/Disinfection Byproducts Rule (Stage I DBPR), which will address control of disinfectants and their byproducts.

Background

In 1990, EPA’s Science Advisory Board, an independent panel of experts established by Congress, sited drinking water contamination as one of the most important environmental risks and indicated that disease-causing microbial contaminants (*i.e.*, bacteria, protozoa, and viruses) are probably the greatest remaining health-risk management challenge for drinking water suppliers. Data from the Centers for Disease Control (CDC) confirm this concern and indicate that between 1980 and 1994, 379 waterborne disease outbreaks were reported, with over 500,000 cases of disease. During this period, a number of agents were implicated as the cause, including protozoa, viruses, bacteria, and several chemicals. Most of the cases (but not the outbreaks) were associated with surface water, including a single outbreak of cryptosporidiosis in Milwaukee (over 400,000 cases).

One of the key regulations EPA has developed to date to counter pathogens in drinking water is the 1989 Surface Water Treatment Rule (SWTR). Among its provisions, the rule requires that a surface water system have sufficient treatment to reduce the source water concentration of *Giardia lamblia* and viruses by at least 99.9 percent (3 log) and 99.99 percent (4 log), respectively. The goal of the SWTR is to reduce risk to less than one infection per year per 10,000 people. However, the SWTR’s limitation is that the source water of some systems has high pathogen concentrations that, when reduced by the levels required under the rule, still may not meet this health goal, and the rule does not specifically control for the protozoan *Cryptosporidium*.

IESWTR

In addition to these microbial issues, there is another potentially confounding public-health concern. The disinfectants used to control pathogens may react with organic chemicals in the source water to produce potentially toxic or carcinogenic DBPs. Thus, the dilemma facing water supply professionals is how to minimize the risk from both microbial pathogens and DBPs simultaneously.

Applicability and Compliance Dates

The IESWTR applies to public water systems (PWSs) that use surface water or ground water under the direct influence of surface water (GWUDI) as a source and serve 10,000 or more people. Additionally, it establishes a schedule by which States are required to conduct sanitary surveys for *all* surface water and GWUDI PWSs.

Systems must comply with the turbidity and monitoring requirements, the primary requirements of the IESWTR, no later than December 31, 2001 (36 months after publication of the rule). However, PWSs with elevated levels of DBPs (Total Trihalomethanes—TTHM; and five haloacetic acids—HAA5) are required to develop an evaluation of their existing disinfection practices—a *disinfection profile*—no later than March 31, 2000 (27 months after publication).

Requirements of the Rule: Public Water Systems

Disinfection profiling and benchmarking

Surface water or GWUDI systems having average annual TTHM ≥ 0.064 mg/L or annual average HAA5 ≥ 0.048 mg/L must develop a *disinfection profile*. The disinfection profile is a compilation of daily criteria that affect the efficacy of the disinfection process (microbial inactivation potential) collected over the period of 1 year. From the disinfection profile, the PWS calculates the average microbial inactivation potential for each month, and the lowest monthly average inactivation becomes the *disinfection benchmark*.

The purpose of these provisions is to provide a process whereby a PWS and the State, working together, assure that there will be no significant reduction in microbial protection as the result of disinfection practice modifications designed to meet the more restrictive Maximum Contaminant Levels (MCLs) for DBPs established in the Stage 1 DBPR. If a PWS required to develop disinfection profiles subsequently wishes to modify its disinfection practices to meet the new MCLs, it must establish the disinfection benchmark and consult with the State prior to implementing such modifications. In addition, PWSs must keep the disinfection profile on file for the State to review during their sanitary surveys.

IESWTR

Cryptosporidium

The IESWTR sets a maximum contaminant level goal (MCLG) of zero for the protozoan *Cryptosporidium*. It also establishes a requirement for 2-log removal of *Cryptosporidium* for systems that must currently filter under the SWTR. Systems that use conventional or direct filtration are assumed to meet this requirement if they are in compliance with the strengthened turbidity performance standards for combined filter effluent in the IESWTR (discussed below). Systems that use slow sand or diatomaceous earth filtration are assumed to meet the 2-log removal requirement if they are in compliance with the existing turbidity performance standards under the SWTR.

The IESWTR also extends the existing watershed control requirements for unfiltered systems to include the control of potential sources of *Cryptosporidium*. Such sources must be included in an unfiltered system's watershed control plan.

State primacy, record keeping, and reporting requirements

In order to receive primacy for the IESWTR, States must adopt regulations no less stringent than this rule. In addition, States are required to explain, through responses to special primacy requirements, how they will implement the key provisions in the rule. States must have rules or other authority to require PWSs to respond to significant deficiencies uncovered in a sanitary survey, to conduct a Composite Correction Program (CCP), and to assure that PWSs implement any follow-up recommendations that result from the CCP. States must submit revisions to their programs, regulations, or authorities no later than December 16, 2000 (2 years after rule publication), although States can request an extension of up to 2 years (December 16, 2002).

States must keep records of PWS turbidity measurements, PWSs required to do filter self-assessment reports, CPEs, CCPs, PWSs consulting with the State concerning modifications to disinfection practices, and decisions for PWSs using alternative filtration technology.

More information can be obtained from:

- A. The Interim Enhanced Surface Water Treatment Rule
63 FR 69477 (December 16, 1998); and
www.epa.gov/OGWDW/mdbp/ieswtrfr.html
- B. The EPA Safe Drinking Water Hotline, Telephone:
1.800.426.4791

A. Key Dates

Al. Timetable

The Long Term 1 Enhanced Surface Water Treatment Rule (LTESWTR) published in the *Federal Register* on becomes effective three years after promulgation of the final rule or by November 2003. Several provisions, including disinfection profiling and benchmarking and restrictions on uncovered finished water storage facilities, however, will require compliance before the primary compliance date. The timetable for the LTESWTR is presented below.

Figure 1: PWS Timetable for the LTESWTR Requirements

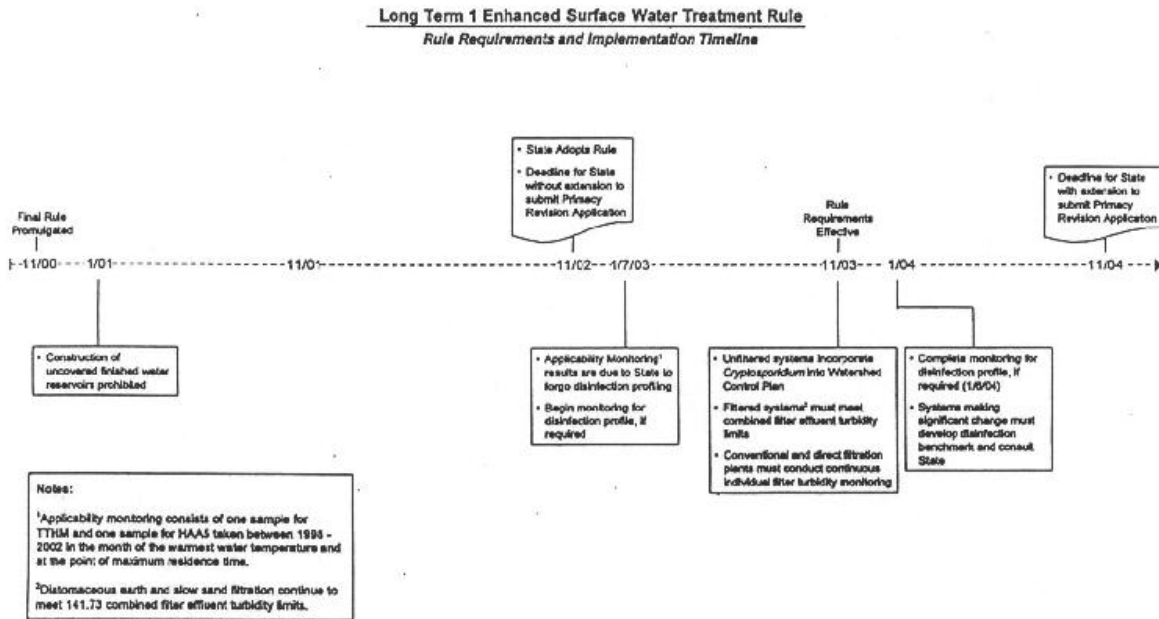
Date	LTESWTR Requirement
November 2000	Rule is published in <i>Federal Register</i>
January 2001	60-day legal challenge period ends.
January 2001	Construction of uncovered finished water storage reservoirs is prohibited [§§141.503(a) and 141.511]
January 2002	Systems that wish to determine if they may forgo developing a disinfection profile may begin TTHM and HAA5 monitoring. [§141.531]
November 2002	Final primacy applications must be submitted to EPA unless granted an extension [§142.12(b)(1)].
January 7, 2003	Systems that elect to demonstrate that their TTHM and HAA5 levels are below 0.064 mg/l and 0.048 mg/l, respectively, must submit their results and a letter to the State indicating their intention to forgo development of a disinfection profile by this date [§141.531].
January 7, 2003	Systems must begin developing a disinfection profile unless the system has demonstrated that their TTHM and HAA5 levels are less than 0.064 mg/L and 0.048 mg/L, respectively [§141.532].
January 2004	Systems that were required to develop a disinfection profile that wish to make a significant change to their disinfection practice after this date must first calculate a disinfection benchmark and consult with the State [§141.540].
November 2003	Subpart H systems that do not provide filtration should modify existing watershed control program to minimize the potential for contamination by <i>Cryptosporidium</i> oocysts in the source water [§141.521].
November 2003	Systems that are required to filter and use conventional/direct filtration must meet the turbidity requirements of §141.551: <ul style="list-style-type: none"> • 0.3 NTU¹ CFE 95 percent of the time, and • At no time exceed 1 NTU. [§141.550 and 141.551]
November 2003	Systems that are required to filter and use membrane technology must meet the turbidity requirements of §141.551: <ul style="list-style-type: none"> • 0.3 NTU CFE (or a value determined by the State not to exceed 1 NTU) 95 percent of the time, and • At no time exceed 1 NTU (or a value determined by the State not to exceed 5 NTU). • State determined turbidity values will be based on a demonstration conducted by the system as described in §141.552. [§141.550 and 141.551]
November 2003	Systems using alternative technologies must: <ul style="list-style-type: none"> • Remove 99 percent of <i>Cryptosporidium</i> oocysts, and • The State must establish alternative CFE turbidity performance standards that must be met 95 percent of the time and a maximum value, not to exceed 5 NTU. • State determined turbidity values will be based on a demonstration conducted by the system as described in §141.552. [§141.550 and 141.551]
November 2003	Systems using conventional or direct filtration must conduct continuous monitoring of turbidity for each individual filter in the system. [§141.560.]
November 2003	Systems must comply with the reporting and record keeping requirements of §141.570, including turbidity exceptions reporting. Systems must, when appropriate: <ul style="list-style-type: none"> • Produce filter profiles or identify obvious reason for poor filter performance. • Report profile has been produced or identify obvious reason for poor filter performance. • Conduct filter self assessments. • Have 3rd party CPEs performed. • CFE requirement results.
January 6, 2004	Disinfection profile is complete and must be kept for review by the State during sanitary surveys [§141.532].
November 2004	Final primacy revisions applications with approved extensions must be submitted to EPA [§141.12(b)(2)].

¹Combined Filter Effluent

A2. Flowchart

The flowchart below depicts the LTESWTR requirements and implementation timeline for States and systems.

Figure 2: LTESWTR Requirements and Implementation Flowchart



B. Draft Rule Executive Summary - Long-Term 1 Enhanced Surface Water Treatment Rule

Purpose

The purpose of this summary is to acquaint State decision-makers and public health officials with the Long-Term 1 Enhanced Surface Water Treatment Rule (LTESWTR). The LTESWTR, published in the *Federal Register* on April 10, 2000 (Federal Register number WH-FRL-6570-5; website location), is the second part of a series of rules, the “Microbial-Disinfectants/Disinfection Byproducts Cluster” (M-DBP Cluster), to be published over several years that are intended to control microbial pathogens while minimizing the public health risks of disinfectants and disinfection byproducts (DBPs). The LTESWTR is designed to address the health risks from microbial contaminants in public water systems (PWSs) serving fewer than 10,000 people without significantly increasing the potential risks from chemical contaminants. It utilizes the same framework as the Interim Enhanced Surface Water Treatment Rule (IESWTR), that applies to systems serving 10,000 or more people. The LTESWTR was proposed concurrently with the Filter Backwash Rule, which addresses the recycle of filter backwash within the treatment process.

Background

In 1990, EPA’s Science Advisory Board, an independent panel of experts established by Congress, cited drinking water contamination as one of the most important environmental risks and indicated that disease-causing microbial contaminants (i.e., bacteria, protozoa, and viruses) are probably the greatest remaining health-risk management challenge for drinking water suppliers. Data from the Centers for Disease Control and Prevention (CDC) confirm this concern and indicate that between 1980 and 1996, 401 waterborne disease outbreaks were reported, with over 750,000 cases of disease. During this period, a number of agents were implicated as the cause, including protozoa, viruses, bacteria, and several chemicals. Most of the cases (but not the outbreaks) were associated with surface water, including a single outbreak of cryptosporidiosis in Milwaukee (over 400,000 cases).

One of the key regulations EPA has developed to date to counter pathogens in drinking water is the 1989 Surface Water Treatment Rule (SWTR). Among its provisions, the rule requires that a surface water system have sufficient treatment to reduce the source water concentration of *Giardia lamblia* and viruses by at least 99.9 percent (3-log) and 99.99 percent (4-log), respectively. The goal of the SWTR is to reduce risk to less than one infection per year per 10,000 people. However, the SWTR’s limitation is that the source water of some systems has high pathogen concentrations that, when reduced by the levels required under the rule, still may not meet this health goal, and the rule does not specifically control for the protozoan *Cryptosporidium*.

In December 1998, EPA published the IESWTR and the Stage 1 Disinfect/Disinfection Byproducts Rule (DBPR). These rules were the first of the M-DBP Cluster rules. IESWTR was designed to enhance the SWTR protections from microbial pathogens, specifically *Cryptosporidium*, for systems serving 10,000 or more people. The IESWTR provisions include an MCLG of zero for *Cryptosporidium*. In addition, the IESWTR requires a minimum of 99 percent (2-log) removal of *Cryptosporidium*, linked to enhanced combined filter effluent and

individual filter turbidity control provisions. The Stage 1 DBPR was designed to address another potentially confounding public-health concern. The disinfectants used to control pathogens may react with organic and inorganic matter in the source water to produce potentially toxic or carcinogenic DBPs. Thus, the dilemma facing water supply professionals is how to minimize the risk from both pathogens and DBPs simultaneously.

The provisions in the LTESWTR address concerns covered by the IESWTR, but for small systems (i.e., systems serving less than 10,000 people) using surface water or ground water under the direct influence of surface water (GWUDI).

Development of the LTESWTR

EPA first launched a rule-making process in 1992 and convened a Regulatory Negotiation (RegNeg) Advisory Committee under the Federal Advisory Committees Act (FACA), representing a range of stakeholders affected by possible regulation. The 1996 SDWA Amendments required EPA to develop rules to balance the risks between microbial pathogens and disinfection byproducts.

In 1997, a similar FACA process was implemented with the Microbial-Disinfectants/Disinfection Byproducts (M-DBP) Advisory Committee. The M-DBP Committee convened to collect, share, and analyze new information available since 1994, review previous assumptions made during the RegNeg process, as well as build consensus on the regulatory implications of this new information. Negotiations resulted in the following three proposals:

- A staged approach to regulation of DBPs (referred to as the Stage 1 and Stage 2 DBPRs) incorporating Maximum Contaminant Levels (MCLs), Maximum Residual Disinfectant Levels (MRDLs), and treatment technique requirements;
- A companion Enhanced Surface Water Treatment Rule (proposed in three stages) and the Filter Backwash Rule designed to improve control of microbial pathogens and prevent inadvertent reductions in microbial safety as a result of DBP control efforts; and,
- An Information Collection Rule (ICR) to collect information necessary to reduce many key uncertainties prior to subsequent negotiations for the Stage 2 DBPR. Systems affected by the ICR were also required to report whether recycle is practiced and to sample wash water (i.e., recycle flow) between the wash water treatment plant (if one existed) and the point at which recycle is added to the treatment train processes.

Benefits of the LTESWTR

The LTESWTR will improve public health by increasing the level of protection from exposure to *Cryptosporidium* and other pathogens in drinking water supplies through filtration improvements at small water systems. According to the risk assessment performed for the Regulatory Impact Analysis, the LTESWTR reduces the mean annual number of endemic illnesses (constant, low-level presence of a disease or infection) from *Cryptosporidium* by 22,800 to 83,600 cases. Based on these values, the mean estimated annual benefits of reducing the illness range from \$54 million to \$200 million per year. This calculation is based on a valuation of \$2,016 per incidence of cryptosporidiosis prevented. The LTESWTR will also reduce the risk of more severe health impacts on sensitive populations, including the risk of mortality. Additionally, the LTESWTR will reduce the likelihood of outbreaks of giardiasis and its associated costs by providing a larger margin of safety against such outbreaks in some systems.

Applicability and Compliance Dates

The LTESWTR applies to PWSs that use surface water or GWUDI as a source and serve fewer than 10,000 people.

Systems must comply with the turbidity and monitoring requirements, the primary requirements of the LTESWTR, no later than November 2003. However, PWSs with elevated levels of DBPs (Total Trihalomethanes—TTHM; and five haloacetic acids—HAA5) are required to develop an evaluation of their existing disinfection practices—a *disinfection profile*—beginning no later than January 7, 2003.

Requirements of the Rule: Public Water Systems

Disinfection profiling and benchmarking

Small surface water or GWUDI systems having TTHM > 0064 mg/L or HAA5 > 0.048 mg/L must develop a *disinfection profile*. In order to determine if the system must conduct the disinfection profile, the system may collect one TTHM and one HAA5 sample between 1998-2002. The sample must be taken during the month with the warmest water temperature and point of maximum residence time.

The disinfection profile is a graphic representation that shows how disinfection varies at a given plant over time. For systems serving fewer than 10,000 people, it is compilation of weekly inactivation of *Giardia* (and in some cases, viruses) based on criteria that affect the disinfection process (i.e., disinfectant residual, pH, temperature, and peak flow) collected over the period of 1 year. From the disinfection profile, the system calculates the average microbial inactivation for each month, and the lowest monthly average inactivation becomes the *disinfection benchmark*. This is the lowest level of inactivation achieved by the system over the course of the year.

The profiling and benchmarking provision provide a process whereby a PWS and the State, working together, assure that there will be no significant reduction in microbial protection as the

result of disinfection practice modifications designed to meet the more restrictive Maximum

Contaminant Levels (MCLs) for DBPs established in the Stage 1 DBPR. If a PWS required to develop disinfection profiles subsequently wishes to modify its disinfection practices to meet the new MCLs, it must establish the disinfection benchmark and consult with the State prior to implementing such modifications. In addition, PWSs must keep the disinfection profile on file for the State to review during their sanitary surveys.

Cryptosporidium

The LTESWTR extends the requirements of IESWTR to systems serving fewer than 10,000 people. Specifically, it sets a maximum contaminant level goal (MCLG) of zero for the protozoan *Cryptosporidium*. It also establishes a requirement for 2-log removal of *Cryptosporidium* for systems that must filter under the SWTR. Systems that use conventional or direct filtration are assumed to meet this requirement if they are in compliance with the strengthened turbidity performance standards for combined filter effluent in the LTESWTR (discussed below). Systems that use slow sand or diatomaceous earth filtration are assumed to meet the 2-log removal requirement if they are in compliance with the existing turbidity performance standards under the SWTR.

The LTESWTR also extends the existing watershed control requirements for unfiltered small systems to include the control of potential sources of *Cryptosporidium*. Such sources must be included in an unfiltered system's watershed control plan.

Combined filter effluent turbidity requirements

The LTESWTR includes a series of requirements related to turbidity. These requirements strengthen current SWTR requirements for combined filter effluent for small systems that use or direct filtration. The turbidity level of a system's combined filtered effluent at each plant must be less than or equal to 0.3 nephelometric turbidity units (NTUs) in at least 95 percent of the measurements taken each month, and the turbidity level of a system's combined filtered water must at no time exceed 1 NTU (under the SWTR, these turbidity requirements are 0.5 NTU and 5 NTU, respectively).

Individual filter monitoring requirements

The LTESWTR requires continuous turbidity monitoring for individual filters with results recorded every 15 minutes. The rule requires that small surface water and GWUDI systems that use conventional or direct filtration must conduct continuous turbidity monitoring on the effluent of each individual filter. PWSs must report instances of poor filter performance to the State, and, based on performance triggers, must take prescribed actions to identify and correct the cause(s).

Uncovered finished water storage facilities

The rule prohibits small PWSs from building any uncovered finished water storage facility (reservoir, holding tank, or other storage facility) for which construction begins after January 2001 (60 days after publication).

Public water system recordkeeping, and reporting requirements

The LTESWTR requires PWSs to provide monitoring and compliance data to States within 10 days after the end of each month the system serves water to the public. Additionally, PWSs must perform filter profiles, filter self-assessments, or Comprehensive Performance Evaluation (CPE) reports when instances of poor filter performance occur or persist based on monitoring of individual filter performance. Reports of these profiles, assessments, or CPEs must be submitted to the State.

Requirements of the Rule: States or Other Primacy Agents

State primacy, recordkeeping, and reporting requirements

In order to receive primacy for the LTESWTR, States must adopt regulations no less stringent than this rule. In addition, States are required to explain, through responses to special primacy requirements, how they will implement the key provisions in the rule. States must have rules or other authority to conduct a Composite Correction Program (CCP), and to assure that PWSs implement any follow-up recommendations that result from the CCP. States must submit revisions to their programs, regulations, or authorities no later than November 2002 (2 years after rule publication), although States can request an extension of up to 2 years (November 2004).

States must keep records of PWS turbidity measurements, PWSs required to do filter self assessment reports, CPEs, CCPs, PWSs consulting with the State concerning modifications to disinfection practices, and decisions for PWSs using alternative filtration technology.

Notes: