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Agency

Office of Water
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Implementation Guidance for the Interim Enhanced Surface Water Treatment Rule

This document does not substitute for EPA regulation nor is this document regulation itself. Thus, it cannot impose legally-binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon the circumstances.

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Abbreviations Used in This Document

"C": Residual Disinfectant Concentration
BAT: Best Available Technology
CCP: Composite Correction Program
CCR: Consumer Confidence Report
CDC: Centers for Disease Control
CFE: Combined Filter Effluent
CFR: Code of Federal Regulations
CPE: Comprehensive Performance Evaluation
CT: Residual Disinfectant Concentration in mg/l "C" x Disinfectant Contact Time in min "T"
CTA: Comprehensive Technical Assistance
CWS: Community Water System
DBP: Disinfection Byproducts
DBPP: Disinfection Byproducts Precursors
DBPR: Disinfectants/Disinfection Byproducts Rule
DE: Diatomaceous Earth
DTF: Data Transfer Format
DWPD: Drinking Water Protection Division
EC: Enhanced Coagulation
EPA: United States Environmental Protection Agency
ES: Enhanced Softening
ESWTR: Enhanced Surface Water Treatment Rule
FACA: Federal Advisory Committee Act
FR: Federal Register
FRDS: Federal Reporting Data System
GAC10: Granular activated carbon with ten minute empty bed contact time and 180 day reactivation frequency
GWR: Ground Water Rule
GWUDI: Ground Water Under the Direct Influence of Surface Water
HAA5: Haloacetic acids (Monochloroacetic, Dichloroacetic, Trichloroacetic, Monobromoacetic and Dibromoacetic Acids)
HAV: Hepatitis A Virus
hrs: Hours
ICR: Information Collection Rule
IESWTR: Interim Enhanced Surface Water Treatment Rule
IFA: Individual Filter Assessment
Log Inactivation: Logarithm of (N_0/N_T)
Log: Logarithm (common, base 10)
LT1ESWTR: Long Term 1 Enhanced Surface Water Treatment Rule
LT2ESWTR: Long Term 2 Enhanced Surface Water Treatment Rule
LTESWTR: Long Term Enhanced Surface Water Treatment Rule
MCL: Maximum Contaminant Level
MCLG: Maximum Contaminant Level Goal
M–DBP: Microbial and Disinfectants/Disinfection Byproducts

MPA: Microscopic Particulate Analysis
M/R: Monitoring/Reporting
MRDL: Maximum Residual Disinfectant Level
MRDLG: Maximum Residual Disinfectant Level Goal
NCWS: Non-Community Water System
NIPDWR: National Interim Primary Drinking Water Regulation
NPDES: National Pollutant Discharge Elimination System
NPDWR: National Primary Drinking Water Regulation
NSCEP: National Service for Environmental Publications
NTIS: National Technical Information Service
NTNCWS: Non-Transient Non-Community Water System
NTU: Nephelometric Turbidity Unit
OAR: Office of Air and Radiation
OECA: Office of Enforcement and Compliance Assurance
OGC: Office of General Counsel
OGWDW: Office of Ground Water and Drinking Water
OMB: Office of Management and Budget
ORC: Office of Regional Counsel
OSWER: Office of Solid Waste and Emergency Response
OW: Office of Water
PWS: Public Water System
PWSS: Public Water Supply Supervision Program
Reg. Neg.: Regulatory Negotiation
SDWA: Safe Drinking Water Act, or "The Act," as amended 1996
SDWIS: Safe Drinking Water Information System
SNC: Significant Non-Compliance
Subpart H: PWS using surface water or ground water under the direct influence of surface water
SUVA: Specific Ultraviolet Absorption
SWTR: Surface Water Treatment Rule
"T": Disinfectant Contact Time
TCR: Total Coliform Rule
TNCWS: Transient Non-Community Water System
TOC: Total Organic Carbon
TT: Treatment Technique
TTHM: Total Trihalomethanes
UV: Ultraviolet
x log removal: Reduction to 1 /10^x of original concentration

Introduction

This document provides guidance to EPA Regions and states exercising primary enforcement responsibility under the Safe Drinking Water Act (SDWA) concerning how EPA interprets the Interim Enhanced Surface Water Treatment Rule (IESWTR) under SDWA. It also provides guidance to the public and the regulated community on how EPA intends to exercise its discretion in implementing the statute and regulations. This guidance is designed to implement national policy on these issues.

The SDWA provisions and EPA regulations described in this document contain legally binding requirements. This document does not substitute for those provisions or regulations, nor is it a regulation itself. It does not impose legally-binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA and state decisionmakers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. Any decisions regarding a particular facility will be made based on the applicable statutes and regulations. Therefore, interested parties are free to raise questions and objections about the appropriateness of the application of this guidance to a particular situation, and EPA will consider whether or not the recommendations or interpretations in the guidance are appropriate in that situation based on the law and regulations. EPA may change this guidance in the future.

This manual was developed through a workgroup process involving Regions, states, and stakeholders, and contains the following sections:

Section I summarizes the IESWTR and presents a timetable of important dates for this rule. Section II addresses violation determination and associated reporting requirements to assist states in their compliance activities. Section III covers state primacy revision requirements, including a detailed timeframe for application review and approval. This section also contains guidance and references to help states adopt each new special primacy requirement included in these rules. Section IV contains a series of "stand-alone" guidance materials that will help states and public water systems comply with the new requirements.

The Appendices of this document also provide information that will be useful to states and EPA Regions throughout the primacy revision application process. Appendix A contains the primacy revision application crosswalk for the rule. Appendix B contains a sample extension agreement between EPA and a state which will allow the state and EPA to document how they will share rule implementation responsibilities if the state does not submit a primacy application by the deadline. Appendix C contains a "Statement of Principles" which outlines the criteria EPA will use to determine whether states with audit laws have retained adequate enforcement and information gathering authority to meet the requirements of the Safe Drinking Water Act (SDWA). Appendix D contains a Plain English summary of the rule. Appendix E contains the rule language of IESWTR incorporating the technical amendments. Appendix F contains sample monitoring forms that can be used as a template by states developing their own forms.

EPA and state decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. Any decisions regarding a particular facility will be made based on the applicable statutes and regulations. Therefore, interested parties are free to raise questions and objections about the appropriateness of the application of this guidance to a particular situation, and EPA will consider whether or not the recommendations or interpretations in the guidance are appropriate in that situation. EPA may change this guidance in the future.

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Section I.

Rule Requirements

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I-A. IESWTR Executive Summary

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 69478; www.epa.gov/OGWDW/mdbp/ieswtrfr.html; 66 FR 3770; www.epa.gov/safewater/mdbp/iesfr.html; Appendix E—rule language only), 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 1 DBPR), which addresses control of disinfectants and their byproducts.

Background

The 1974 Safe Drinking Water Act (SDWA) called for EPA to regulate drinking water by creating the national interim primary drinking water regulations (NIPDWR). In 1979, the first interim standard addressing DBPs was set for total trihalomethanes (TTHMs), a group of four volatile organic chemicals which form when disinfectants react with natural organic matter in the water.

Although SDWA was amended slightly in 1977, 1979, and 1980, the most significant changes to the 1974 law occurred when SDWA was reauthorized in 1986. Disease-causing microbial contamination had not been sufficiently controlled under the original Act. To safeguard public health, the 1986 Amendments required EPA to set health goals, or maximum contaminant level goals (MCLGs) and maximum contaminant levels (MCLs) for 83 named contaminants. EPA was also required to establish regulations within certain time frames, require disinfection of all public water supplies, specify filtration requirements for nearly all water systems that draw their water from surface sources, and develop additional programs to protect ground water supplies.

In 1989, EPA issued two important National Primary Drinking Water Regulations (NPDWR): The Total Coliform Rule (TCR) (40 CFR 141.21) and the Surface Water Treatment Rule (SWTR) (40 CFR 141 Subpart H). The TCR and SWTR provide the foundation for the M-DBP Cluster and are summarized below.

The TCR covers all public water systems. Since coliforms are easily detected in water, they are used to indicate a water system's vulnerability to pathogens in the water. In the TCR, EPA set a MCLG of zero for total coliforms. EPA also set a MCL for total coliforms. If more than 5.0 percent of the samples contain coliforms within a month, water system operators must report this violation to the state and the public. In addition, sanitary surveys are required every five or ten years (depending on the quality of the source water) for every system that collects fewer than five samples per month (typically systems that serve less than 4,100 people).

EPA issued the SWTR in response to Congress' mandate requiring disinfection, and where necessary, filtration of systems that draw their water from surface sources before distribution. The SWTR applies to all systems that use surface water or ground water under the direct influence of surface water (GWUDI). The rule sets MCLGs for *Legionella, Giardia lamblia,* and viruses at zero since any exposure to these contaminants presents some level of health risk.

Specifically, 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. A detectable disinfection residual must be maintained throughout the entire distribution system. For systems that filter, the adequacy of the filtration process is determined by measuring the turbidity of the treated water since high levels of turbidity often indicate that the filtration process is not working properly. The goal of the SWTR is to reduce risk to less than one infection per year per 10,000 people. However, the SWTR does not account for systems with high pathogen concentrations that, when treated at 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 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 (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).

In response to these findings, the SDWA was further amended in 1996 to improve public health protection by incorporating new data on the adverse health effects of contaminants, the occurrence of contaminants in public water systems, and the estimated reduction in health risks that would result from further regulation. The Act also increased scientific research requirements and emphasized cost-benefit analyses in the regulatory decision process.

Based on prevailing scientific data, the M-DBP Cluster is intended to control microbial pathogens while minimizing the public health risk from disinfectants and DBPs. Since multiple threats require multiple barriers, the IESWTR and Stage 1 DBPR expand on the foundation of the TCR, SWTR, and TTHM standards to target health risk outliers unaddressed by prior regulations.

The IESWTR builds on the SWTR by adding protection from *Cryptosporidium* through strengthened combined filter effluent turbidity performance standards and individual filter turbidity provisions for filtered systems that serve greater than 10,000 people using conventional and direct filtration. For unfiltered systems, *Cyptosporidium* must be included in the watershed control requirements. In addition, the IESWTR builds on the TCR by requiring sanitary surveys for all public water systems using surface water and ground water under the direct influence of surface water. The IESWTR also requires covers for all new finished water storage facilities and includes disinfection benchmark provisions to ensure continued levels of microbial protection while taking the necessary steps to comply with the DBP standards. Collectively, the SWTR and IESWTR place stringent treatment requirements on systems using surface water as a source.

By building on the foundation set forth by the original SDWA, the quality of drinking water has improved and public health protection has increased. The IESWTR and Stage 1 DBP Rules are part of a series of rules designed to expand on the foundation of prior rulemaking efforts. By encompassing previously unaddressed health risks from microbials and disinfection byproducts, the M-DBP Cluster continues to maximize drinking water quality and public health protection.

Development of the IESWTR

The new rules are a product of 6 years of collaboration among the water supply industry, environmental and public health groups, and local, state, and federal governments. 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 Interim Enhanced Surface Water Treatment Rule (IESWTR) 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.

Benefits of the IESWTR

The IESWTR will improve public health by increasing the level of protection from exposure to *Cryptosporidium* and other pathogens in drinking water supplies through improvements in filtration at water systems. According to the risk assessment performed for the Regulatory Impact Analysis, the IESWTR decreases the likelihood of endemic illness (constant, low-level presence of a disease or infection) from *Cryptosporidium* by 110,000 to 463,000 cases annually. Based on these values, the estimated annual benefits of reducing the illness range from $0.263 billion to $1.240 billion per year. This calculation is based on a valuation of $2,000 per incidence of cryptosporidiosis prevented. The IESWTR will also reduce the risk of more severe health impacts on sensitive populations, including the risk of mortality. Additionally, the IESWTR will reduce the likelihood of outbreaks of cryptosporidiosis and its associated costs by providing a larger margin of safety against such outbreaks in some systems.

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 January 1, 2002. 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 March 31, 2000.

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 as a result of data or specific monitoring conducted by March 31, 2000 must develop a *disinfection profile*. The disinfection profile is a compilation of daily inactivation of *Giardia* (and in some cases, viruses) based on daily criteria (i.e., disinfectant residual, pH, temperature, and peak flow) that affect the efficacy of the disinfection process (microbial inactivation potential) collected over the period of 1 year. Systems may also use existing operational data in conjunction with daily criteria or three years of existing operational data to create a multi-year profile, if approved by the state. From the disinfection profile, the PWS calculates the average microbial inactivation for each month, and the lowest monthly average inactivation for the year becomes the *disinfection benchmark*. For systems creating a multi-year profile, the disinfection benchmark is the average of the lowest monthly average values.

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.

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 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.

Strengthened turbidity requirements

The IESWTR includes a series of requirements related to turbidity. These requirements strengthen current SWTR requirements for combined filter effluent for systems that use conventional or direct filtration. The turbidity level of a system's combined filtered water 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 IESWTR introduces continuous turbidity monitoring for individual filters. The rule requires that surface water and GWUDI systems that use conventional or direct filtration must conduct continuous turbidity monitoring (every 15 minutes) 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 building any uncovered finished water storage facility (reservoir, holding tank, or other storage facility) for which construction begins after February 16, 1999 (60 days after publication).

Public water system recordkeeping and reporting requirements

The IESWTR requires PWSs to submit combined filter effluent monitoring and compliance data and report that they have conducted individual filter turbidity monitoring to states within 10 days after the end of each month the system serves water to the public. Additionally, PWSs must report to the state if certain individual filter monitoring trigger levels are exceeded. In this case, systems must report turbidity measurements and report that filter profiles, filter self-assessments, or comprehensive performance evaluation (CPE) reports have been produced or conducted when instances of poor filter performance occur or persist based on monitoring of individual filter performance. Systems must maintain the results of individual filter monitoring for at least three years.

Requirements of the Rule: States or Other Primacy Agents

Sanitary surveys

The IESWTR requires that the state conduct sanitary surveys for *all* PWSs using surface water or GWUDI, *regardless of the population the PWS serves*, no less frequently than every 3 years for community water systems and every 5 years for noncommunity systems. For community water systems determined by the state in previous sanitary surveys to have "outstanding performance," successive sanitary surveys may be conducted at up to 5-year intervals. As part of the eight required sanitary survey components, the state also must review the disinfection profile as part of the sanitary survey.

States must have rules or other authority to ensure that a PWS responds to any "significant deficiencies" revealed during its survey within 45 days, indicating how and on what schedule the system will address the deficiencies noted in the survey. States must also have rules or other authority to ensure that facilities take the steps necessary to address significant deficiencies identified in the survey report that are within the control of the PWS and its governing body.

State primacy, recordkeeping, 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:

- The Interim Enhanced Surface Water Treatment Rule
  63 FR 69478 (December 16, 1998)
  www.epa.gov/OGWDW/mdbp/ieswtrfr.html
- The Interim Enhanced Surface Water Treatment Rule: Technical Corrections
  66 FR 3770 (January 16, 2001)
  www.epa.gov/safewater/mdbp/iesfr.html
- The EPA Safe Drinking Water Hotline, Telephone:
  1.800.426.4791

I-B. 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 Table I-1.

Table I-1: Timetable for the IESWTR Requirements

Date	IESWTR Requirement
December 16, 1998	Rule is published in *Federal Register* [63 FR 1 69478].
February 16, 1999	60-day legal challenge period ends.
February 16, 1999	Construction of uncovered finished water storage facilities is prohibited [40 CFR 141.170(c)].
March 16, 1999	After this date, 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 [40 CFR 141.172(a)(2)(iii)].
April 16, 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 [40 CFR 141.172(a)(5)(ii)].
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 [40 CFR 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 [40 CFR 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 [40 CFR 141.172(a)(5)(v)].
March 31, 2000	TTHM and HAA5 monitoring must be complete for systems determining if they must develop a disinfection profile [40 CFR 141.172(a)(2)(iii)(A)].
March 31, 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 [40 CFR 141.172(b)(3)(i)].
April 1, 2000	Systems determining if they must develop a disinfection profile must submit their TTHM and HAA5 data to the state [40 CFR 141.172(a)(5)(iii)].
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 [40 CFR 141.172(b)(2)].
December 16, 2000	Final primacy applications must be submitted to EPA unless granted an extension [40 CFR 142.12(b)(1)]
March 31, 2001	Disinfection profile is complete [40 CFR 141.172(b)(2)].
March 31, 2001	After this date, systems that were required to develop a disinfection profile that wish to make a significant change to their disinfection practice must first calculate a disinfection benchmark and consult with the state [40 CFR 141.172(c)].

Date	IESWTR Requirement
December 31, 2001	Systems that are not required to filter must comply with the requirements for TTHM in §141.12 and §141.30 until this date. After this date, systems must comply with the requirements in Subpart L for TTHM, HAA5, bromate, chlorite, chlorine, chloramines, and chlorine dioxide [40 CFR 141.71(b)(6)].
December 31, 2001	Systems that do not meet all of the criteria for avoiding filtration and use conventional/direct filtration must meet the turbidity requirements of the rule [0.3 NTU CFE (Combined Filter Effluent) 95 percent of the time, at no time exceed 1 NTU] [40 CFR 141.173].
December 31, 2001	Alternative technologies for systems that serve at least 10,000 people must remove 99 percent of *Cryptosporidium* oocysts, and the state must establish alternative turbidity performance standards that must be met 95 percent of the time and a maximum [40 CFR 141.173(b)].
January 1, 2002	Systems must comply with the reporting and recordkeeping requirements of §141.175, including turbidity exceptions reporting. Systems must, when appropriate: • 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.
December 16, 2002	Final primacy revisions applications with approved extensions must be submitted to EPA [40 CFR 142.12(b)(2)].
December 2004	State must have first round of sanitary surveys completed for Subpart H CWSs [40 CFR 142.16(b)(3)(i)].
December 2006	State must have first round of sanitary surveys completed for Subpart H NCWSs [40 CFR 142.16(b)(3)(i)].

Section II.

SDWIS Reporting and SNC Definitions

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II-A. Safe Drinking Water Information System (SDWIS) Reporting Under the IESWTR

SDWIS/FED (Safe Drinking Water Information System/Federal version) is an EPA national database storing routine information about the nation's drinking water. Designed to replace the system known as FRDS (Federal Reporting Data System), SDWIS/FED stores the information EPA needs to monitor approximately 175,000 public water systems.

States supervise the drinking water systems within their jurisdictions to ensure that each public water system meets state and EPA standards for safe drinking water. The Safe Drinking Water Act (SDWA) requires states to report drinking water information periodically to EPA; this information is maintained in SDWIS/FED.

States report the following information to EPA:

- Basic information on each water system, including: name, ID number, number of people served, type of system (year-round or seasonal), and source of water (ground water or surface water)
- Violation information for each water system: whether it has followed established monitoring and reporting schedules, complied with mandated treatment techniques, or violated any Maximum Contaminant Levels (MCLs)
- Enforcement information: what actions states have taken to ensure that drinking water systems return to compliance if they are in violation of a drinking water regulation
- Sampling results for unregulated contaminants and for regulated contaminants when the monitoring results exceed the MCL

EPA uses this information to determine if and when it needs to take action against non-compliant systems, oversee state drinking water programs, track contaminant levels, respond to public inquiries, and prepare national reports. EPA also uses this information to evaluate the effectiveness of its programs and regulations, and to determine whether new regulations are needed to further protect public health.

II-A.1 Federally Reported Violations

Under SDWIS/FED reporting, states only report when violations occur. In the interest of reducing the reporting burden on states, EPA has limited the number and type of violations to be reported to SDWIS/FED. However, PWSs must still keep records and report all required information to the state. Any violation of the rule, whether included in the accompanying table or not, is a basis for a state or federal enforcement action.

Table II-1 summarizes the violation and contaminant codes that will be used to report violations of the IESWTR to SDWIS/FED.

Table II-1: SDWIS/FED Codes for Federal Reporting Under the IESWTR

Violation Code	Contaminant Code	Treatment Technique (TT) Violations
37	0300	Failure to profile or consult w/state (disinfection changes)
43	0300	Combined filter effluent exceeds 1 NTU/state-set maximum requirements
44	0300	More than 5% of monthly combined filter effluent samples exceed 0.3 NTU/state-set maximum requirements
47	0300	Construction of an uncovered finished water storage facility
Inventory Code	0300	Failure to meet *Cryptosporidium* site specific conditions (unfiltered systems)
		Monitoring and Reporting (M/R) Violations
29	0300	**Major**: Failure to conduct follow-up activities triggered by individual filter turbidity exceedances.
38[1]	0300	**Major**: Failure to collect and report 90% of required combined filter effluent turbidity samples
		Major: Failure to report all individual filter monitoring has been conducted
		Major: Failure to report combined filter effluent exceedances by the end of the next business day
		Minor: Any other failure to monitor or report
		Recordkeeping Violations
09	0300	Failure to maintain the results of individual filter monitoring for at least 3 years
		Public Notification (PN) Violation*
06	0300	Failure to notify public after a violation

* The revised PN rule (65 FR 25981) is effective May 6, 2002 and will supercede the PN violation listed above.

Table II-2 contains the federally reportable violations for the IESWTR in more detail. These violations are listed by contaminant or requirement and violation type. The table includes the SDWIS/FED reporting codes, the regulatory citation, system type affected, a detailed description of the violation, and the initial compliance date. This table will allow a user to better understand violations listed in SDWIS. For more information on how to report IESWTR violations to SDWIS, please refer to the *State Reporting Guidance for the Interim Enhanced Surface Water Treatment Rule* which will be available at www.epa.gov/safewater/mdbp/implement.html in fall 2001.

[1] Flag used to denote major or minor

This chart contains the federally reportable violations for the IESWTR. In the interest of reducing the reporting burden on states, EPA has limited the number and type of violations to be reported to SDWIS/FED. However, PWSs must still keep records and report all required information to the state. Any violation of the rule is a basis for a state or federal enforcement action.

Table II-2: Federally Reported Violations for the IESWTR

Treatment Technique Violation						
SDWIS Reporting Code	**Regulated Contaminant/ Requirement**	**Citation**	**Violation Type**	**System Size and Type Affected**	**Violation**	**Initial Compliance Date**
1	**2**	**3**	**4**	**5**	**6**	**7**
37/0300	Disinfection and Consultation	§141.172(b) and (c)	TT	All Subpart H systems serving at least 10,000 people	Failure to consult with the state before making a significant change to a disinfection practice if required to develop a disinfection profile	January 1, 2002
43/0300	Filtration	§141.173(a)(2) and (b)	TT	Subpart H systems serving $ 10,000 using conventional or direct filtration Subpart H systems serving $ 10,000 using alternative filtration technologies	Failure to achieve combined filter effluent turbidity level that at no time exceeds 1 NTU if PWS uses conventional or direct filtration or exceedance of the state-set maximum turbidity performance requirements for systems using alternative filtration technologies	January 1, 2002

This chart contains the federally reportable violations for the IESWTR. In the interest of reducing the reporting burden on states, EPA has limited the number and type of violations to be reported to SDWIS/FED. However, PWSs must still keep records and report all required information to the state. Any violation of the rule is a basis for a state or federal enforcement action.

Treatment Technique Violation						
SDWIS Reporting Code	**Regulated Contaminant/ Requirement**	**Citation**	**Violation Type**	**System Size and Type Affected**	**Violation**	**Initial Compliance Date**
1	**2**	**3**	**4**	**5**	**6**	**7**
44/0300	Filtration	§141.173(a)(1)	TT	Subpart H systems serving $ 10,000 using conventional or direct filtration Subpart H systems serving $ 10,000 using alternative filtration technologies	Failure to achieve combined filter effluent turbidity level of 0.3 NTU in 95 percent of monthly measurements if PWS uses conventional or direct filtration or failure to meet the state-set turbidity performance requirements in 95% of monthly measurements for systems using alternative filtration technologies	January 1, 2002
47/0300	Finished Water Storage Facilities	§141.170(c)	TT	All Subpart H systems serving at least 10,000 people	Systems are not allowed to start construction of any uncovered finished water storage facility (reservoir, holding tank, or other storage facility)	February 16, 1999
Inventory Code/0300	*Cryptosporidium*	§141.171	TT	All unfiltered Subpart H systems serving at least 10,000 people	Failure to meet Cryptosporidium site specific condition requirements - system must install filtration within 18 months. Do not report a violation, but change the inventory record/code from “unfiltered avoiding” to “unfiltered required to filter”. Report a 42 code violation if filtration has not been installed after 18 months.	January 1, 2002

This chart contains the federally reportable violations for the IESWTR. In the interest of reducing the reporting burden on states, EPA has limited the number and type of violations to be reported to SDWIS/FED. However, PWSs must still keep records and report all required information to the state. Any violation of the rule is a basis for a state or federal enforcement action.

Monitoring and Reporting Violations						
SDWIS Reporting Code	**Regulated Contaminant/ Requirement**	**Citation**	**Violation Type**	**System Size and Type Affected**	**Violation**	**Initial Compliance Date**
1	**2**	**3**	**4**	**5**	**6**	**7**
29/0300	Filtration - Response to Individual Filter Trigger	§141.175(b)(2)	M/R Major	Subpart H systems serving $ 10,000 using conventional or direct filtration	Failure to produce and/or report to the state an individual filter profile within 7 days of a turbidity exceedance (> 0.5 NTU in 2 consecutive measurements taken 15 minutes apart after the first 4 hours of operation after filter backwash or otherwise taken offline) if the PWS is not able to identify an obvious reason for abnormal filter performance	January 1, 2002
29/0300	Filtration - Response to Individual Filter Trigger	§141.175(b)(1)	M/R Major	Subpart H systems serving $ 10,000 using conventional or direct filtration	Failure to produce and/or report to the state an individual filter profile within 7 days of a turbidity exceedance (> 1.0 NTU in 2 consecutive measurements taken 15 minutes apart) if the PWS is not able to identify an obvious reason for abnormal filter performance	January 1, 2002
29/0300	Filtration - Response to Individual Filter Trigger	§141.175(b)(3)	M/R Major	Subpart H systems serving $ 10,000 using conventional or direct filtration	Failure to conduct and/or report to the state a self-assessment of an individual filter within 14 days of a turbidity exceedance (> 1.0 NTU in 2 consecutive measurements taken 15 minutes apart in each of 3 consecutive months)	January 1, 2002
29/0300	Filtration - Response to Individual Filter Trigger	§141.175(b)(4)	M/R Major	Subpart H systems serving $ 10,000 using conventional or direct filtration	Failure to have a comprehensive performance evaluation conducted by the state or a third party no later than 30 days after a turbidity exceedance (> 2.0 NTU in 2 consecutive measurements taken 15 minutes apart in 2 consecutive months) and have the evaluation completed and submitted to the state no later than 90 days following the exceedance	January 1, 2002

This chart contains the federally reportable violations for the IESWTR. In the interest of reducing the reporting burden on states, EPA has limited the number and type of violations to be reported to SDWIS/FED. However, PWSs must still keep records and report all required information to the state. Any violation of the rule is a basis for a state or federal enforcement action.

Monitoring and Reporting Violations						
SDWIS Reporting Code	**Regulated Contaminant/ Requirement**	**Citation**	**Violation Type**	**System Size and Type Affected**	**Violation**	**Initial Compliance Date**
1	**2**	**3**	**4**	**5**	**6**	**7**
38/0300	Filtration/ combined filter effluent	§141.175(a) §141.74	M/R Major Failure to collect and report at least 90 % of required samples.	Subpart H systems serving $ 10,000 using conventional or direct filtration	Failure to sample combined filter effluent for turbidity at required frequency using required collection and analytical methods and report the following within 10 days after the end of each month the PWS serves water to the public: 1. total number of samples taken, the number and percentage of samples less than or equal to the limits specified in §141.73 or §141.173; and/or 2. date and level of any measurements over 1 NTU for conventional or direct filtration or which exceed the maximum level set by the state for alternative filtration technologies	January 1, 2002
			M/R Minor Any other failure to monitor or report.			
38/0300	Filtration	§141.175(b)	M/R Major	Subpart H systems serving $ 10,000 using conventional or direct filtration	Failure to report that the system has conducted all individual filter monitoring to the state within 10 days after the end of each month	January 1, 2002

This chart contains the federally reportable violations for the IESWTR. In the interest of reducing the reporting burden on states, EPA has limited the number and type of violations to be reported to SDWIS/FED. However, PWSs must still keep records and report all required information to the state. Any violation of the rule is a basis for a state or federal enforcement action.

Monitoring and Reporting Violations						
SDWIS Reporting Code	**Regulated Contaminant/ Requirement**	**Citation**	**Violation Type**	**System Size and Type Affected**	**Violation**	**Initial Compliance Date**
1	**2**	**3**	**4**	**5**	**6**	**7**
38/0300	Filtration	§141.175(c)	M/R Major	All Subpart H systems serving at least 10,000 people	Failure to report that the system has exceeded 1 NTU in representative samples by the end of the next business day if the PWS uses conventional filtration treatment or direct filtration, or Failure to report that the system has exceeded the maximum level set by the state under §141.173(b) for filtration technologies other that conventional filtration, direction filtration, slow sand, or diatomaceous earth filtration in representative samples by the end of the next business day.	January 1, 2002

This chart contains the federally reportable violations for the IESWTR. In the interest of reducing the reporting burden on states, EPA has limited the number and type of violations to be reported to SDWIS/FED. However, PWSs must still keep records and report all required information to the state. Any violation of the rule is a basis for a state or federal enforcement action.

Recordkeeping Violations						
SDWIS Reporting Code	**Regulated Contaminant/ Requirement**	**Citation**	**Violation Type**	**System Size and Type Affected**	**Violation**	**Initial Compliance Date**
1	**2**	**3**	**4**	**5**	**6**	**7**
09/0300	Filtration	§141.175(b)	Recordkeeping	Subpart H systems serving $ 10,000 using conventional or direct filtration	Failure to maintain the results of individual filter monitoring for at least 3 years, documenting that the system has collected and recorded individual filter results every 15 minutes	January 1, 2002

Public Notification Violations (Note: The revised PN rule supercedes §141.32)						
SDWIS Reporting Code	**Regulated Contaminant/ Requirement**	**Citation**	**Violation Type**	**System Size and Type Affected**	**Violation**	**Initial Compliance Date**
1	**2**	**3**	**4**	**5**	**6**	**7**
06/0300	Filtration and Disinfection	§141.32	PN	All Subpart H serving at least 10,000 people	Failure to notify public and use approved public notification language when there is a violation of the treatment technique and/or monitoring requirements for filtration and disinfection in Subpart H or Subpart P	January 1, 2002

II-B. SNC Definitions for the IESWTR

Significant non-compliers (SNCs) are community, non-transient non-community and transient non-community water systems that have more serious, frequent, or persistent violations. The criteria which designate a system as a SNC vary by contaminant. Once a system is designated as a SNC, it is subject to EPA's timely and appropriate policy. SNCs that have not returned to compliance or are not addressed timely and appropriately are called Exceptions. Timeliness for SNCs is eight months after the system became a SNC. (Two months for the state to determine, and become aware of, the system's SNC status and six months in which to complete the follow-up/enforcement action). The types of actions considered appropriate include the issuance of a formal state or federal administrative or compliance order, a civil or criminal referral to state Attorney General or Department of Justice, or state bilateral compliance agreement signed by both the state and the violator. The following are SNC definitions for the IESWTR.

NOTE: SNC definitions for the Surface Water Treatment Rule continue to remain in effect.

UNFILTERED AVOIDING FILTRATION

C Systems which fail avoidance criteria must filter. See 6/27/90 Surface Water Treatment Rule Implementation Manual. Systems become an SNC if filtration is not installed within 18 months of any failure of the avoidance criteria.

C A system that has three (3) or more Major M/R violations in any 12 consecutive months.

C A system that has a combination of five (5) or more Major M/R violations and Minor M/R violations in any 12 consecutive months.

FILTERED

• A system that has four (4) or more TT violations in any 12 consecutive months.

C A system that has a combination of six (6) or more TT violations and Major M/R violations in any 12 consecutive months.

C A system that has a combination of ten (10) or more TT violations, Major M/R violations, and Minor M/R violations in any 12 consecutive months.

DISINFECTION PROFILING (if required)

C Failure to consult with the state before making a significant disinfection change if required to develop a disinfection profile.

UNCOVERED RESERVOIRS

C Beginning construction of any uncovered finished water storage facility after February 16, 1999.

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Section III.

State Primacy Revision Applications

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Changes to the Primacy Revision Process

40 CFR 142 sets out requirements for states to obtain and/or retain primary enforcement responsibility (primacy) for the Public Water System Supervision (PWSS) program as authorized by §1413 of the Safe Drinking Water Act (SDWA). The 1996 SDWA Amendments create an additional requirement and modify the process for states to obtain and/or retain primacy. On April 28, 1998, EPA promulgated the Primacy Rule to reflect these statutory changes (63 FR 23361).

For consistency with the Amendments to §1413, the Primacy Rule makes the following changes to the existing regulations in 40 CFR 142:

1) **Administrative Penalty Authority**—As a condition of primacy, states must now have administrative penalty authority for all violations of their approved primacy program, unless prohibited by the states' constitution. This encompasses applicable requirements in 40 *CFR* 141 and 142 including, but not limited to, National Primary Drinking Water Regulations, variances and exemptions, if applicable, and public notification requirements.

2) **Interim Primacy**—The Primacy Rule also codifies the new process which grants primary enforcement authority to states while their applications to modify their primacy programs are under review (interim primacy). New section 142.12(e) explains that any state already having primacy for all existing national primary drinking water regulations in effect when a new regulation is promulgated is considered to have interim primacy for a new or revised regulation, once it has submitted a complete and final primacy revision application. This interim enforcement authority begins on the date of submission of a complete and final primacy revision application or the effective date of the new or revised state regulation, whichever is later, and ends when EPA makes a final determination.

3) **Time increases for rule adoptions—**The rule also increases the time for a state to adopt new or revised federal regulations from 18 months to 2 years.

4) **Examples of emergencies**—Finally, the Primacy Rule adds examples of circumstances that require an emergency plan for the provision of safe drinking water. Emergencies include earthquakes, floods, hurricanes, and other natural disasters.

For consistency with the Amendments to §1401(4), the Primacy Rule expands the definition of a public water system (PWS) to include not only systems which provide water for human consumption through pipes, but also systems which provide water for human consumption through "other constructed conveyances."

III-A. State Primacy Program Revision

Pursuant to §142.12, **Revision of State Programs**, complete and final requests for approval of program revisions to adopt new or revised EPA regulations must be submitted to the Administrator no later than 2 years after promulgation of the new or revised federal regulations (see Table III-1). Until those applications are approved, EPA Regions have responsibility for directly implementing the IESWTR. The state and EPA can agree to implement the rule together during this period. However, if a state is eligible for interim primacy, once it submits a complete and final revision package, it will have full implementation and enforcement authority. A state may be granted additional time, up to two years, to submit its application package. During this period, an extension agreement outlining the state's and EPA's responsibilities is required.

Table III-1: State Rule Implementation and Revision Timetable

EPA/State Action	Time Frame
IESWTR published by EPA	December 16, 1998
State and Region establish a process and agree upon a schedule for application review and approval	May 1999
State, at its option, submits *draft* program revision package including: Preliminary Approval Request Draft State Regulations and/or Statutes Regulation Crosswalk	September 1999 (Suggested)
Regional (and Headquarters if necessary) review of draft	Completed within 90 days of state submittal of Draft
State submits final program revision package including: Adopted State Regulations Regulation Crosswalk 40 *CFR* 142.10 Primacy Update Checklist 40 *CFR* 142.14 and 142.15 Reporting and Recordkeeping 40 *CFR* 142.16 Special Primacy Requirements Attorney General's Enforceability Certification	By September 16, 2000*
EPA final review and determination: Regional review (program and ORC) Headquarters concurrence and waivers (OGWDW, OECA, OGC) Public Notice Opportunity for hearing EPA's Determination	Completed within 90 days of state submittal of final 45 days Region 45 days Headquarters
Rule Effective Date	January 1, 2002

* EPA suggests submitting an application by September 2000, to ensure timely approval. EPA regulations allow until December 16, 2000 for this submittal. An extension of up to 2 additional years may be requested by the state.

III-A.1 The Revision Process

The approval of state program revisions is recommended to be a two-step process comprised of submission of a draft request (optional) and then submission of a complete and final request for program approval. Figure III-1 diagrams these processes and their timing.

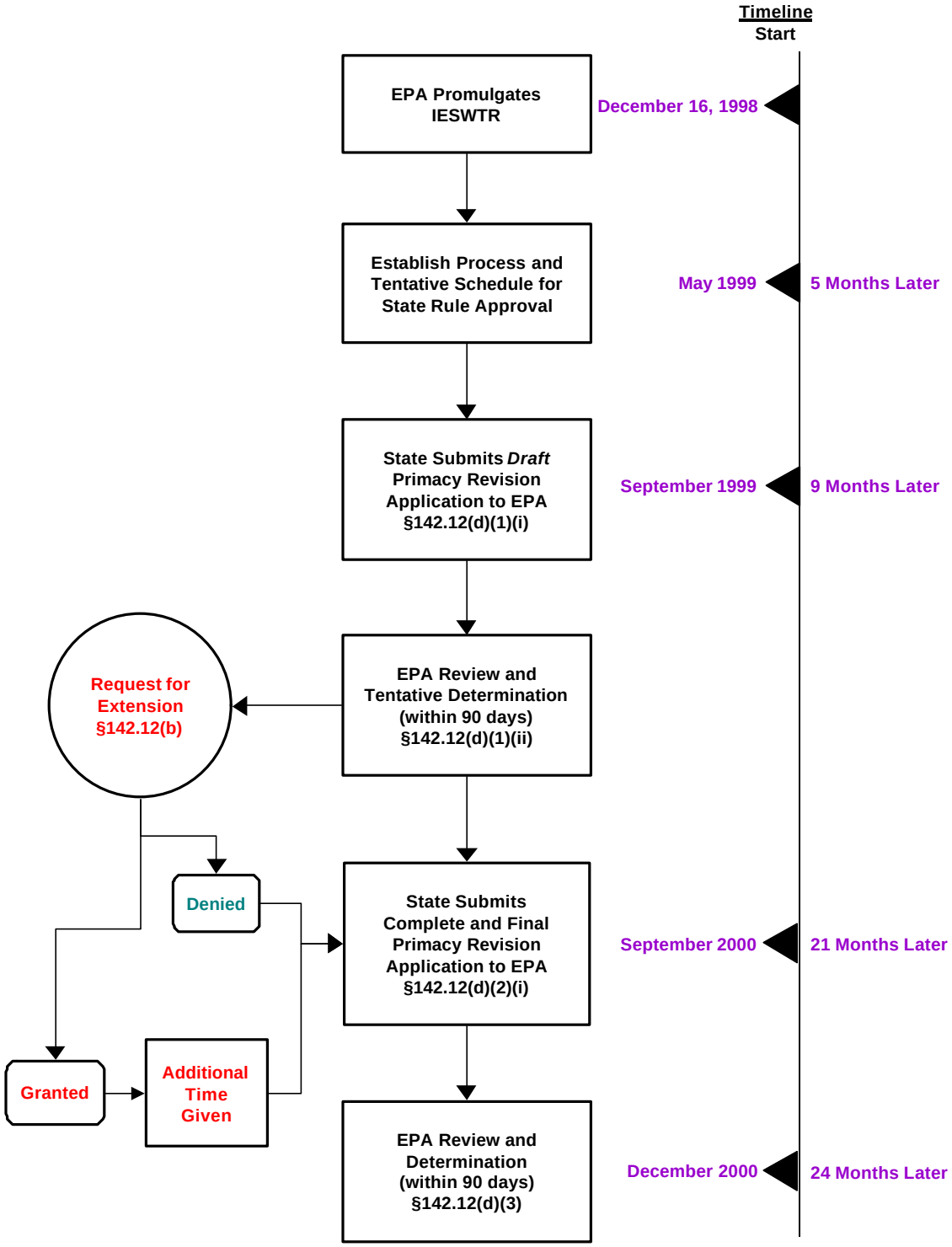
Draft Request—At the state's option, it may submit a draft request for EPA review and tentative determination. The request should contain drafts of all required primacy application materials. A draft request should be submitted by 9 months after rule promulgation. EPA will make a tentative determination on whether the state program meets the applicable requirements. The tentative determination should be made within 90 days.

Complete and Final Request—This submission must be in accordance with §142.12(c)(1) and (2) and include the Attorney General's statement. If the state has submitted a draft request for EPA review the state must also address comments and/or program deficiencies identified in the tentative determination in their final submission. Regions should make states aware that submission of only a final request may make it more difficult for the states to address any necessary changes within the allowable time for state rule adoption.

EPA requests that states submit their complete and final revision package within 21 months of rule promulgation. This will ensure that states will have interim primacy within 24 months and will prevent states from becoming backlogged with revision applications to adopt future federal requirements.

The state and Region should agree to a plan and timetable for submitting the state primacy revision application as soon as possible after rule promulgation—ideally within 5 months of promulgation.

Figure III-1: Recommended Review Process for State Request for Approval of Program Revisions



III-A.2 The Final Review Process

Once a state application is complete and final, EPA has a regulatory (and statutory) deadline of 90 days to review and approve or disapprove of the revised program. The Offices of Ground Water and Drinking Water (OGWDW) and Enforcement and Compliance Assurance (OECA) will conduct detailed reviews of the first state package from each Region. The Region should submit their comments with the state's package for Headquarter's review. Where the Region has identified all significant issues, OGWDW and OECA will waive concurrence on all other state programs in that Region, although HQ will retain the option to review additional state programs with cause. The Office of General Counsel (OGC) has delegated its review and approval to the Office of Regional Counsel (ORC).

In order to meet the 90 day deadline for packages undergoing Headquarters' review, the review period will be equally split giving both the Regions and Headquarters 45 days to conduct their respective reviews. For the first package in each Region, Regions should forward copies of the primacy revision applications and their comments to the director of the Drinking Water Protection Division (DWPD) in OGWDW. The DWPD Director will take the lead on the review process. OGWDW will provide OECA with a copy for their concurrent review. OECA will concur on OGWDW approvals.

III-B. State Primacy Program Revision Extensions (40 CFR 142.12(b))

III-B.1 The Extension Process

Under §142.12(b), states may request that the 2-year deadline for submitting the complete and final request for EPA approval of program revisions be extended for up to 2 additional years in certain circumstances. The extension request must be submitted to EPA within 2 years of the date that EPA published the regulation. The Regional Administrator has been delegated authority to approve extension applications. Headquarters concurrence on extensions is not required.

III-B.2 Criteria that an Extension Request Must Meet

For an extension to be granted under § 142.12(b), the state must demonstrate that it is requesting the extension because it cannot meet the original deadline for reasons beyond its control, despite a good faith effort to do so. A critical part of the extension application is the state's proposed schedule for submission of its complete and final request for approval of a revised primacy program. The application must also demonstrate at least one of the following:

(i) That the state currently lacks the legislative or regulatory authority to enforce the new or revised requirements; or,

(ii) That the state currently lacks the program capability adequate to implement the new or revised requirements; or,

(iii) That the state is requesting the extension to group two or more program revisions in a single legislative or regulatory action.

In addition, the state must be implementing the EPA requirements to be adopted in its program revision within the scope of its current authority and capabilities.

III-B.3 Conditions of the Extension

If an extension is granted, the Region and state will negotiate certain conditions that must be met during the extension period. These conditions will be determined during the extension approval process and are decided on a case-by-case basis. The conditions must be included in an extension agreement between the state and the EPA Regional office. Appendix B contains a sample extension agreement.

Conditions of an extension agreement may include:

- Informing PWSs of the new EPA (and upcoming state) requirements and that the Region will be overseeing implementation of the requirements until they approve the state program revisions or until the state submits a complete and final revision package if the state qualifies for interim primacy;
- Collecting, storing and managing laboratory results, public notices, and other compliance and operation data required by the EPA regulations;
- Assisting the Region in the development of the technical aspects of enforcement actions and conducting informal follow-up on violations (telephone calls, letters, etc.);
- Providing technical assistance to public water systems;
- For states whose request for an extension is based on a current lack of program capability adequate to implement the new requirements, taking steps agreed to by the Region and the state during the extension period to remedy the deficiency;
- Providing the Region with all the information required under §142.15 on state reporting.

Figure III-2 provides a checklist the Region can use to review state extensions.

Figure III-2: Extension Request Checklist

I. Reason for State Request

- _ Clustering of Program Revisions
- _ Statutory Barrier
- _ Regulatory Barrier
- _ Lack of Program Capability
  - _ Insufficient Resources
  - _ Funding Level
  - _ Staffing
  - _ Lack of Adequately Trained Staff
  - _ Inadequate Procedures, Guidelines, and Policies
- _ Other_____

II. Actions Taken by the State to Justify an Extension

	Schedule Dates (or attachments)
_ Seeking Increases in Program Resources	_____
_ Training Existing Personnel/Revising Training Programs	_____
_ Revising State Regulations or Statutes	_____
_ Developing Revised/New Procedures, Guidelines, Policies	_____
_ Other_____	_____
_____	

III. Extension Decision

- _ Extension Request Approved Date: / /
  - _ Period of Extension Request: / / to / /
- _ Extension Request Denied Date: / /
  - _ Reason Cited: _____

IV. Conditions of the Extension

During the extension period the state will (check all that apply):

- _ Inform public water systems of the new requirements and the fact that EPA will be overseeing their implementation until the state's program is approved or submitted if state qualifies for interim primacy
- _ Collect and store laboratory results and other compliance data
- _ Provide technical assistance to public water systems
- _ Provide EPA with the information required under section 142.15 of the primacy rule
- _ Other_____

III-C. State Primacy Package

The primacy revision application package should consist of the following sections:

III-C.1 Section I—The State Primacy Revision Checklist (40 CFR 142.10)

This section is a checklist of general primacy requirements, taken from 40 CFR 142.10, as shown in Table III-2. In completing this checklist, the state must identify the program elements that it has revised in response to new federal requirements. If an element has been revised the state should indicate a "Yes" answer in the second column next to the list of program elements and should submit appropriate documentation. For elements that need not be revised, the state need only list the citation and date of adoption in the second column. During the application review process, EPA will insert findings and comments in the third column.

Table III-2: State Primacy Revision Checklist

Required Program Elements		Revision to State Program	EPA Findings/Comments
§142.10	Primary Enforcement – Definition of Public Water System*		
§142.10(a)	Regulations No Less Stringent		
§142.10(b)(1)	Maintain Inventory		
§142.10(b)(2)	Sanitary Survey Program		
§142.10(b)(3)	Laboratory Certification Program		
§142.10(b)(4)	Laboratory Capability		
§142.10(b)(5)	Plan Review Program		
§142.10(b)(6)(i)	Authority to apply regulations		
§142.10(b)(6)(ii)	Authority to sue in courts of competent jurisdiction		
§142.10(b)(6)(iii)	Right of Entry		
§142.10(b)(6)(iv)	Authority to require records		
§142.10(b)(6)(v)	Authority to require public notification		
§142.10(b)(6)(vi)	Authority to assess civil and criminal penalties		
§142.10(b)(6)(vii)	Authority to require CWSs to provide CCRs		
§142.10(c)	Maintenance of Records		
§142.10(d)	Variance/Exemption Conditions (if applicable)**		
§142.10(e)	Emergency Plans		
§142.10(f)	Administrative Penalty Authority*		

* New requirement from the 1996 Amendments. Regulations published in the April 28, 1998 *Federal Register*.
** New regulations published in the August 14, 1998 *Federal Register*.

The 1996 SDWA Amendments include new provisions for PWS definition and administrative penalty authority. States must adopt provisions at least as stringent as these new provisions, now codified at 40 CFR 142.2 and 142.10. Failure to revise primacy for these new provisions can affect primacy for the IESWTR. However, states may still receive primacy for the IESWTR even if they have not yet revised their base program to comply with the new statutory requirements provided that the time to adopt these requirements (including the extension period if applicable) has not expired (April 2000 and April 2002 with extension).

Rule Bundling—States may bundle the new PWS definition, administrative penalty authority, variance and exemption requirements or any other drinking water regulation with the IESWTR primacy revision packages so long as the submittal date (two years plus two year extension) has not lapsed. If states choose to bundle these requirements, the state needs to include the text of the state regulation/statute. The Attorney General statement should reference these new requirements.

III-C.2 Section II—Text of the State's Regulation (40 CFR 142.10)

Each primacy application package must include the text of the state regulation.

III-C.3 Section III—Primacy Revision Crosswalk

The Primacy Revision Crosswalk, found in Appendix A, should be completed by states in order to identify state statutory or regulatory provisions that correspond to each federal requirement. If the state's provisions differ from federal requirements, the state should explain how its requirements are "no less stringent." For the "early requirements" of the IESWTR that will be completed prior to state rule adoption, a state regulation that does not include these requirements will still be considered as stringent as the federal requirements.

III-C.4 Section IV—State Reporting and Recordkeeping Checklists (40 CFR 142.14 and 142.15)

This section addresses state reporting and recordkeeping requirements. The state should use these checklists to explain how state reporting and recordkeeping requirements are consistent with federal requirements. If state requirements are inconsistent with federal requirements, the state must explain how its requirements are "no less stringent" as per §142.10. The checklist for the IESWTR is presented in Table III-3.

Table III-3: Reporting and Recordkeeping Checklist for the IESWTR

Requirement	Are state policies consistent with federal requirements? If not, please explain.
Each state that has primary enforcement responsibility must keep records of turbidity measurements for not less than 1 year; information retained must be set forth in a form which makes possible comparison with turbidity limits specified in §§141.71, 141.73, 141.173, 141.175.	
Each state that has primary enforcement responsibility must keep records of disinfectant residual measurements and other parameters necessary to document disinfection effectiveness in accordance with §§141.72 and 141.74, and the reporting requirements of §§141.75 and 141.175; records must be kept for not less than 1 year.	
Each state that has primary enforcement responsibility must keep written records of decisions made on a system-by-system and case-by-case basis under the provisions of 40 CFR 141, subpart H or subpart P.	
Each state that has primary enforcement responsibility must keep records of systems consulting with the state concerning a modification to a disinfection practice under §141.172(c) including the status of the consultation.	
Each state that has primary enforcement responsibility must keep records of decisions that a system using alternative filtration technologies as allowed under §141.173(b) can consistently achieve 99% removal of *Cryptosporidium* oocysts; decisions must include state-set enforceable turbidity limits for each system; copy of the decision must be kept until the decision is reversed or revised; state must provide a copy of the decision to the system.	
Each state that has primary enforcement responsibility must keep records of systems required to do filter self-assessment, CPE, or CCP under the requirements of §141.175.	
Each state that has primary enforcement responsibility will keep a list of Subpart H systems that have had a sanitary survey completed during the previous year and an evaluation of the state's program for conducting sanitary surveys under §141.16(b)(3).	

III-C.5 Section V—Special Primacy Requirements (40 CFR 142.16)

See section D. This section provides guidance on how states may choose to meet each special primacy requirement.

III-C.6 Section VI—Attorney General's Statement of Enforceability (40 CFR 142.11)

The complete and final primacy revision application must include an Attorney General statement certifying that the state regulations were duly adopted and are enforceable. The Attorney General statement should

also certify that the state does not have any audit privilege or immunity laws, or if it has such laws, that these laws do not prevent the state from meeting the requirements of the Safe Drinking Water Act. If a state has submitted this certification with a previous revision package, then the state should indicate the date of submittal and the Attorney General need only certify that the status of the audit laws has not changed since the prior submittal. An example of an Attorney General statement is presented in Figure III-3.

Figure III-3: Example of Attorney General Statement

Model Language

I hereby certify, pursuant to my authority as (1) and in accordance with the Safe Drinking Water Act as amended, and (2), that in my opinion the laws of the [state / commonwealth of (3)] [or tribal ordinances of (4)] to carry out the program set forth in the "Program Description" submitted by the (5) have been duly adopted and are enforceable. The specific authorities provided are contained in statutes or regulations that are lawfully adopted at the time this Statement is approved and signed, and will be fully effective by the time the program is approved.

Guidance For States on Audit Privilege and/or Immunity Laws

In order for EPA to properly evaluate the state's request for approval, the state Attorney General or independent legal counsel should certify that the state's environmental audit immunity and/or privilege and immunity law does not affect its ability to meet enforcement and information gathering requirements under the Safe Drinking Water Act. This certification should be reasonably consistent with the wording of the state audit laws and should demonstrate how state program approval criteria are satisfied.

EPA will apply the criteria outlined in its "Statement of Principles" memo issued on 2/14/97 (*See* Appendix C) in determining whether states with audit laws have retained adequate enforcement authority for any authorized federal programs. The principles articulated in the guidance are based on the requirements of federal law, specifically the enforcement and compliance and state program approval provisions of environmental statutes and their corresponding regulations. The Principles provide that if provisions of state law are ambiguous, it will be important to obtain opinions from the state Attorney General or independent legal counsel interpreting the law as meeting specific federal requirements. If the law cannot be so interpreted, changes to state laws may be necessary to obtain federal program approval. Before submitting a package for approval, states with audit privilege and/or immunity laws should initiate communications with appropriate EPA Regional Offices to identify and discuss the issues raised by the state's audit privilege and/or immunity law.

Model Language

I. For States with No Audit Privilege and/or Immunity Laws

Furthermore, I certify that [state / commonwealth of (3)] has not enacted any environmental audit privilege and/or immunity laws.

II. For States with Audit Laws that do Not Apply to the State Agency Administering the Safe Drinking Water Act

Furthermore, I certify that the environmental [audit privilege and/or immunity law] of the [state / commonwealth of (3)] does not affect (3) ability to meet enforcement and information gathering requirements under the Safe Drinking Water Act because the [audit privilege and/or immunity law] does not apply to the program set forth in the "Program Description." The Safe Drinking Water Act program set forth in the "Program Description" is administered by (5); the [audit privilege and/or immunity law] does not affect programs implemented by (5), thus the program set forth in the "Program Description" is unaffected by the provisions of [state / commonwealth of (3)] [audit privilege and/or immunity law].

III. For States with Audit Privilege and/or Immunity Laws that Worked with EPA to Satisfy Requirements for Federally Authorized, Delegated or Approved Environmental Programs

Furthermore, I certify that the environmental [audit privilege and/or immunity law] of the [state / commonwealth of (3)] does not affect (3) ability to meet enforcement and information gathering requirements under the Safe Drinking Water Act because [state / commonwealth of (3)] has enacted statutory revisions and/or issued a clarifying Attorney General's statement to satisfy requirements for federally authorized, delegated or approved environmental programs.

_____

Seal of Office

_____
Signature

_____
Name and Title

_____
Date

(1) State Attorney General or attorney for the primacy agency if it has independent legal counsel

(2) 40 CFR 142.11(a)(6)(i) for initial primacy applications or 142.12(c)(1)(iii) for primacy program revision applications..

(3) Name of state or commonwealth

(4) Name of tribe

(5) Name of primacy agency

III-D. Guidance for IESWTR Special Primacy Requirements

This section contains guidance states can use when addressing the special primacy requirements of 40 CFR 142.16. It specifically addresses the special primacy conditions added for implementation of the Interim Enhanced Surface Water Treatment Rule (IESWTR). The guidance addresses special primacy conditions in the same order that they occur in the rule.

States should note that, in several sections, the guidance makes suggestions and offers alternatives that go beyond the minimum requirements indicated by reading the subsections of §142.16. EPA does this to provide states with information and/or suggestions that may be helpful to states' implementation efforts. Such suggestions are prefaced by "may" or "should" and are to be considered advisory. They are not required elements of states' applications for program revision.

§142.16 Special primacy requirements. (b)(1)Enforceable requirements. (ii): *States must have the appropriate rules or other authority to assure PWSs respond in writing to significant deficiencies outlined in sanitary survey reports required under paragraph (b)(3) of this section no later than 45 days after receipt of report, indicating how and on what schedule the system will address significant deficiencies noted in the survey.*

Guidance

This special primacy requirement can be satisfied by a description of statutes, rules, and other authorities the state can use to assure PWSs take the necessary actions as outlined above. The appropriate section(s) of each source of authority must be cited and copies of the written documents must be included in the program revision application package.

In their applications, states may also wish to address their authority to take administrative and/or legal actions and assess penalties. Additionally, states may include a description of the plan for using their appropriate rules and/or other authority to achieve the desired actions on the part of PWSs. The plan may include the following:

- A cover letter that would be included with the sanitary survey report that lists each significant deficiency and provides notice to the system of the regulatory requirements. The cover letter would state the date by which the system's response would be required and explain that the response would have to indicate how and on what schedule the system plans to address each significant deficiency.

- Establishment of a "tickler" file to ensure state follow up.

- Follow-up actions for non-responding systems or systems that provide inadequate responses.

§142.16 Special primacy requirements. **(b)(1) Enforceable requirements. (iii):** *States must have the appropriate rules or other authority to assure that PWSs take necessary steps to address significant deficiencies identified in sanitary survey reports required under paragraph (b)(3) of this section, if such deficiencies are within the control of the PWS and its governing body.*

Guidance

This special primacy requirement can be satisfied by a description of statutes, rules, and other authority the state can use to assure PWSs take action necessary to address significant deficiencies. The appropriate section(s) of each source of authority must be cited and copies of the written documents must be included in the revision application package. EPA does not believe that the state's existing authority to address imminent and substantial endangerment is sufficient to meet this special primacy requirement.

In addition, states may wish to address their authority to take administrative and/or legal actions and assess penalties. Additionally, states may wish to include a description of how the appropriate rules and/or other authority, including formal enforcement actions, will be used to ensure that the PWSs take the steps necessary to correct significant deficiencies within their control.

EPA believes that many states have existing authorities that are adequate to comply with the intent of this special primacy requirement. These authorities can often be found in broad statutory language designed to provide public health protection.

§142.16 Special primacy requirements. (b)(3) Sanitary survey: *In addition to the general requirements for sanitary surveys contained in §142.10.(b)(2), an application must describe how the state will implement a sanitary survey program that meets the requirements in paragraphs (b)(3)(i) through (v) of this section. For the purposes of this paragraph, "sanitary survey" means an onsite review of the water source (identifying sources of contamination using results of source water assessments where available), facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources and operations and the distribution of safe drinking water.*

Guidance

The special primacy requirements of §142.16(b)(3) describe several additional provisions states must apply to their sanitary survey programs for systems using surface water or ground water under the direct influence of surface water as a source. These provisions address the aspects of PWSs that must be evaluated during the sanitary survey, minimum frequencies for conducting the sanitary surveys, review of disinfection profiles, and identification of "significant deficiencies" that require immediate corrective action. It also offers states the flexibility to allow some post-1995 sanitary surveys to serve as the first set required under the IESWTR; to reduce the frequency of sanitary surveys necessary for community surface water systems deemed by the state to have outstanding performance; and to conduct sanitary surveys in a phased or staged manner.

The following guidance addresses each subsection of §142.16(b)(3) (i) through (v) in order. The arrangement and structure of the state's description, however, is discretionary, provided the state gives sufficient detail to demonstrate that its strategy and capacity are adequate for meeting the special primacy conditions.

References for more detailed guidance

1. Guidance Manual for Sanitary Surveys, USEPA, April 1999 (EPA 815-R-99-016)
   Available from:
   www.epa.gov/safewater/mdbp/pdf/sansurv/sansurv.pdf; and
   Safe Drinking Water Hotline: 1-800-426-4791

§142.16 Special primacy requirements. (b)(3) Sanitary survey (i)*: The state must conduct sanitary surveys for all surface water systems(including groundwater under the influence) that address the eight sanitary survey components listed in paragraphs (b)(3)(i)(A) through (H) of this section no less frequently than every three years for community systems and no less frequently than every five years for noncommunity systems. The state may allow sanitary surveys conducted after December 1995 to serve as the first set of required sanitary surveys if the surveys address the eight sanitary survey components listed in paragraphs (b)(3)(i)(A) through (H) of this section.*

(A) Source.
(B) Treatment.
(C) Distribution system.
(D) Finished water storage.
(E) Pumps, pump facilities, and controls.
(F) Monitoring and reporting and data verification.
(G) System management and operation.
(H) Operator compliance with state requirements.

Guidance

This special primacy requirement addresses both the scope of the state's sanitary surveys (eight components must be included) and the minimum frequency for conducting surveys. States should have adequate resources to comply with these requirements. States must address scope and frequency of sanitary surveys in their primacy revision application and are encouraged to address capacity and implementation as well.

Scope and frequency of sanitary surveys

The state must provide adequate information to demonstrate that the sanitary surveys to be performed address, at a minimum, the eight components listed above. In cases where the state is currently performing sanitary surveys that meet these minimum requirements, example sanitary survey forms and completed reports can be used to demonstrate that all eight elements are addressed. If the state does not believe that it currently performs sanitary surveys that meet the minimum requirements, the revision application must include details of a plan for upgrading its procedures, as necessary, including examples of sanitary survey forms that will be used and a description of training for staff in performance of sanitary surveys.

The state must show that sanitary surveys will be conducted no less frequently than every three years for community systems and no less frequently than every five years for noncommunity systems. EPA believes that in order to ensure that these surveys will be conducted as an effective preventive tool to identify and correct water system deficiencies that could pose a threat to public health, states should conduct surveys three (or five) years from the year the survey was last conducted. Thus, if a sanitary survey for a system on a three-year cycle is conducted on June 11, 2003, the next survey should be completed by December 2006.

Capacity

The state's revision application should address capacity for conducting appropriate sanitary surveys at, or in excess of, the frequency outlined in §142.16(b)(3)(i). When such capacity exists and the above requirements are being met or exceeded by an existing program, a summary of the state's sanitary survey program, including a brief description of past and future schedules, should be sufficient to demonstrate adequate capacity.

A state that does not have an existing sanitary survey program that meets these requirements should describe its proposed program and estimate the resources directed toward sanitary surveys. The state should explain how the new requirements will affect its program and whether existing resources will be adequate. When existing resources are clearly inadequate, the state should provide EPA with a plan for obtaining additional support before the compliance dates of the rule.

Implementation

Finally, the state should provide EPA with a brief description of its plan for meeting the requirements of §142.16(b)(3)(i) given existing or planned resources, the number of affected surface water systems, anticipated follow-up technical assistance and enforcement needs, and other program demands.

References for more detailed guidance

2. Guidance Manual for Sanitary Surveys, USEPA, April 1999 (EPA 815-R-99-016)
   Available from:
   www.epa.gov/safewater/mdbp/pdf/sansurv/sansurv.pdf; and
   Safe Drinking Water Hotline: 1-800-426-4791

§142.16 Special primacy requirements. (b)(3) Sanitary survey (ii)*:* *For community systems determined by the state to have outstanding performance based on prior sanitary surveys, subsequent sanitary surveys may be conducted not less than every five years. In its primacy application, the state must describe how it will decide whether a system has outstanding performance and is thus eligible for sanitary surveys at a reduced frequency.*

Guidance

This special primacy requirement allows the state to decrease the frequency of sanitary surveys for some community surface water systems from once every 3 years to once every 5 years. The provision is designed to allow states to direct their limited resources toward those systems that have the greatest potential for posing public health risks, *i.e.*, those *not* achieving outstanding performance. States must have a procedure for determining whether a system should be considered to have outstanding performance that must be integrated into the sanitary survey process. The procedure should provide inspectors with enough guidance to ensure consistent implementation.

Criteria states may wish to consider in determining outstanding performance can be found in Section 4.5 of Guidance Manual for Conducting Sanitary Surveys for Public Water Systems: Surface Water and Ground Water Under Direct Influence (GWUDI).

References for more detailed guidance

1. Guidance Manual for Sanitary Surveys: Surface Water and Ground Water Under Direct Influence (GWUDI), USEPA, April 1999 (EPA 815-R-99-016)
   Available from:
   www.epa.gov/safewater/mdbp/pdf/sansurv/sansurv.pdf; and
   Safe Drinking Water Hotline: 1-800-426-4791

§142.16 Special primacy requirements. (b)(3) Sanitary survey (iii)*:* *Components of a sanitary survey may be completed as part of a staged or phased state review process within the established frequency.*

Guidance

Section 142.16(b)(3) requires states to conduct sanitary surveys for surface water systems including groundwater under the direct influence that address eight components. In view of the fact that states often have inspections and evaluations conducted on one or more of these PWS components in program efforts separate from the sanitary surveys, the rule allows for those evaluations and inspections to be used in a staged or phased review process as long as all eight components are addressed within the required frequency. For example, the annual onsite inspection required for unfiltered systems, as one criterion to remain unfiltered, can be used to supplement a full sanitary survey. Other programs whose activities may serve to address one or more of the components include the following:

- Source Water Assessment and Protection Program
- Wellhead Protection Area Program
- Watershed Control Program
- The Composite Correction Program
- Comprehensive Performance Evaluations
- Operator Training and Certification Programs
- Technical Assistance Programs
- Capacity Development Programs

If a state wishes to conduct sanitary surveys in a staged or phased process, the primacy revision application should contain a description of relevant programs and activities, how they will be coordinated, and who the responsible parties will be for follow-up technical assistance and enforcement in response to deficiencies.

References for more detailed guidance

1. Guidance Manual for Sanitary Surveys: Surface Water and Ground Water Under Direct Influence (GWUDI), USEPA, April 1999 (EPA 815-R-99-016)

Available from:

www.epa.gov/safewater/mdbp/pdf/sansurv/sansurv.pdf; and
Safe Drinking Water Hotline: 1-800-426-4791

§142.16 Special primacy requirements. (b)(3) Sanitary survey (iv)*: When conducting sanitary surveys for systems required to comply with the disinfection profiling requirements in §141.172 of this chapter, the state must also review the disinfection profile as part of the sanitary survey.*

Guidance

EPA suggests that states address this provision under the treatment component of the general description of their existing or planned sanitary survey programs. The description should include information on how the systems that are required to prepare disinfection profiles will be identified and tracked so inspectors will know when this review is needed. Inspectors should know what format the state will expect the data to be presented in and how the state will consult with PWSs to evaluate modifications to disinfection practices so these issues can be discussed during the sanitary survey (*see* §142.16(g)(2))**.**

References for more detailed guidance

1. Disinfection Profiling and Benchmarking Guidance Manual, USEPA, August 1999 (EPA 815-R-99-013).
   Available from:
   www.epa.gov/safewater/mdbp/implement.html; and
   Safe Drinking Water Hotline: 1-800-426-4791

3. Guidance Manual for Compliance With the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources, USEPA, March 1991 (PB93-222933).
   Available from:
   NTIS
   5282 Port Royal Road
   Springfield, VA 22161
   Phone: 1-800-533-6847

   or

   AWWA
   6666 West Quincy Avenue
   Denver, CO 80235
   Phone: 1-800-926-7337

4. Guidance Manual for Sanitary Surveys: Surface Water and Ground Water Under Direct Influence (GWUDI), USEPA, April 1999 (EPA 815-R-99-016)
   Available from:
   www.epa.gov/safewater/mdbp/pdf/sansurv/sansurv.pdf; and
   Safe Drinking Water Hotline: 1-800-426-4791

§142.16 Special primacy requirements. (b)(3) Sanitary survey (v)*:* *In its primacy application, the state must describe how it will decide whether a deficiency identified during a sanitary survey is significant for the purposes of paragraph (b)(1)(ii) of this section.*

Guidance

During sanitary surveys inspectors often discover a wide range of deficiencies. Some are minor and have little near-term potential to pose risks to public health or safety. At the other end of the spectrum are those that are currently supplying drinking water that is unsafe or operating in a manner that threatens the safety of operators or the public. States must establish procedures for inspectors to use to determine the point where deficiencies become "significant."

The first step in this process should be to define a "significant deficiency." Many public health professionals believe that any aspect of a PWS (source, transmission, pumping, treatment, storage, distribution, operation, maintenance, management, etc.) that may cause, or have potential to cause, risks to public health or safety should be considered a significant deficiency. EPA does not specify the definition states must use; rather, it suggests that states use their best professional judgement and expertise to develop their own definitions. One potential definition that might be used is the following:

> **Significant deficiency:** *Any defect in a system's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that the state determines to cause, or have the potential to cause, an unacceptable risk to health or that could affect the reliable delivery of safe drinking water.*

The second step may be for the state to develop a procedure whereby inspectors can evaluate system defects and make a determination regarding "significance"(*i.e.*, does it meet the state definition?). The procedure might begin with questions to be asked about each defect. A few examples (*not intended to be complete*) of questions that may help inspectors in making determinations include the following:

- Does the deficiency cause the potential for contaminants to be introduced to the drinking water?
- If left uncorrected will the deficiency cause the potential for the introduction of contaminants at some point in the future?
- Does the deficiency affect treatment in an unacceptable manner?
- Does the deficiency pose risks to the safety of the public or operators?

Finally, it should be helpful for states to develop a list of the most commonly found deficiencies that are significant and that require immediate corrective actions. EPA would expect the list to be expanded and modified over time based upon state experience. The following are some examples, organized by each of the eight sanitary survey components, of system defects that states may consider to be significant and require immediate corrective action (also not intended to be complete).

Source

- Raw water quality monitoring that is indicative of an immediate sanitary risk.
- Activities or pollution sources in the immediate source water area that will cause sanitary risks.
- Location of a well making it vulnerable to surface water runoff.

- A well that is not properly sealed (details of what is expected should be offered regarding, sanitary seals, vents, grouting, etc.).

- Spring boxes that are poorly constructed and/or subject to flooding.

Treatment

- The disinfection contact time is inadequate.

- One or more of the unit processes is incapable of producing water that meets standards under all conditions of raw water quality.

- There are no provisions to warn operators of membrane failures.

- No disinfection profile is available for review (for systems required to develop a disinfection profile).

Distribution and transmission

- Customers are receiving, and using for drinking water, raw water from the raw water transmission main.

- The raw water transmission main is equipped with a bypass around the treatment plant and the bypass does not have an air gap to prevent unintended bypass of untreated water.

- Disinfection residuals in the distribution system regularly do not meet state requirements.

- Pressures in parts of the distribution system fall below 20 psi during peak flows.

- High leakage rates pose unacceptable risks of back siphonage.

Finished water storage

- The elevation of the storage facilities is such that pressures within the distribution system fall below 20 psi during peak demands.

- The tank is not adequately sealed to prevent entry of contamination (unscreened or poorly designed vents, overflows, hatches, etc.).

- The elevated tank has not been inspected for sanitary defects for *x* years.

Pumps, pump facilities, and controls

- The pumping station is used for storage of materials that offer unacceptable potential for contamination of the water.

- The pumping station is used for storage of materials that pose safety risks to operators.

- Cross connections are present.

- Auxiliary power is needed to keep pressures above 20 psi during commonly experienced power outages.

Monitoring, reporting and data verification

- The system has been found to be in significant non-compliance (SNC) for one or more contaminants or for disinfectant residuals, or is approaching SNC status.
- Operators are using improper procedures and/or methods when conducting onsite lab analyses.
- The system is not using a certified laboratory.
- The system has been falsifying data

System management and operation

- The system has inadequate personnel to keep the plant manned as required by state regulations.
- The system has not developed a plan for provision of water during emergencies.

Operator compliance with state requirements

- The system has no certified operator.
- The system's certified operator is not complying with the state's continuing education requirements.

States should note that the above lists of significant deficiencies are provided in this guidance as examples of deficiencies that states may determine to be significant. The final determination of what constitutes a significant deficiency will be determined by each state on a case by case basis.

References for more detailed guidance

1. Guidance Manual for Conducting Sanitary Surveys for Public Water Systems: Surface Water and Ground Water Under Direct Influence (GWUDI), USEPA, April 1999 (EPA 815-R-99-016).
   Available from:
   www.epa.gov/safewater/mdbp/implement.html; and
   Safe Drinking Water Hotline: 1-800-426-4791

2. How to Conduct a Sanitary Survey of Small Water Systems, University of Florida Training, Research and Education for Environmental Occupations Center (developed under EPA Training Grant T902854), 1998.
   Available from:
   National Environmental Training Association
   5320 North 16th St, Suite 114
   Phoenix, AZ 85016
   Phone: 602-956-6099

3. State Sanitary Survey Resource Directory, AKA EPA/State Joint Guidance on Sanitary Surveys, Association of State Drinking Water Administrators, 1995.

   Available from:

   www.asdwa.org ; or
   ASDWA
   1025 Connecticut Ave NW, Suite 903
   Washington, DC 20036

4. Guidance Manual for Compliance With the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources, USEPA, March 1991 (PB93-222933).

   Available from:

   NTIS
   5282 Port Royal Road
   Springfield, VA 22161
   Phone: 1-800-533-6847

   or

   AWWA
   6666 West Quincy Avenue
   Denver, CO 80235
   Phone: 1-800-926-7337

§142.16 Special primacy requirements. (g)(1) Enforceable requirements: *States must have the appropriate rules or other authority to require PWSs to conduct a Composite Correction Program (CCP) and to assure that PWSs implement any follow up recommendations that result as part of the CCP (See the rule for a description of the CCP components).*

Background

Many states have raised a concern regarding the interpretation of this special primacy condition and asked EPA to clarify the intent. Some states have interpreted this special primacy condition to mean the state must have the authority to require systems to implement recommendations. EPA hereby clarifies that the intent of this special primacy condition is to ask the state to describe a procedure to assure follow-up on the outcome of the CCP.

As discussed in the handbook Optimizing Water Treatment Plant Performance Using the Composite Correction Program, the CCP has been developed and demonstrated as a method of optimizing surface water treatment plant performance with respect to protection from microbial pathogens. The approach is based on establishing effective use of the available water treatment process barriers against passage of particles to the finished water. The CCP is composed of two components: 1.) Comprehensive Performance Evaluation (CPE) and 2.) Comprehensive Technical Assistance. A CPE is a through review and analysis of a plant's performance-based capabilities and associated administrative, operation, and maintenance practices as they relate to achieving optimum performance from the facility. A CPE does not identify recommendations or solutions. A CPE identifies performance limiting factors. A CTA is the performance improvement phase that is implemented if the CPE results indicate performance improvement potential.

Guidance

The first part of the special primacy requirement can be satisfied by a description of statutes, rules, and other authority (other than their imminent and substantial endangerment authority) the state can use to require PWSs to conduct a Composite Correction Program (CCP). The appropriate section(s) of each source of authority should be cited and copies of the written documents must be included in the revision application package. The state should explain how the authorities will be used to require CCPs. States may also wish to address their authority to take administrative and/or legal actions and assess penalties. The second part of this special primacy requirement can be satisfied with a description of a procedure that will be used to assure follow up on the outcome of a CCP.

Additionally, states should note that this requirement of the IESWTR is intended to ensure that states have authority to require comprehensive performance evaluations or comprehensive technical assistance in situations beyond those in which the IESWTR establishes the requirement for CPEs. Therefore, states may wish to consider other circumstances under which the requirement for performing a CPE or CTA might be desirable. States should consider development of prioritization procedures for targeting systems that need CPEs and should determine what performance-limiting factors (A, B, or C factors) should be corrected. To obtain the authority to ensure that systems conduct a CTA when necessary, states may want to add a requirement in their regulations that would require systems to go through with a CTA when the CPE required by the triggers in §141.175 of the rule show that a CTA would be beneficial.

Another consideration for states is that §141.175 of the IESWTR requires systems, under certain circumstances, to have a CPE conducted by the state or a third party approved by the state. If a state does not have adequate resources to conduct the expected CPEs, it may wish to begin development of a procedure for approving third parties that have the necessary expertise and meet other criteria established by the state.

References for more detailed guidance

1. Optimizing Water Treatment Plant Performance Using the Composite Correction Program, USEPA, Revised August 1998 (EPA/625/6-91/027).
   Available from:
   Safe Drinking Water Hotline: 1-800-426-4791

2. Optimizing Water Treatment Plant Performance Using the Composite Correction Program, USEPA, February 1991 (EPA/625/6-91/027).
   Available from:
   Safe Drinking Water Hotline: 1-800-426-4791

3. Summary Report: Optimizing Water Treatment Plant Performance With the Composite Correction Program, USEPA, 1990 (EPA/625/8-90/017).
   Available from:
   Safe Drinking Water Hotline: 1-800-426-4791

§142.16 Special primacy requirements. (g)(2) State practices or procedures. (i)*:* *Section 141.172(a)(3) of this chapter—How the state will approve a more representative annual data set other than the data set determined under §141.172(a)(1) or (2) of this chapter for the purpose of determining applicability of the requirements of §141.172 of this chapter.*

*NOTE: Systems which requested the use of a more representative annual data set must have had this request approved by the state such that applicable systems would begin disinfection profiling by April 1, 2000. This one-time provision occurs prior to the date which states are required to submit their primacy application. Therefore, a state's primacy application which does not address the above provision (§142.16(g)(2)(i)) will still be considered complete. However, if a state chooses to address the above special primacy condition, the guidance below will aid the state in doing so.

Guidance

Section 141.172(a)(3) allows systems to request the state to approve their use of a more representative data set for determining if the system is required to develop a disinfection profile. Requests for approval to use a more representative data set may occur when a system has modified its treatment in a manner such that the data collected pursuant to §141.172(a)(1) or (2) no longer reflect the potential for production of disinfection byproducts. Use of a more representative data set would also be appropriate if the sampling, handling, and/or analysis of the data collected pursuant to §141.172(a)(1) or (2) were of questionable quality. Alternative data may also be necessary due to atypical climatological events or changes in source water.

EPA believes that requests for use of alternative data sets are best handled by states on a case-by-case basis. Therefore, to meet this special primacy requirement, states' applications for program revision must demonstrate that each request for use of a more representative data set will be evaluated on its merits and approved only when a data set exists, or can be collected within the established time frame, that is more representative of the system's potential for production of disinfection byproducts.

References for more detailed guidance

1. Disinfection Profiling and Benchmarking Guidance Manual, USEPA, August 1999 (EPA 815-R-99-013).

   Available from:
   www.epa.gov/safewater/mdbp/implement.html; and
   Safe Drinking Water Hotline: 1-800-426-4791

2. Microbial and Disinfection Byproduct Rules Simultaneous Compliance Guidance Manual, USEPA, August 1999 (EPA 815-R-99-015).
   Available from:
   www.epa.gov/safewater/mdbp/implement.html; and
   Safe Drinking Water Hotline: 1-800-426-4791

§ 142.16 Special primacy requirements. (g)(2) State practices or procedures. (ii): *Section 141.172(b)(5) of this chapter—How the state will approve a method to calculate the logs of inactivation for viruses for a system that uses either chloramines or ozone for primary disinfection.*

Guidance

Section 141.172(b)(5) of the IESWTR requires systems that use ozone or chloramines as primary disinfectants to calculate the logs of inactivation of viruses using a method approved by the state. This calculation is in addition to the calculation of the logs inactivation for *Giardia lamblia* and is required because, for these disinfectants, EPA expects greater CT will be necessary to achieve the necessary virus inactivation than will be necessary for inactivation of *Giardia lamblia.* In their primacy revision applications, states must describe how they will approve a method to calculate the logs of inactivation for viruses.

When determining virus inactivation, PWSs will be required to calculate the total CT from the point(s) of disinfectant application to the first customer. This procedure for determining CT for purposes of disinfection profiling under the IESWTR is outlined in §141.172(b) of the rule. It differs from that of the Surface Water Treatment Rule (SWTR) guidance which simply required a demonstration that minimum inactivation requirements were being met but did not require a demonstration of the extent to which the requirements were exceeded.

After the PWS has determined its daily peak hour's CT, it must determine the logs of inactivation for viruses. EPA suggests that states, to the extent practicable, use the *Guidance Manual for Compliance With the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources* (SWTR Guidance Manual) for determining how systems should calculate the logs of inactivation of viruses, and thus meet this special primacy requirement. Suggested methods of doing so are as follows:

For systems using chloramines as a primary disinfectant

Table E-13 of the SWTR Guidance Manual presents CT values for 2 log, 3 log, and 4 log inactivation of viruses by chloramine at temperatures ranging from <1E C to 25E C. The table is appropriate for use by systems that add chlorine prior to ammonia and, therefore, get some benefit of a short-lived free chlorine residual. The basis for the inactivation values in Table E-13, is discussed in Appendix F (Section F.2.3 Chloramines) of the manual. Systems that add the two chemicals concurrently, or those adding ammonia first, have little free chlorine and cannot use Table E-13 but may determine viral inactivation efficiencies by using the protocol found in Appendix G of the manual.

For systems using ozone as a primary disinfectant

Table E-11 of the SWTR Guidance Manual shows CT values for 2 log, 3 log, and 4 log inactivation of viruses by ozone over a temperature range of <1E C to 25E C. EPA believes it to be appropriate for states to have PWSs use Table E-11 for calculating the logs of inactivation of viruses. Appendix F (F.2.4 Ozone) of the SWTR Guidance Manual offers a short discussion of the basis for the values in the table.

Other methods

States may approve other methods for calculation of the logs of inactivation for viruses for systems using ozone or chloramines as long as the methods are adequately explained in the primacy revision application and are technically correct.

References for more detailed guidance

1. Guidance Manual for Compliance With the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources, USEPA, March 1991 (PB93-222933).
   Available from:
   NTIS
   5282 Port Royal Road
   Springfield, VA 22161
   Phone: 1-800-533-6847
   or
   AWWA
   6666 West Quincy Avenue
   Denver, CO 80235
   Phone: 1-800-926-7337

2. Alternative Disinfectants and Oxidants Guidance Manual, USEPA, April 1999 (EPA 815-R-99-014).
   Available from:
   www.epa.gov/safewater/mdbp/implement.html; and
   Safe Drinking Water Hotline: 1-800-426-4791

***§142.16 Special primacy requirements. (g)*(2) State practices or procedures. (iii):** *Section 141.172(c) of this chapter—How the state will consult with PWSs to evaluate modifications to disinfection practice.*

Guidance

The IESWTR requires systems to develop a disinfection profile if they have concentrations of TTHM or HAA5 at or above 80 percent of the respective maximum contaminant levels. Systems that are required to develop disinfection profiles, and that later want to make a significant change to their disinfection practice, must consult with the state prior to making such change. As described in §141.172(c)(1) of the IESWTR, significant changes include:

- Changes to the point of disinfection
- Changes to the disinfectant(s) used in the treatment plant
- Changes to the disinfection process
- Any other modification identified by the state

Examples of state-identified modifications may include source water, pretreatment, contact basin geometry and baffling, or in some instances changes in pH.

This requirement of the IESWTR is intended to ensure that systems attempting to reduce disinfection byproduct production do not make changes that cause unintended and unacceptable increases in microbial risks. In order for §141.172(c)(1) of the IESWTR to be effective, states must identify all systems that are required to develop a disinfection profile and provide them with guidance in terms of when, and under what circumstances, consultation is necessary. It should be noted that the IESWTR requires "consultation" with the state but does not prescribe the outcome of the consultation.

In their applications for program revision, states must explain how they will consult with systems to evaluate changes in disinfection practices. EPA suggests that states, in the consultation process, consider the following:[2]

- Why the change is being proposed.
- The positive impacts of the change.
- The negative impacts of the change.
- The alternative benchmark.
- Are there alternatives that achieve the desired goal and, if so, have they been evaluated?

Finally, the state should work with the PWS in an effort to reach a conclusion that considers, weighs, and balances the risks of microbial contaminants and disinfection byproducts. Ultimately, the state and system should jointly make a public-health-based decision using all available information.

References for more detailed guidance

1. Disinfection Profiling and Benchmarking Guidance Manual, USEPA, August 1999 (EPA 815-R-99-013).
   Available from:
   www.epa.gov/safewater/mdbp/implement.html; and
   Safe Drinking Water Hotline: 1-800-426-4791

2. Microbial and Disinfection Byproduct Rules Simultaneous Compliance Guidance Manual, USEPA, August 1999 (EPA 815-R-99-015).
   Available from:
   www.epa.gov/safewater/mdbp/implement.html; and
   Safe Drinking Water Hotline: 1-800-426-4791

[2] More detailed guidance and strategies for simultaneous achievement of acute and chronic public health protection are addressed in the two listed EPA references.

***§142.16 Special primacy requirements. (g)*(2) State practices or procedures.(iv)*:** *Section 141.173(b) of this chapter—For filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration, how the state will determine that a public water system may use a filtration technology if the PWS demonstrates to the state, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of §141.172(b) of this chapter, consistently achieves 99.9 percent removal and/or inactivation of* Giardia lamblia *cysts and 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of* Cryptosporidium *oocysts. For a system that makes this demonstration, how the state will set turbidity performance requirements that the system must meet 95% of the time and that the system may not exceed at any time at a level that consistently achieves 99.9 percent removal and/or inactivation of* Giardia lamblia *cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of* Cryptosporidium *oocysts.*

Guidance

The SWTR and IESWTR establish performance standards for several long-established types of surface water treatment technologies, including conventional treatment, direct filtration, slow sand filtration, and diatomaceous earth filtration. These technologies, when properly designed and operated, used in conjunction with disinfection and contact time, and applied to appropriate surface waters, are capable of protecting against the health risks associated with *Giardia lamblia*, *Legionella*, viruses, *Cryptosporidium*, and other pathogens. Section 141.173(b) of the IESWTR allows PWSs to use technologies other than those mentioned above if they demonstrate to the state's satisfaction that the chosen technology consistently meets the rule's minimum removal and inactivation requirements, and the state approves the use of the technology. When the state grants approval for the use of alternative technologies, it must establish a turbidity performance limit the system must meet at least 95 percent of the time and a turbidity limit the system may not exceed at any time. The state must set the turbidity limits at levels that ensure the removal and/or inactivation requirements are consistently achieved.

To qualify for the authority to use the discretion provided for by §141.173(b) of the IESWTR, states must, in their primacy revision application, describe how they will determine whether a PWS will or will not be granted approval for use of an alternative technology *and* how the state will establish the requisite turbidity performance standards.

Most states have a review and approval process that addresses all significant modifications to PWSs (not just alternative technologies). In their review of treatment technologies, states generally consider all relevant components necessary to provide consistently safe drinking water including raw water quality and its variability, pretreatment needs, design flow rates, disinfection, storage, monitoring, and operation and maintenance requirements. Because alternative technologies generally do not have long performance histories to base approval/permitting decisions upon, states may wish to apply an additional margin of scrutiny in their review process. The technologies should be evaluated not only on the basis of finished water quality, but also with consideration of operational complexities, the potential for cross connections, redundancy, the ability to handle variable raw water qualities, leaching of contaminants, and long term reliability. Pilot studies are often necessary to adequately demonstrate that an alternative technology is appropriate for use at a particular site.

Guidance has been developed for states to use in determining how to grant approvals for alternative technologies. This guidance generally does not address the current concern for *Cryptosporidium*. The protocols that have been developed and used to assess the performance of technologies in terms of *Giardia lamblia* removal may, however, be revised for *Cryptosporidium* removal evaluations. EPA recommends that states consider the guidance on these issues presented in Section 4.3.7 and Appendix M of the SWTR Guidance Manual (reference 3) as well as the Western States Workgroup's *Consensus Protocol for Evaluation and Acceptance of Alternate Surface Water Filtration Technologies in Small System Applications*, 1992 (reference 1). The protocol developed by the Western States Workgroup establishes a

procedure and criteria for evaluation of alternative filtration technologies and should be particularly useful. The following is an outline of the protocol's procedural steps.

1) System component evaluation for leaching of contaminants.
2) Demonstration of *Giardia* (and *Cryptosporidium*) removal performance.
   a. Microscopic Particulate Analyses (MPA).
   b. *Giardia/Cryptosporidium* surrogate particle removal evaluations.
   c. Particle size analysis demonstration for *Giardia* (and *Cryptosporidium*) removal credit.
   d. Live *Giardia/Cryptosporidium* challenge studies.
3) On-site demonstration of performance effectiveness.
   a. Prior testing of an identical system on a similar water.
   b. Conditional acceptance with a performance bond.
   c. Pilot testing with MPAs, appropriate monitoring, and final engineering report.

The final step in the process is for states to establish turbidity limits for the technologies. This was not necessary under the SWTR's requirements because the limits for alternative technologies defaulted to the performance limits established for slow sand filtration. When establishing the performance limits, states should give consideration to, among other things, cyst removal efficiencies, potential for interference with disinfection, potential for interference with bacteriological testing, and the technology (failure indicators) redundant components.

References for more detailed guidance

1. Consensus Protocol for Evaluation and Acceptance of Alternate Surface Water Filtration Technologies in Small System Applications, Western States Workgroup, April 1992.
   Available from:
   Safe Drinking Water Hotline: 1-800-426-4791

2. State Alternative Technology Approval Protocol, Association of State Drinking Water Administrators/USEPA, 1996.
   Available from:
   www.asdwa.org; or
   ASDWA
   1025 Connecticut Avenue, NW Suite 903
   Washington, DC 20036

3. Guidance Manual for Compliance With the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources, USEPA, March 1991 (PB93-222933).
   Available from:
   NTIS
   5282 Port Royal Road
   Springfield, VA 22161
   Phone: 1-800-533-6847
   or
   AWWA
   6666 West Quincy Avenue
   Denver, CO 80235
   Phone: 1-800-926-7337

Section IV.

Other Resources and Guidance

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IV-A. Technical Information Available on the IESWTR

A series of guidance manuals support the IESWTR. The manuals will aid EPA, state agencies, and affected PWSs in implementing this rule and will help ensure that implementation among these groups is consistent. Summaries of the manuals and information on how to obtain them are provided below. The six technical guidance manuals associated with the IESWTR are:

- Disinfection Profiling and Benchmarking Guidance Manual
- Guidance Manual for Compliance with the Interim Enhanced Surface Water Treatment Rule: Turbidity Provisions
- Alternative Disinfectants and Oxidants Guidance Manual
- Guidance Manual for Conducting Sanitary Surveys of Public Water Systems
- Uncovered Finished Water Reservoirs Manual
- Microbial and Disinfection Byproducts Rules Simultaneous Compliance Guidance Manual

Disinfection Profiling and Benchmarking Guidance Manual (EPA 815-R-99-013)

Objective: Help determine if a disinfection profile (an evaluation of current disinfection practices) is required and how to do one; when a disinfection benchmark must be determined and how to extract it from the profile, and; how a PWS must use the benchmark, in consultation with the state, to assure protection from microbial risk is maintained when the system changes its disinfection practice.

Contents: The manual provides detailed information on the following subjects: applicability of the profiling and benchmarking requirements to public water systems; procedures for generating a disinfection profile, including example profiles; methods for calculating the disinfection benchmark, including example calculations; the use of the benchmark in modifying disinfection practices, communication with the state, and assessing significant changes to disinfection practices; the development of the profiling and benchmarking regulations; the significance of the log inactivation concept and CT values for inactivations achieved by various disinfectants; and the determination of contact time.

Guidance Manual for Compliance with the Interim Enhanced Surface Water Treatment Rule: Turbidity Provisions (EPA 815-R-99-010)

Objective: The first section provides information regarding specific requirements of the IESWTR relating to turbidity and is intended for experienced operators and others in the regulated community. The second section of the document provides background on concepts surrounding turbidity and serves as a primer for less experienced operators and individuals.

Contents: The first section contains key regulatory requirements, including combined filter effluent monitoring and individual filter monitoring; recordkeeping and reporting requirements; additional compliance issues, such as compliance schedules, public notification, variances/exemptions, and follow-up action requirements; approved methods and additional methods and additional measurement and calibration issues; components and description of a filter self-assessment, and; components and description of a Comprehensive Performance Evaluation. The second section of the manual includes more basic information on turbidity; description of the particles (both natural and man-made) that typically contribute to turbidity; discussion of typical steps in a treatment process and how turbidity is removed or created in each step; discussion of turbidity in different source waters with an emphasis of how changes in source water affect turbidity, and; basic turbidimeter design.

Alternative Disinfectants and Oxidants Guidance Manual (EPA 815-R-99-014)

Objective: To provide technical data and engineering information on disinfectants and oxidants that are not as commonly used as chlorine so that systems can evaluate their options for developing disinfection schemes to control water quality problems such as zebra mussels and Asiatic clams, and oxidation to control water quality problems associated with iron and manganese.

Contents: The manual discusses six disinfectants and oxidants: ozone, chlorine dioxide, potassium permanganate, chloramines, ozone/hydrogen peroxide combinations, and ultraviolet light. A decision tree is provided to assist in evaluating which disinfectant, or disinfectants, is most appropriate given certain site-specific conditions (e.g., water quality conditions, existing treatment, and operator skill). The manual also contains a summary of existing alternative disinfectants used in the U.S. and cost estimates for the use of alternative disinfectants.

Guidance Manual for Conducting Sanitary Surveys of Public Water Systems (EPA 815-R-99-016)

Objective: Provides an overview of how to conduct a sanitary survey of all water systems using surface water and ground water under the direct influence of surface water. It is intended to help state agencies improve their sanitary survey programs where needed.

Contents: The manual provides information about the objective and regulatory context of sanitary surveys. It covers four principal stages of a sanitary survey: planning, including preparatory steps to be taken by inspectors before conducting the on-site portion conducting the on-site survey, compiling a sanitary survey report, and performing follow-up activities.

Uncovered Finished Water Reservoirs Manual (EPA 815-R-99-011)

Objective: To provide information on ways to limit water quality degradation in existing uncovered finished water reservoirs.

Contents: Provides detailed information on the following subjects: developing and implementing comprehensive open finished water reservoir management plans based on site-specific conditions; identifying potential sources of contamination in open finished water reservoirs and potential mitigation measures; employing different methods to control the degradation of water quality while it resides in the reservoir; monitoring schemes that can be used to characterize water quality and identify water quality degradation before it becomes severe and difficult to correct.

Microbial and Disinfection Byproducts Rules Simultaneous Compliance Guidance Manual (EPA 815-R-99-015)

Objective: To assist PWSs on complying simultaneously with various drinking water regulations (e.g., Stage 1 DBPR, IESWTR, Lead and Copper Rule, and the Total Coliform Rule). The manual discusses operational problems systems may encounter when implementing these rule.

Contents: The manual provides detailed information on the requirements in the Stage 1 DBPR and the IESWTR.

Links to these manuals can be found at the website:
www.epa.gov/safewater/mdbp/implement.html.

They are also available free of charge (while supplies last) from:

- The National Service for Environmental Publications (NSCEP, formerly NCEPI) at 1.800.490.9198
- The Office of Water Resource Center at 1.202.260.7786.

Customers can purchase these documents for a fee from:

- The National Technical Information Service (NTIS) at 1.800.553.6847.

For more information, contact EPA's Safe Drinking Water Hotline at 1.800.426.4791.

IV-B. Profiling Spreadsheet

An electronic spreadsheet to assist PWSs performing disinfection profiles is available on the EPA web site (see http://www.epa.gov/safewater/mdbp/implement.html).

IV-C. List of Labs Approved to Perform Analysis for the ICR

For an updated list, please refer to the Safe Drinking Water Hotline (1.800.426.4791) or the EPA web site (www.epa.gov/ogwdw/lablist/lname.html).

IV-D. Rule Presentation

A presentation that can be used for workshops for the IESWTR is available in Power Point format on the Drinking Water Academy web site.
(http://www.epa.gov/safewater/dwa/electronic/M-DBPmodule.html).

IV-E. Fact Sheets

The following pages are fact sheets on the rules. They may be useful in conveying information to water systems, new personnel, and for educating stakeholders about the rules. The fact sheets are included in this section are:

- Drinking Water Priority Rulemaking: Microbial and Disinfection Byproduct Rules
- Interim Enhanced Surface Water Treatment Rule
- Disinfection Profiling and Benchmarking
- Interim Enhanced Surface Water Treatment Rule: Quick Reference Guide

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United States Environmental Protection Agency | Office of Water (4607) | EPA 816-F-01-012 June 2001

Drinking Water Priority Rulemaking: Microbial and Disinfection Byproduct Rules

Disinfection of drinking water is one of the major public health advances in the 20th century. One hundred years ago, typhoid and cholera epidemics were common throughout American cities and disinfection was a major factor in reducing these epidemics. However, the disinfectants themselves can react with naturally-occurring materials in the water to form unintended byproducts which may pose health risks.

Over the past ten years, we have also learned that there are specific microbial pathogens, such as *Cryptosporidium*, that are highly resistant to traditional disinfection practices. In 1993, *Cryptosporidium* caused 400,000 people in Milwaukee to experience intestinal illness. More than 4,000 were hospitalized, and at least 50 deaths have been attributed to the disease. There have also been cryptosporidiosis outbreaks in Nevada, Oregon, and Georgia over the past several years.

A major challenge for water suppliers is how to balance the risks from microbial pathogens and disinfection byproducts. It is important to provide protection from these microbial pathogens while simultaneously ensuring decreasing health risks to the population from disinfection byproducts (DBPs). The Safe Drinking Water Act (SDWA) Amendments, signed by President Clinton in August 1996, required EPA to develop rules to achieve these goals.

These new rules are a product of six years of collaboration between the water industry, environmental and public health groups, and local, state and federal government. This fact sheet contains general information about the two new rules and others that are a part of the Microbial-Disinfectants and Disinfection Byproducts (M-DBP) Rules. Separate fact sheets focus on the Interim Enhanced Surface Water Treatment Rule (EPA 816-F-01-013) and the Stage 1 Disinfectants and Disinfection Byproducts Rule (EPA 816-F-01-014).

Schedule of M-DBP Rules

December 16, 1998 – Final Rule	Interim Enhanced Surface Water Treatment Rule and Stage 1 Disinfectants and Disinfection Byproducts Rule
June 8, 2001 – Final Rule	Filter Backwash Recycling Rule
Summer 2001 – Final Rule	Long Term 1 Enhanced Surface Water Treatment Rule
Spring/Summer 2002 – Final Rule	Ground Water Rule
May 2002 – Final Rule	Long Term 2 Enhanced Surface Water Treatment Rule and Stage 2 Disinfectants and Disinfection Byproducts Rule

PUBLIC HEALTH CONCERNS

Most Americans drink tap water that meets all existing health standards all the time. These new rules will further strengthen existing drinking water standards and thus increase protection for many water systems.

In 1990, EPA's Science Advisory Board concluded that exposure to microbial contaminants such as bacteria, viruses, and protozoa (e.g., *Giardia lamblia* and *Cryptosporidium*) was likely the greatest remaining health risk management challenge for drinking water suppliers. Acute health effects from exposure to microbial pathogens is documented and associated illness can range from mild to moderate cases lasting only a few days to more severe infections that can last several weeks and may result in death for those with weakened immune systems.

While disinfectants are effective in controlling many microorganisms, they react with natural organic and inorganic matter in source water and the distribution system to form potentially harmful DBPs. Many of these DBPs have been shown to cause cancer and reproductive and developmental effects in laboratory animals. More than 200 million people consume water that has been disinfected. Because of the large population exposed, health risks associated with DBPs, even if small, need to be taken seriously.

EXISTING REGULATIONS

C Surface Water Treatment Rule – The Surface Water Treatment Rule, promulgated in 1989, applies to all public water systems using surface water sources or ground water sources under the direct influence of surface water. It establishes maximum contaminant level goals (MCLGs) for viruses, bacteria and Giardia lamblia. It also includes treatment technique requirements for filtered and unfiltered systems that are specifically designed to protect against the adverse health effects of exposure to these microbial pathogens.

- Total Coliform Rule – The Total Coliform Rule, revised in 1989, applies to all PWSs and establishes a maximum contaminant level (MCL) for total coliforms.

C Total Trihalomethane Rule – In 1979, EPA set an interim MCL for total trihalomethanes of 0.10 mg/l as an annual average. This applies to any community water system serving at least 10,000 people that adds a disinfectant to the drinking water during any part of the treatment process.

- Information Collection Rule – The Information Collection Rule, promulgated in 1996, established monitoring and data reporting requirements for large public water systems serving at least 100,000 people to support the M-DBP rulemaking process. This rule was intended to provide EPA with information on the occurrence in drinking water of microbial pathogens and DBPs. In addition, EPA collected engineering data on how PWSs currently control such contaminants.

INTERIM ENHANCED SURFACE WATER TREATMENT RULE AND STAGE 1 DISINFECTANTS AND DISINFECTION BYPRODUCTS RULE

EPA published the Interim Enhanced Surface Water Treatment Rule and Stage 1 Disinfectants and Disinfection Byproducts Rule in December 1998. The final rules resulted from formal regulatory negotiations with a wide range of stakeholders that took place in 1992-93 and 1997.

Interim Enhanced Surface Water Treatment Rule

The Interim Enhanced Surface Water Treatment Rule applies to systems using surface water, or ground water under the direct influence of surface water, that serve 10,000 or more persons. The rule also includes provisions for states to conduct sanitary surveys for surface water systems regardless of system size. The rule builds upon the treatment technique requirements of the Surface Water Treatment Rule with the following key additions and modifications:

- 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 public water systems.
- Requirements for covers on new finished water storage facilities.
- Sanitary surveys, conducted by states, for all surface water systems regardless of size.

The Interim Enhanced Surface Water Treatment Rule, with tightened turbidity performance criteria and required individual filter monitoring, is designed to optimize treatment reliability and to enhance physical removal efficiencies to minimize the *Cryptosporidium* levels in finished water. In addition, the rule includes disinfection benchmark provisions to assure continued levels of microbial protection while facilities take the necessary steps to comply with new DBP standards.

Stage 1 Disinfectants and Disinfection Byproducts Rule

The final Stage 1 Disinfectants and Disinfection Byproducts Rule applies to community water systems and non-transient non-community systems and transient noncommunity systems using chlorine dioxide, (including systems serving fewer than 10,000 people), that add a disinfectant to the drinking water during any part of the treatment process.

The Stage 1 Disinfectants and Disinfection Byproducts Rule includes the following key provisions:

- Maximum residual disinfectant level goals (MRDLGs) for chlorine (4 mg/L), chloramines (4 mg/L), and chlorine dioxide (0.8 mg/L).

- Maximum contaminant level goals (MCLGs) for three trihalomethanes (bromodichloromethane (zero), dibromochloromethane (0.06 mg/L), and bromoform (zero)), two haloacetic acids (dichloroacetic acid (zero) and trichloroacetic acid (0.3 mg/L)), bromate (zero), and chlorite (0.8 mg/L).

- MRDLs for three disinfectants (chlorine (4.0 mg/L), chloramines (4.0 mg/L), and chlorine dioxide (0.8 mg/L)).

- MCLs for total trihalomethanes (0.080 mg/L) - a sum of the three listed above plus chloroform, haloacetic acids (HAA5) (0.060 mg/L)- a sum of the two listed above plus monochloroacetic acid and mono- and dibromoacetic acids), and two inorganic disinfection byproducts (chlorite (1.0 mg/L)) and bromate (0.010 mg/L)).

- A treatment technique for removal of DBP precursor material.

The terms MRDLG and MRDL, which are not included in the SDWA, were created during the negotiations to distinguish disinfectants (because of their beneficial use) from contaminants. The rule also includes monitoring, reporting, and public notification requirements for these compounds and describes the best available technology (BAT) upon which the MRDLs and MCLs are based.

FUTURE RULES

Long Term 1 Enhanced Surface Water Treatment Rule

While the Stage 1 Disinfectants and Disinfection Byproducts Rule will apply to systems of all sizes, the Interim Enhanced Surface Water Treatment Rule only applies to systems serving 10,000 or more people. The Long Term 1 Enhanced Surface Water Treatment Rule, expected in 2001, will strengthen microbial controls for small systems (i.e. those systems serving fewer than 10,000 people). The rule will also prevent significant increase in microbial risk where small systems take steps to implement the Stage 1 Disinfectants and Disinfection Byproducts Rule.

EPA believes that the rule will generally track the approaches in the Interim Enhanced Surface Water Treatment Rule for improved turbidity control, including individual filter monitoring and reporting. The rule will also address disinfection profiling and benchmarking.

Long Term 2 Enhanced Surface Water Treatment Rule and Stage 2 Disinfectants and Disinfection Byproduct Rule

The SDWA, as amended in 1996, requires EPA to finalize a Stage 2 Disinfectants and Disinfection Byproducts Rule by May 2002. Although the 1996 Amendments do not require EPA to finalize a Long Term 2 Enhanced Surface Water Treatment Rule along with the Stage 2 Disinfectants and Disinfection Byproducts Rule, EPA believes it is important to finalize these rules together to ensure a proper balance between microbial and DBP risks.

EPA began discussions with stakeholders in December 1998 on the direction for these rules. EPA anticipates proposed rules in 2001. The intent of the rules is to provide additional public health protection, if needed, from DBPs and microbial pathogens.

Ground Water Rule

EPA is finalizing the Ground Water Rule which specifies the appropriate use of disinfection and, just as importantly, addresses other components of ground water systems to ensure public health protection. There are more than 158,000 public ground water systems. Almost 89 million people are served by community ground water systems, and 20 million people are served by non-community ground water systems. Ninety-nine percent (157,000) of ground water systems serve fewer than 10,000 people. However, systems serving more than 10,000 people serve 55 percent (more than 60 million) of all people who get their drinking water from public ground water systems.

Filter Backwash Recycling Rule

The Filter Backwash Recycling Rule establishes a standard to return all recycle flows to a point that incorporates all treatment processes of the system's existing conventional or direct filtration systems or at an alternate location approved by the state. The regulation will apply to public water systems that use surface water or ground water under the direct influence of surface water, practice conventional or direct filtration, and recycle spent filter backwash, sludge thickener supernatant, or liquids from dewatering processes. The rule was promulgated on June 8, 2001.

ADDITIONAL INFORMATION

EPA encourages public input into regulation development. Public meetings and opportunities for public comment on M-DBP rules are announced in the *Federal Register*. EPA's Office of Ground Water and Drinking Water also provides this information for the M-DBP rules and other programs in its online Calendar of Events.

For more information, contact EPA's Safe Drinking Water Hotline, 1-800- 426-4791, or see the Office of Ground Water and Drinking Water web page at http://www.epa.gov/safewater/standards.html.

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United States Environmental Protection Agency | Office of Water (4607) | EPA 816-F-01-013 June 2001

Interim Enhanced Surface Water Treatment Rule

Disinfection of drinking water is one of the major public health advances in the 20th century. One hundred years ago, typhoid and cholera epidemics were common through American cities and disinfection was a major factor in reducing these epidemics. However, the disinfectants themselves can react with naturally-occurring materials in the water to form unintended byproducts which may pose health risks.

In the past ten years, however, we have learned that there are specific microbial pathogens, such as *Cryptosporidium*, that are resistant to traditional disinfection practices. In 1993, *Cryptosporidium* caused 400,000 people in Milwaukee to experience intestinal illness. More than 4,000 were hospitalized, and at least 50 deaths have been attributed to the disease. There have also been cryptosporidiosis outbreaks in Nevada, Oregon, and Georgia over the past several years.

Amendments to SDWA in 1996 require EPA to develop rules to balance the risks. It is important to strengthen protection against microbial contaminants, especially *Cryptosporidium*, and at the same time, reduce potential health risks from disinfection byproducts. The new Interim Enhanced Surface Water Treatment Rule and Stage 1 Disinfectants and Disinfection Byproducts Rule are among the first of a set of rules under the Amendments. This fact sheet focuses on the Interim Enhanced Surface Water Treatment Rule. A separate fact sheet focuses on the Stage 1 Disinfectants and Disinfection Byproducts Rule (EPA 816-F-01-014).

PUBLIC HEALTH CONCERNS FROM MICROBIAL CONTAMINANTS IN DRINKING WATER

In 1990, EPA's Science Advisory Board concluded that exposure to microbial contaminants such as bacteria, viruses, and protozoa (e.g., *Giardia lamblia* and *Cryptosporidium*) was likely the greatest remaining health risk management challenge for drinking water suppliers. Acute health effects from exposure to microbial pathogens is documented and associated illness can range from mild to moderate cases lasting only a few days to more severe infections that can last several weeks and may result in death for those with weakened immune systems.

WHO MUST COMPLY WITH THE RULE?

The Interim Enhanced Surface Water Treatment Rule applies to public water systems that use surface water or ground water under the direct influence of surface water (GWUDI) and serve at least 10,000 people. In addition, states are required to conduct sanitary surveys for all surface water and GWUDI systems, including those that serve fewer than 10,000 people.

WHAT DOES THE RULE REQUIRE?

The Interim Enhanced Surface Water Treatment Rule amends the existing Surface Water Treatment Rule to strengthen microbial protection, including provisions specifically to address *Cryptosporidium*, and to address risk trade-offs with disinfection byproducts. The final rule includes treatment requirements for the waterborne pathogen *Cryptosporidium*. In addition, systems must continue to meet existing requirements for *Giardia lamblia* and viruses. Specifically, the rule includes:

- 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 for systems using conventional and direct filtration.
- Individual filter turbidity monitoring provisions for systems using conventional and direct filtration.
- 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 public water systems.
- Requirements for covers on new finished water storage facilities.
- Sanitary surveys, conducted by states, for all surface water systems regardless of size.

The rule, with tightened turbidity performance criteria and individual filter monitoring requirements, is designed to optimize treatment reliability and to enhance physical removal efficiencies to minimize the *Cryptosporidium* levels in finished water. Turbidity requirements for combined filter effluent will remain at least every four hours, but continuous monitoring (record results every 15 minutes) will be required for individual filters at conventional and direct filtration plants. In addition, the rule includes disinfection profiling and benchmarking provisions to assure continued levels of microbial protection while facilities take the necessary steps to comply with new DBP standards.

WHAT ARE THE COMPLIANCE DEADLINES?

States have until December 16, 2000 to adopt and implement the requirements of this regulation. States may request up to a two year extension to adopt the rule. Simultaneous compliance with the Stage 1 Disinfectants and Disinfection Byproduct Rule, promulgated at the same time as IESWTR, will be achieved as follows:

Public water systems that use surface water or ground water under the direct influence of surface water, either in whole or in part, and serve a population of 10,000 or more generally must comply with requirements of this rule by January 1, 2002. Systems with elevated levels of disinfection by-products were required to develop a disinfection profile beginning no later than March 31, 2000. In cases where capital improvements are needed to comply with the rule, states may grant systems up to an additional two years to comply.

WHAT ARE THE COSTS AND BENEFITS OF THE RULE?

EPA estimates that implementation of the Interim Enhanced Surface Water Treatment Rule will:

- Improvements in filtration at water systems will increase public health protection by reducing the level of exposure to *Cryptosporidium* and other pathogens (i.e., *Giardia*, or other waterborne bacterial or viral pathogens) in drinking water supplies ;

- Decrease the likelihood of endemic (constant low-level presence of a disease or infection) illness from *Cryptosporidium* by 110,000 to 463,000 cases annually and related health costs, as well as incidences of illness from *Giardia* and other waterborne pathogens; and,

- Reduce the likelihood of the occurrence of outbreaks of cryptosporidiosis (illness from *Cryptosporidium)* and their associated economic costs by providing a larger margin of safety against such outbreaks for some systems.

The total annualized national cost for implementing the Interim Enhanced Surface Water Treatment Rule is $307 million. EPA believes that the benefits exceed the costs. The rule will result in increased costs to public water systems for improved turbidity treatment, monitoring, disinfection benchmarking and covering new finished water storage facilities, as well as state implementation costs.

EPA estimates that 92 percent of households will incur an increase in their water bill of less than $1 per month; 7 percent of households will incur an increase in their water bills of between $1 - $5 per month; and less than 1 percent will incur an increase of between $5-8 per month.

WHAT TECHNICAL INFORMATION WILL BE AVAILABLE ON THE RULE?

A series of guidance manuals have been developed to support the Interim Enhanced Surface Water Treatment Rule. The manuals will aid EPA, state agencies and affected public water systems in implementing the IESWTR. The guidance manual are available on EPA's website at www.epa.gov/safewater/mdbp/implement.html.

Disinfection Benchmarking Guidance Manual

Objective: To help determine if a disinfection profile (an evaluation of current disinfection practice) is required and how to do one; when a disinfection benchmark must be determined and how to extract it from the profile; and how a public water system must use the benchmark, in consultation with the state, to assure protection from microbial risk is maintained when the system changes disinfection practice.

Contents: The manual provides detailed information on the following subjects: applicability of the profiling and benchmarking requirements to public water systems; procedures for generating a disinfection profile, including example profiles; methods for calculating the disinfection benchmark, including example calculations; the use of the benchmark in modifying disinfection practices, communicating with the state, and assessing significant changes to disinfection practices; the development of the profiling and benchmarking regulations; the significance of the log inactivation concept and CT values for inactivations achieved by various disinfectants; and the determination of contact time.

Guidance Manual for Compliance with the Interim Enhanced Surface Water Treatment Rule: Turbidity Provisions

Objective: The first section provides technical information regarding specific requirements of the Interim Enhanced Surface Water Treatment Rule relating to turbidity and is intended for experienced operators and others in the regulated community. The second section of the document provides background on concepts surrounding turbidity and serves as a primer for less experienced operators and individuals.

Contents: The first section contains key regulatory requirements including combined filter effluent monitoring and individual filter monitoring; recordkeeping and reporting requirements; additional compliance issues such as compliance schedule, public notification, variances/exemptions, and follow-up action requirements; approved methods and additional measurement and calibration issues; components and description of an filter self-assessment; and components and description of a Comprehensive Performance Evaluation. The second section of the manual includes more basic information on turbidity; description of the particles (both natural and man-made) which typically contribute to turbidity; discussion of typical steps in a treatment process and how turbidity is removed or created in each step; discussion of turbidity in different source waters with an emphasis of how changes in source water effect turbidity; and basic turbidimeter design.

Alternative Disinfectants and Oxidants Guidance Manual

Objective: To provide technical data and engineering information on disinfectants and oxidants that are not as commonly used as chlorine, so that systems can evaluate their options for developing disinfection schemes to control water quality problems such as zebra mussels and Asiatic clams, and oxidation to control water quality problems associated with iron and manganese.

Contents: The manual discusses six disinfectants and oxidants: ozone, chlorine dioxide, potassium permanganate, chloramines, ozone/hydrogen peroxide combinations, and ultraviolet light. A decision tree is provided to assist in evaluating which disinfectant(s) is most appropriate given certain site-specific conditions (e.g., water quality conditions, existing treatment and operator skill). The manual also contains a summary of existing alternative disinfectants use in the United States and cost estimates for the use of alternative disinfectants.

Microbial and Disinfection Byproducts Simultaneous Compliance Manual

Objective: To assist public water systems on complying simultaneously with various drinking water regulations (e.g., Stage 1 Disinfectants and Disinfection Byproducts Rule, Interim Enhanced Surface Water Treatment Rule, Lead and Copper Rule and the Total Coliform Rule). The manual discusses operational problems systems may encounter when implementing these rules.

Contents: The manual provides detailed information on the requirements in the Stage 1 Disinfectants and Disinfection Byproducts Rule and the Interim Enhanced Surface Water Treatment Rule and issues involved with simultaneously complying with other rules.

Guidance Manual for Conducting Sanitary Surveys of Public Water Systems

Objective: The guidance manual provides an overview of how to conduct a sanitary survey of all water systems using surface water and ground water under the direct influence of surface water. It is intended to help state agencies improve their sanitary survey programs where needed.

Contents: The manual provides information about the objective and regulatory context of sanitary surveys. It covers four principal stages of a sanitary survey: planning, including preparatory steps to be taken by inspectors before conducting the onsite portion; conducting the onsite survey; compiling a sanitary survey report; and performing follow-up activities.

Uncovered Finished Water Reservoirs

Contents: The manual provides detailed information on the following subjects: developing and implementing comprehensive open finished water reservoir management plans based on site-specific conditions; identifying potential sources of contamination in open finished water reservoirs and potential mitigation measures; employing different methods to control the degradation of water quality while it resides in the reservoir; monitoring schemes that can be used to characterize water quality and identify water quality degradation before it becomes severe and is difficult to correct.

For more information, contact EPA's Safe Drinking Water Hotline, 1.800.426.4791, or see the Office of Ground Water and Drinking Water web page at http://www.epa.gov/safewater/standards.html.

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United States Environmental Protection Agency | Office of Ground Water and Drinking Water Washington, DC 20460 | EPA 816-F-98-017b December 16, 1998

Fact Sheet: Disinfection Profiling and Benchmarking

The Interim Enhanced Surface Water Treatment Rule (IESWTR) requires certain public water systems (PWSs) to evaluate their disinfection practices and work with the state to assure there are no unintended reductions in microbial protection

Is your PWS affected?

Your PWS is affected if it is a surface water or GWUDI* system that—

- **Serves 10,000 or more people; and,**
- **Has Total Trihalomethanes $ 0.064 mg/L or Haloacetic Acids $ 0.048 mg/L.**

The process consists of the following 3 steps:

- Ø Determining if a PWS must develop a disinfection profile—§141.172 (a)
- Ù Developing the disinfection profile—§141.172 (b)
- Ú Calculating the disinfection benchmark and consulting with the state—§141.172 (c)

* Ground water under the direct influence (of surface water)

Ø Determining if a PWS Must Develop a Disinfection Profile

How can a PWS determine if it must develop a disinfection profile?

A PWS determines if it must establish a disinfection profile using 4 consecutive quarters of TTHM and HAA5 data. If the PWS has an annual average level of TTHM $ 0.064 mg/L or an annual average level of HAA5 $ 0.048mg/L, it must then develop a disinfection profile.

Alternatively, a PWS may choose to develop a disinfection profile and not collect these data.

How should a PWS collect TTHM and HAA5 data?

- Most PWSs serving 100,000 or more people have collected TTHM and HAA5 data under the **1996 Information Collection Rule (ICR)**. These systems must use these data (from calendar year 1998) to determine if they must profile, unless the state determines there is a more representative data set for them to use. PWSs must submit these data to the state no later than **December 1999** (Timeline Milestone ã).

- A PWS that has not collected data under the ICR but has 4 consecutive quarters of **TTHM compliance data and HAA5 occurrence data** may use these data to determine if it must profile. The PWS must submit these data to the state for approval no later than **April 1999** (Timeline Milestone â).

Which labs may conduct analyses for HAA5?

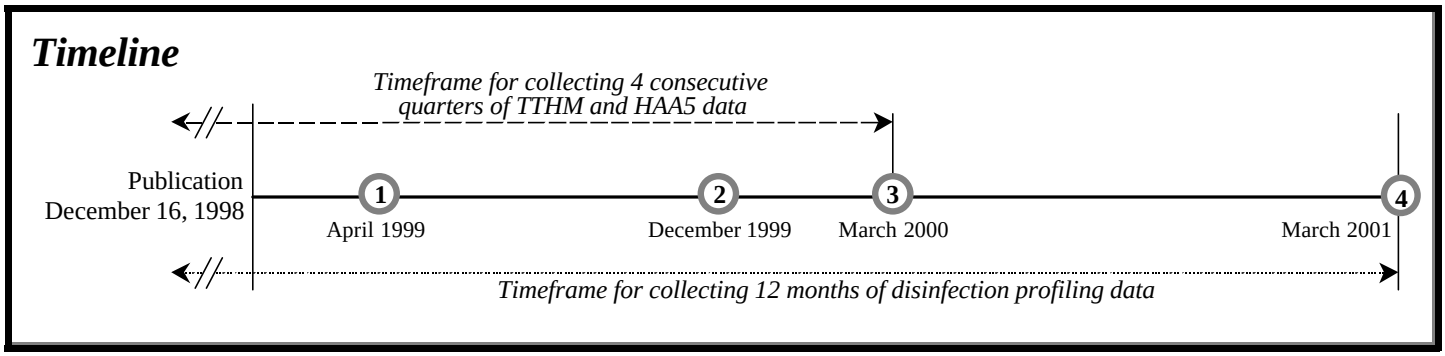
- Any lab that received approval under the 1996 ICR
- Any lab using ICR-approved methods

- A PWS that has **no data or inadequate data** for TTHM and HAA5 should collect 4 consecutive quarters of data. The PWS should submit these data to the state and determine whether or not to develop a disinfection profile no later than **March 2000** (Timeline Milestone ä).

What are the monitoring requirements for TTHM and HAA5 data?

- TTHM and HAA5 data must be collected during the same quarter.
- For TTHM, samples must be taken in accordance with current TTHM monitoring requirements under 40 *CFR* 141.12 and 141.30. For HAA5, at least 4 samples must be taken per plant per quarter in accordance with **routine** monitoring requirements under 40 *CFR* 141.12 and 141.30.
- At least 25 percent of the samples for TTHM and HAA5 shall be taken at locations within the distribution system reflecting maximum residence time of the water in the system.
- The remaining 75 percent of the samples for TTHM and HAA5 shall be taken at representative locations in the distribution system, taking into account the number of people served, the different sources of water, and the different treatment methods employed.
- Analytical Methods and Handling Requirements

TTHM:	EPA	502.2	HAA5:	EPA	552.1
	EPA	524.2		EPA	552.2
	EPA	551		Std.	6251 B



Ù Developing the Disinfection Profile

How does a PWS develop a disinfection profile?

- The disinfection profile is developed by compiling daily *Giardia lamblia* log inactivations computed over a period of **12 months**. In addition, a disinfection profile for daily virus log inactivations must be developed for PWSs that use either chloramines or ozone for primary disinfection. The log inactivation values are calculated using daily measurements of operational data collected during peak-hour flows. This disinfection profiling must be completed no later than **March 2001** (Timeline Milestone å).

- A PWS that has **3 years of existing operational data** may use these data to develop a disinfection profile as long as the state has determined that these data are substantially equivalent to data that would be collected under the IESWTR.

- The PWS must keep the disinfection profile on file to be reviewed during its Sanitary Survey.

Ú Calculating the Disinfection Benchmark and Consulting with the State

A PWS required to develop a disinfection profile that subsequently decides to make a significant modification to its disinfection practice must calculate a disinfection benchmark and consult with the state prior to implementing such a change. The state consultation process helps assure that the PWS will meet the new disinfection byproduct standards without compromising protection from microbial contaminants.

How does a PWS calculate a disinfection benchmark?

A disinfection benchmark is an indicator of disinfection effectiveness and depends upon 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 system has data from more than 1 year, it repeats this calculation for each year. The benchmark is the average of the lowest month's value for each of the years.

What are significant modifications to a disinfection practice?

Significant modifications to disinfection practices include:

- Changes to the point of disinfection
- Changes to the disinfection process
- Changes to the disinfectant(s) used in the treatment plant
- Any other modification identified by the state

PLEASE LOOK INSIDE:

Your water system is expected to be affected by the requirements of the new IESWTR

More information can be obtained from:

- Your state's primacy agency
- The EPA Safe Drinking Water Hotline, Telephone: 1.800.426.4791

EPA

United States
Environmental Protection Agency
(4101)
Washington, DC 20460

Bulk Rate
Postage and Fees Paid
EPA
G-35

Official Business
Penalty for Private Use
$300

United States Environmental Protection Agency
Office of Water (4606)
EPA 816-F-01-011
May 2001
www.epa.gov/safewater

Interim Enhanced Surface Water Treatment Rule: A Quick Reference Guide

Overview of the Rule

Title	Interim Enhanced Surface Water Treatment Rule (IESWTR) 63 FR 69478 - 69521, December 16, 1998, Vol. 63, No. 241 Revisions to the Interim Enhanced Surface Water Treatment Rule (IESWTR), the Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR), and Revisions to State Primacy Requirements to Implement the Safe Drinking Water Act (SDWA) Amendments 66 FR 3770, January 16, 2001, Vol 66, No. 29
Purpose	Improve public health control of microbial contaminants, particularly *Cryptosporidium*. Prevent significant increases in microbial risk that might otherwise occur when systems implement the Stage 1 Disinfectants and Disinfection Byproducts Rule.
General Description	Builds upon treatment technique approach and requirements of the 1989 Surface Water Treatment Rule. Relies on existing technologies currently in use at water treatment plants.
Utilities Covered	Sanitary survey requirements apply to all public water systems using surface water or ground water under the direct influence of surface water, regardless of size. All remaining requirements apply to public water systems that use surface water or ground water under the direct influence of surface water and serve 10,000 or more people.

Major Provisions

Regulated Contaminants

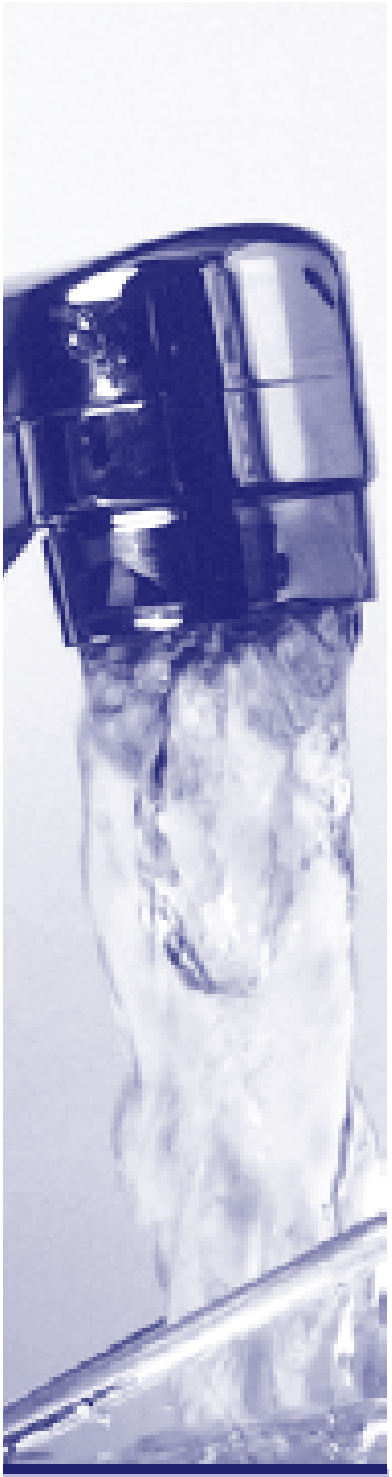
Cryptosporidium	▸ Maximum contaminant level goal (MCLG) of zero. ▸ 99 percent (2-log) physical removal for systems that filter. ▸ Include in watershed control program for unfiltered systems.
Turbidity Performance Standards	Conventional and direct filtration combined filter effluent: ▸ £ 0.3 nephelometric turbidity units (NTU) in at least 95 percent of measurements taken each month. ▸ Maximum level of 1 NTU.

Turbidity Monitoring Requirements (Conventional and Direct Filtration)

Combined Filter Effluent	▸ Performed every 4 hours to ensure compliance with turbidity performance standards.
Individual Filter Effluent	▸ Performed continuously (every 15 minutes) to assist treatment plant operators in understanding and assessing filter performance.

Additional Requirements

- Disinfection profiling and benchmarking.
- Construction of new uncovered finished water storage facilities prohibited.
- Sanitary surveys, conducted by the state, for all surface water and ground water under the direct influence of surface water systems regardless of size (every 3 years for community water systems and every 5 years for noncommunity water systems).



For additional information on the IESWTR

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at www.epa.gov/safewater; or contact your State drinking water representative.

Additional material is available at www.epa.gov/safewater/mdbp/implement.html.

Profiling and Benchmarking

Public water systems must evaluate impacts on microbial risk before changing disinfection practices to ensure adequate protection is maintained. The three major steps are:

- **Determine if a public water system needs to profile based on TTHM and HAA5 levels (applicability monitoring)**
- **Develop a disinfection profile that reflects daily *Giardia lamblia* inactivation for at least a year (systems using ozone or chloramines must also calculate inactivation of viruses)**
- **Calculate a disinfection benchmark (lowest monthly inactivation) based on the profile and consult with the state prior to making a significant change to disinfection practices**

Critical Deadlines and Requirements

For Drinking Water Systems

February 16, 1999	Construction of uncovered finished water reservoirs is prohibited.
March 1999	Public water systems lacking ICR or other occurrence data begin 4 quarters of applicability monitoring for TTHM and HAA5 to determine if disinfection profiling is necessary.
April 16, 1999	Systems that have 4 consecutive quarters of HAA5 occurrence data that meet the TTHM monitoring requirements must submit data to the state to determine if disinfection profiling is necessary.
December 31, 1999	Public water systems with ICR data must submit it to states to determine if disinfection profiling is necessary.
April 1, 2000	Public water systems must begin developing a disinfection profile if their annual average (based on 4 quarters of data) for TTHM is greater than or equal to 0.064 mg/L or HAA5 is greater than or equal to 0.048 mg/L.
March 31, 2001	Disinfection profile must be complete.
January 1, 2002	Surface water systems or ground water under the direct influence of surface water systems serving 10,000 or more people must comply with all IESWTR provisions (e.g., turbidity standards, individual filter monitoring).

For States

December 16, 2000	States submit IESWTR primacy revision applications to EPA (triggers interim primacy).
January 2002	States begin first round of sanitary surveys.
December 16, 2002	Primacy extension deadline - all states with an extension must submit primacy revision applications to EPA.
December 2004	States must complete first round of sanitary surveys for community water systems.
December 2006	States must complete first round of sanitary surveys for noncommunity water systems.

Public Health Benefits

Implementation of the IESWTR will result in . . .	▸ Increased protection against gastrointestinal illnesses from *Cryptosporidium* and other pathogens through improvements in filtration. ▸ Reduced likelihood of endemic illness from *Cryptosporidium* by 110,000 to 463,000 cases annually. ▸ Reduced likelihood of outbreaks of cryptosporidiosis.
Estimated impacts of the IESWTR include . . .	▸ National total annualized cost: $307 million ▸ 92 percent of households will incur an increase of less than $1 per month. ▸ Less than 1 percent of households will incur an increase of more than $5 per month (about $8 per month).

IV-F. Frequently Asked Questions

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1.0 Interim Enhanced Surface Water Treatment Rule

1.1 *Cryptosporidium*

For further information, see the following rule sections:

Citation	Part Title
§141.32(e)(10)	Public Notification
§141.201	Public Notification of Drinking Water Violations
§141.52	Maximum Contaminant Level Goals for Microbiological Contaminants

Q: *Why do filtered systems have a* Cryptosporidium *removal requirement and unfiltered systems do not?*

A: Systems that have met the SWTR filtration avoidance criteria must now incorporate *Cryptosporidium* into their watershed protection programs. If a system meeting the SWTR avoidance criteria fails to address *Cryptosporidium* under the IESWTR, they will be required to filter within 18 months to meet the removal requirements. As before, any failure to meet the SWTR avoidance criteria requires filtration within 18 months. More stringent requirements may be placed on systems avoiding filtration in future regulations.

Q: *Can a system use UV for* Cryptosporidium *inactivation and receive credit for it under the IESWTR?*

A: A system may use UV; however, it cannot use UV to meet the requirements of the IESWTR. A system must physically remove 99 percent of oocysts using filtration *alone*.

Q: *Is an oocyst that is not viable considered to be* Cryptosporidium *or not?*

A: Since the rule requires systems to measure turbidity, not the viability of oocysts, it is not relevant to the enforceable requirements of the rule. Present analytical methods cannot reliably distinguish between oocysts that are infective or viable and those that are not.

Q: *What does EPA have in mind in terms of* Cryptosporidium *controls on the watershed?*

A: The same types of prevention measures that have been taken to address *Giardia* may be used to address *Cryptosporidium*. Whether or not additional steps are needed will be determined by an onsite assessment of each watershed, currently conducted by the states on an annual basis. Each water system should assess potential sources of *Cryptosporidium* in its watershed and identify and carry out measures to control the potential adverse impacts on water quality from these sources. Ultimately monitoring should help to determine if these measures have been successful in controlling the sources, but monitoring is not currently required by the regulations due to limitations of the analytical methods.

Q: *Does the* Cryptosporidium *MCLG of zero apply to all species or just* Cryptosporidium *parvum?*

A: The MCLG was set at the genus level because EPA believes that adequate data are not available to determine that only *Cryptosporidium parvum* infects humans.

1.2 Disinfection Profiling And Benchmarking

For further information, see the following rule sections:

Citation	Part Title
§141.172(a)	Disinfection Profiling and Benchmarking (Determination of systems required to profile)
§141.172(b)	Disinfection Profiling and Benchmarking (Disinfection profiling)
§141.172(c)	Disinfection Profiling and Benchmarking (Disinfection benchmarking)

Q: *Why are systems required to collect TTHM and HAA5 data to determine applicability for disinfection profiling under the IESWTR?*

A: For surface water systems that chlorinate, and most do, some of the conditions (e.g. increased disinfectant dose and increased contact time) that accelerate creation of TTHMs and HAA5 are identical to those that increase inactivation ratios for viruses and *Giardia lamblia* cysts. Therefore, it is logical that surface water systems that have elevated TTHMs and/or HAA5 will consider adjusting these variables to reduce the level of disinfection byproducts. Disinfection profiling and benchmarking is designed to ensure such adjustments are not made without giving full consideration of the positive and negative impacts.

Q: *Can the TTHM and HAA5 data collected for applicability monitoring be used to qualify for reduced monitoring for the Stage 1 DBPR?*

A: The data can be used if the samples were collected at the appropriate location and frequency as required by §141.132(b)(1)(i) (i.e. routine monitoring) and were analyzed by a certified laboratory using approved methods under §141.132 or approved ICR methods. Samples collected for applicability monitoring only do not have to be analyzed by a certified lab, but the lab must use approved ICR analytical methods.

Q: *What exactly is meant by consultation with the state for systems making changes to their disinfection process?*

A: EPA believes that states will consult relatively extensively with systems making significant changes to disinfection. Most states have extensive procedures in place for approval of water system modifications. The rule does not require the consultation to be a specific process or require specific types of documentation, however, states must describe "how they will consult" in their primacy revision application (§ 142.16(h)) .

Q: *Will systems be required to calculate another disinfection benchmark after implementation of enhanced coagulation under the Stage 1 DBPR begins?*

A: Benchmarking is a one-time provision under the IESWTR. It does not have to be repeated when processes are changed a second time. EPA believes a similar process will be carried out in most states for every change in disinfection.

Q: *What if you use one watershed with low levels of DBPPs for x months and then switch to another watershed with higher levels of DBPPs?*

A: The system should discuss the change in source with the state and the state should determine if the disinfection profile is representative of normal operating conditions. Although not required by the regulation, the state may choose to have the system perform an additional profile before allowing modifications. Also, the state and system should review the data together to determine its value for decision making and use it accordingly.

Q: *May a system use data from many years ago (e.g., 7 or 8 years ago) to develop a disinfection profile under the IESWTR?*

A: The rule does not specify which years of data can be grandfathered for profiling, however, a state should carefully review older data to determine if it is still representative of normal operating conditions. The profile must reflect inactivation through the entire treatment plant.

Q: *If a system does not have to submit its profile to the state upon completion, how can the state determine if the system is in compliance with this provision?*

A: A state will determine system compliance with this provision during the system's sanitary survey.

Q: *Does a water system serving 10,000 or more people, which purchases water from a Subpart H system that has decided to go directly to profiling, need to perform applicability monitoring?*

A: No, as long as the purchased water is the only Subpart H source serving the system. Both the seller and the purchaser need to inform the state of this decision by December 31, 1999, and should clearly indicate that the purchaser is not performing the applicability monitoring because the seller has decided to go directly to profiling. The state should have documentation that there is an agreement between the seller and purchaser.

Q: *How should a system develop a disinfection profile under the IESWTR if it experiences emergency conditions requiring addition of high levels of disinfectants while gathering data?*

A: As part of the consultation with the state, the system should note any effect on the benchmark caused by the emergency. An emergency that is only a few hours or days in duration will likely be averaged out, since daily results are part of an average. The system and state should put any unusual situation in proper prospective when consulting over the benchmark and make decisions accordingly.

Q: *If a system does not normally operate for 12 consecutive months, how will it collect 4 quarters of applicability monitoring data necessary to determine whether the system is required to profile?*

A: Seasonal systems should collect samples for the quarters they operate and base the applicability determination on all available sample data. The system has the option to forego TTHM/HAA5 applicability monitoring and conduct profiling. The disinfection profile would be developed for the months the system is operational.

Q: *Is there an advantage for systems to begin monitoring early for TTHM and HAA5?*

A: Yes. In addition to addressing the early requirements of the IESWTR for Subpart H systems serving $10,000, systems will know more about their treatment process, and seasonal variations. EPA would also encourage systems with conventional treatment to initiate TOC monitoring to assess the need to meet treatment technique requirements of the Stage 1 DBPR.

Q: *Is switching from gas to liquid (or vice versa) chlorine considered a "significant change" for the purposes of setting a benchmark and consulting with the state?*

A: No, switching from gas to liquid, or liquid to gas, chlorine would not be considered a significant change, but states may require notification of such change.

Q: *What happens when ICR data has missing values or the state believes the data is not representative? Must this "bad data" still be used to determine if a disinfection profile must be developed?*

A: The state may determine whether or not to consider the ICR data "bad." If the state determines that TTHM and HAA5 data are not representative, the state should inform the system and ask the system to collect TTHM and HAA5 data to determine if profiling is necessary.

Q: *If a system is planning to switch to ozone for protozoan control and will, as a result, decrease virus inactivation, should the state discourage the system from making this switch?*

A: Not necessarily. The state should carefully examine the treatment operations in the system and the source water. The ultimate determination should be made on a case-by-case basis. The *Disinfection Profiling and Benchmarking Guidance Manual* contains more detailed information.

Q: *Will there be an electronic template for calculating CT values?*

A: An electronic template has been developed and is available with other technical assistance materials related to these rules on EPA's Website (www.epa.gov/safewater/mdbp/implement.html).

Q: *Since we are putting a burden on the system to develop a disinfection profile can we limit the time of year that monitoring is required to focus on the worst case?*

A: No. Affected systems serve 10,000 or more people and generally already collect all or most of the information necessary for developing a profile. Regardless of whether or not they already have the data, the rule requires systems to develop a 1-year disinfection profile (unless the system does not operate year-round; then the profile is developed for the months the seasonal system is operational). The full year is necessary to examine the maximum possible disinfection, water use, and water quality scenarios. In addition, the full year of data will provide information to the systems on seasonal strategies to achieve compliance.

Q: *If a system is on reduced monitoring for TTHM, does it have to return to routine monitoring for the applicability monitoring under the IESWTR?*

A: No, for the purpose of applicability monitoring, the system may remain on reduced monitoring for TTHM samples. EPA believes that the samples, because they are taken at a point in the distribution system that represents the maximum residence time, are a worst case sample. Systems are however, required to take 4 quarters of routine samples for HAA5 for the profiling applicability monitoring, as most non-ICR systems have not monitored for HAA5.

Q: *What if a system has some HAA5 data but not four samples per plant (incomplete data)? Do they have to collect more samples to see if disinfection profiling is necessary?*

A: The system would have to collect a full data set meeting the requirements of the rule or notify the state by December 31, 1999 that they will go directly to profiling.

Q: *If initial TTHM and HAA5 levels suggest that the final annual average will exceed the levels that trigger disinfection profiling, can a system go directly to profiling, or must they complete the monitoring?*

A: The system can go directly to profiling. It must, however, notify the state in writing of its intent to do so by December 31, 1999.

Q: *Is there any difference in the requirements for calculation of* Giardia lamblia *and virus inactivation between the IESWTR's disinfection profiling requirements and the SWTR's requirements?*

A: The Surface Water Treatment Rule requires Subpart H systems to show they meet a minimum level of inactivation for *Giardia lamblia* and viruses, but only unfiltered systems are required to use the CT procedure. However, many systems exceed the minimum requirements by a large margin.

The IESWTR, on the other hand, requires systems to show the inactivation achievable through the entire treatment plant (from point(s) of disinfectant application to the first user). When systems are considering changes to disinfection practices, this showing of full inactivation potential is important for ascertaining the full impact of those changes on microbial protection.

Q: *If a system needs to temporarily increase its chlorine levels in response to an emergency during the year of the disinfection profile—is the profile still valid?*

A: Yes, the profile would still be valid. The profile should cover each day the system is operating and short-term increases in disinfectant levels should have little effect on the final benchmark. Systems and states can put unusual circumstances in perspective when they consult over a disinfection benchmark.

Q: *Under the disinfection profiling and benchmarking provisions of the IESWTR, must a system take TTHM and HAA5 samples at the same time? If the system wishes to use grandfathered data, do the data have to have been collected at the same time?*

A: EPA intends to liberally interpret the "at the same time" provisions of §141.172 such that TTHM and HAA5 samples would be deemed acceptable for applicability determinations if they are collected during the same four quarters.

Q: *What is the consequence of "failure to develop a profile"?*

A: If a system is required to develop a disinfection profile under the provisions of §141.172 and fails to do so, this failure would constitute a treatment technique violation.

Q: *Can a state approve a treatment change while the profiling requirement is in place but before profiling is complete? What about treatment changes already approved?*

A: The requirement to prepare a disinfection profile is triggered by elevated levels of TTHMs or HAA5 pursuant to §141.172(a)(6), or by notification of the state of its intent to comply with the disinfection profiling requirement as if the applicability monitoring had been conducted and the results required the preparation of the disinfection profile. Once the profiling requirement has been triggered, no significant changes can be made to the system's disinfection practices without consultation with the state. However, the state can consult with the system and allow changes they determine to be appropriate prior to beginning or completing the disinfection profile. The EPA recognizes that it may not always be practical to postpone necessary changes in disinfection practices until completion of the profile.

Q: *Can a system use 6 months of ICR data and 6 months of monitoring data if the state approves it as better than the final 12 months of ICR data?*

A: Yes, a system would be able to use this data if approved by the state as a more representative data set under the provisions of §141.172 (a)(4) or (5)(v).

Q: *Under §141.172(b)(2), a system with more than one point of disinfection must conduct monitoring at each disinfection segment to measure pH, temperature, and CT values. Can a system use data from a worst case scenario (maximum flow) to satisfy this requirement?*

A: The rule requires that monitoring be performed at each disinfection segment. The *Disinfection Profiling and Benchmarking Guidance Manual* contains more detailed information.

Q: *Can states use a different method to calculate a disinfection profile?*

A: States must require systems to develop disinfection profiles as provided in §141.172(b)(4) and (5). States always have the option to adopt rules that are equally or more stringent to those of EPA. This option offers the possibility that state's might develop alternative procedures that EPA could find to be equally stringent and protective of public health.

Q: *There is a note in the* Guidance Manual for Compliance With the Filtration and Disinfection Requirements for PWSs Using Surface Water Sources *that the CT values for inactivation of viruses by chloramines expressed in Table E-13 are suitable for use only with systems that add chlorine prior to ammonia. Is this true and, if so, why?*

A: The above referenced guidance manual was specifically designed to aid systems in complying with the SWTR, not the IESWTR. As explained in the guidance, the CT values in Table E-13

were based directly on experimental data developed using preformed chloramines to determine inactivation of Hepatitis A Virus (HAV). HAV is less resistant to preformed chloramines than are some other viruses including rotavirus. Rotavirus is, on the other hand, very sensitive to free chlorine and, in field practices where chlorine is added prior to ammonia, it was assumed there would be sufficient contact time with free chlorine to inactivate the rotavirus. When preformed chloramines are used or when ammonia is added prior to chlorine, the free chlorine will not be available for inactivation of rotavirus. For these reasons, Table E-13 should not be used to determine compliance with the inactivation requirements of the SWTR when ammonia is added prior to chlorine or when preformed chloramines are used. The guidance manual suggests that inactivation studies be performed in these cases to ensure adequate inactivation of viruses. The IESWTR, however, requires development of a disinfection profile so a disinfection benchmark can be calculated. Changes in disinfection practices are then to be measured against the benchmark to ensure that there is no unintended reduction in microbial protection when systems change disinfection practices to comply with the Stage 1 DBPR. For the purpose of developing a disinfection profile, the data in Table E-13 is acceptable as long as all profiles and subsequent benchmarks are developed in a similar manner so that comparisons of benchmarks are consistent.

1.3 Turbidity Standards (Combined Filter Effluent)

For further information, see the following rule sections:

Citation	Part Title
§141.73(a)(3)	Filtration
§141.173(a), (b)	Filtration

Q: *In terms of compliance with the combined filter effluent turbidity levels, does 0.3 NTU really mean 0.349 NTU and does 1 NTU really mean 1.49 NTU?*

A: Yes, due to rounding of significant figures.

Q: *A system may substitute continuous turbidity monitoring for grab sample monitoring every four hours. Which results of the continuous monitoring would the system report?*

A: The system is required to record results every four hours. Each month, the system must report the total number of filtered water turbidity measurements recorded, the number and percentage of the recorded measurements taken which are less than or equal to 0.3 NTU, and the date and value of recorded measurements greater than 1 NTU.

1.4 Individual Filter Provisions

For further information, see the following rule sections:

Citation	Part Title
§141.174(a), (b)	Filtration Sampling Requirements
§141.175(a), (b)	Reporting and Recordkeeping Requirements
§142.16(g)(1)	Special Primacy Requirements

Q: *As a system brings filters on line, at different times, do they need separate timers on each filter or can they take all readings on the quarter hour (i.e. 3:00, 3:15, 3:30, etc.)?*

A: Taking all readings on the quarter hour would meet the intent of the rule.

Q: *Is particle counting an adequate substitute for continuous turbidity monitoring?*

A: No, particle counting may not be used as a substitute for continuous turbidity monitoring. However, EPA encourages the use of particle counters for optimization of process control.

Q: *Some package plants and/or filters are constructed so that it is not possible to install the continuous turbidimeters on each filter bed and perform this monitoring. How do you resolve this issue?*

A: Individual filter monitoring is a requirement of the rule for all Subpart H systems serving 10,000 or more persons that use conventional or direct filtration. This is to ensure public health protection for the maximum number of people. Configurations which do not allow for such plumbing, such as a Greenleaf Filter Plant or certain automatic backwash filters, can be considered one filter and can monitor the combined effluent from the unit every 15 minutes to determine compliance with the individual filter requirements. Systems which believe that they fall under this category should consult with the state. However, it is likely that some of these plants/filters are plumbed such that they can install turbidimeters on individual filters, and therefore should.

Q: *What if a plant exceeds a turbidity trigger for an individual filter while performing filter to waste? Does this need to be reported? Is it a violation?*

A: The turbidity requirements apply only to water that will become part of the combined filter effluent of the plant. Filtered wastewater turbidity does not need to be measured or reported and should not have violations associated with it.

Q: *Does each filter need its own turbidimeter or can several filters be connected to one turbidimeter?*

A: The rule doesn't preclude the use of a single turbidimeter to measure and record the turbidity of multiple filters. A state would have to find that this would be an appropriate methodology for measuring and recording compliance with the individual filter reporting and recordkeeping requirements.

Q: *When a system exceeds the rule-established individual filter turbidity trigger levels in two consecutive measurements taken 15 minutes apart, certain corrective actions are required to be completed within designated time frames. When does the clock start running on those time limits?*

A: The time for completing the necessary corrective actions begins immediately after the second of the two measurements that exceed the "trigger" level.

Q: *How should a system deal with spiked turbidimeter readings for hours (sometimes as many as 12 hours) after the turbidimeter (not the filter it is monitoring) has been cleaned?*

A: EPA believes that the duration of these kinds of spiked readings should normally be a matter of minutes, not hours. A turbidimeter returning inaccurate readings for more than a few minutes should be overhauled or replaced. In the event that inaccurate spikes lasted for a longer period of time, the system would have the option of measuring and recording turbidity at 15 minute intervals using a bench top turbidimeter until the on-line unit returned to normal.

Q: *If a system is required to have a Comprehensive Performance Evaluation (CPE) conducted by the state or a third party, is the system liable if the state or third party does not conduct the CPE within 90 days (and the delay is clearly the fault of the state or third party, not the system)?*

A: If the Comprehensive Performance Evaluation is not completed and the report submitted to the state within 90 days, a violation is triggered and must be reported. However, the state can exercise its discretion on what enforcement action is taken.

When the state chooses to perform the CPE and is unable to do so within the time frame established by the rule, it has the authority to issue an administrative order that includes the establishment of a more appropriate compliance schedule.

Q: *Is there a limit to the number of CPEs that can be triggered by ongoing compliance problems?*

A: The rule does not specify the number of CPEs that are required in response to turbidity limits that trigger Section 141.175(b)(4) multiple times for problems with individual filters (turbidity levels of > 2.0 NTU in two consecutive measurements in each of two consecutive months.) One CPE is adequate until that CPE has been completed and the appropriate corrective actions taken. The CPE must be completed within the time limits established by the rule for the initial exceedence.

In cases where the causes of individual filter turbidity problems are not easily and quickly correctable, the system should consider negotiating with the state to enter into an enforcement action such as an administrative order with a mutually agreeable set of actions leading to compliance within an established compliance schedule. Compliance with the administrative order would limit the system's liability for having additional CPEs conducted after one had been done to identify performance limiting factors.

Q: *If a turbidity exceedence is caused by a failure of the turbidimeter, does it still have to be reported?*

A: High turbidity readings that are caused by cleaning and purging a turbidimeter, etc. and that are not indicative of finished water quality do not have to be reported as treatment technique violations and do not trigger the corrective actions of §141.175(b)(1) - (4). However, the system must keep a written record of the readings, the cause of the turbidimeter failure, and why the readings have been deemed inaccurate. When possible, bench top measurements should be made to provide confirmation of the system's reasons for deleting and/or replacing measurements.

1.5 Alternative Filtration Technologies

For further information, see the following rule sections:

Citation	Part Title
§141.73(d)	Filtration
§141.173(b)	Filtration

Q: *Why are diatomaceous earth and slow sand filters not required to meet the more stringent turbidity requirements of the IESWTR?*

A: Slow sand and DE systems, because of their filtration effectiveness, are assumed to already meet the 2-log removal for *Cryptosporidium* under the existing requirements of the SWTR. Therefore, they are not required to meet more stringent requirements under the IESWTR.

Q: *Will a state have to re-evaluate alternative filtration technologies previously approved under the 1989 SWTR for the purposes of the* Cryptosporidium *removal requirements of the IESWTR?*

A: Yes, states will have to re-evaluate alternative filtration technologies previously approved under the SWTR in order to determine whether they are capable of 2 log removal of *Cryptosporidium* cysts. The rule only requires this re-evaluation for alternative technologies that have been approved at Subpart H systems serving 10,000 or more people.

Q: *How will a state approve an alternative filtration technology that reduces the turbidity to levels that cannot be reliably measured using turbidimeters? How will the PWS determine compliance with the IESWTR turbidity requirements?*

A: States are required by §142.16(g)(iv) to explain how they plan to approve alternative technologies and establish turbidity performance requirements for such technologies. The state would approve the above-referenced alternative filtration technology in the same manner it would use for other technologies that might be less effective in terms of turbidity removal and would then establish performance standards that would ensure appropriate inactivation/removal of *Giardia lamblia* and viruses and removal of *Cryptosporidium*. For purposes of compliance it would not be necessary to measure down to the level of actual turbidity removal. It is only necessary to accurately measure turbidity at the levels established by the state as performance standards for the technology. The state may require an equally stringent performance requirement such as frequent integrity testing for membrane systems.

Q: *Can states allow log removal credit for GWUDI systems for natural filtration? Can EPA develop a criteria for providing credit for natural filtration?*

A: States have the discretion to consider "natural filtration" an alternative technology. Examples where this might be appropriate are well designed off-stream infiltration galleries and Ranney collectors. Pursuant to §141.173(b) the system would have to demonstrate to the state that it consistently achieves 99.9 percent removal and/or inactivation of Giardia lamblia cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of Cryptosporidium oocysts. The state would then have to establish performance standards that ensure the removal and inactivation requirements are achieved.
EPA has not developed guidance for establishing criteria for providing credit for natural filtration.

Q: *Are contact absorption clarifiers and dissolved air floatation considered sedimentation in the conventional filtration process as defined in 141.2?*

A: The state has the flexibility to consider these processes as part of the conventional filtration process. However, once the process has been categorized, the state should be consistent in implementation for all their systems. If these processes are not classified as part of conventional filtration, they are considered alternative filtration technologies and must meet the regulatory provisions that address those technologies.

2.0 General Program Requirements

2.1 Primacy

Q: *If the state has a blanket letter from the Attorney General that covers all regulations, does it have to get a new letter specifically for the IESWTR?*

A: Yes. States would not be able to use a letter from the Attorney General that provided certification of rules not in existence at the time the certification letter was written. The certification would also have to confirm that there are no state audit laws preventing enforcement of the rules.

Q: *Do you need to adopt the PWS definition (if applicable) and obtain administrative penalty authority in order to receive interim primacy for the IESWTR?*

A: A state is eligible for interim primacy for new regulations provided they have primacy or interim primacy for all existing regulations. At a time when multiple regulations are being promulgated, a state qualifies for interim primacy for each rule as the rules are adopted by the state as long as the time period allowed for adoption (two years plus up to a two year extension, if applicable) has not expired. For example, even though the CCR was promulgated before the IESWTR, a state can obtain interim primacy for the IESWTR before the CCR, as long as the deadline to adopt the

CCR has not passed. However, if time period allow for adoption of the CCR has passed and the state has not adopted the CCR, then the state would not be eligible for interim primacy for the IESWTR.

Q: *Are states going to have to revisit their GWUDI determinations due to the addition of Cryptosporidium to the definition of GWUDI and the Cryptosporidium removal requirements of the IESWTR?*

A: No, the processes used by states to identify GWUDI under the existing SWTR would still apply. When identifying GWUDI, states use a process that considers indicators that cysts might be present and does not look specifically for cysts. Even though *Cryptosporidium* oocysts are different from *Giardia* cysts, the process is not required to be updated.

Q: *Can states "bundle" regulations in their primacy revision package?*

A: Yes, states may combine two or more rules in one primacy revision package provided that the states' adoption of the rules falls within the statutory two year period and two year extension period, if applicable.

Q: *May a state adopt the IESWTR by reference?*

A: Yes, if the state law allows this. However, the state will still need to address the special primacy requirements which give the state flexibility and discretion in meeting certain requirements.

Q: *Our State's Attorney General does not have the authority to approve regulations. Will this be a problem for us in terms of obtaining primacy for new rules?*

A: EPA does not require the state's Attorney General to provide approval of regulations adopted for purposes of the state achieving primacy under these rules. The requirement is for a statement by the Attorney General, or the primacy agency's attorney if it has independent legal council, that the laws and regulations adopted by the state were duly adopted and are enforceable.

2.2 Violations, SDWIS Reporting and SNC Definitions

Q: *If a system receives 2 treatment technique violations in 1 month, is that counted as two TT violations toward SNC?*

A: Yes.

Q: *How frequently are SNC determinations made? Can a system potentially receive a SNC designation every month? every quarter? every year?*

A: Significant Non-Compliance (SNC) determinations for all rules, including the Interim Enhanced Surface Water Treatment Rule (IESWTR) and the Stage 1 Disinfectants/Disinfection Byproducts Rule (DBPR), are made once per quarter, compounding over a rolling four quarter period. SDWIS guidance states that these determinations are made on the first day of the month following the end of the quarter which covers the 12 month compliance period which ended the previous quarter.

Q: *The IESWTR does not require systems to gather applicability data. How can you give a system a M/R violation for not doing so?*

A: Failure to gather applicability data is not a federally reportable monitoring and reporting violation. However, if a system does not conduct applicability monitoring, it must notify the state of this election, in writing, not later than December 31, 1999 and must (1) begin developing a disinfection profile not later than March 31, 2000, or (2) obtain state approval to use three years of existing operational data to create a profile. Failure to profile is a treatment technique violation.

Q: *If a system does not profile and is required to, what kind of violation is it?*

A: Failure to profile is a treatment technique violation.

Q: *If a system can receive an SNC designation for failure to conduct disinfection profiling under the IESWTR, how can the system return to compliance if profiling is a one-time provision?*

A: Failure to develop a disinfection profile during the required timeframe is a treatment technique violation. A system can return to compliance by developing a disinfection profile. Once completed, the system must retain the disinfection profile data in an acceptable format for review as part of the sanitary surveys and consult with the state before making a significant change to its disinfection practice.

2.3 Qualified Operators

Q: *There is a requirement of the SWTR that the systems be operated by qualified personnel. What if the system has a membrane plant that is not operated on a full time basis? EPA has not mandated the number of hours in a operating cycle and systems have been installing membrane plants to prevent being required to have a full-time operator.*

A: Both the Surface Water Treatment Rule and the Stage 1 Disinfectants/Disinfection Byproducts Rule require regulated systems to be operated by qualified personnel who meet the requirements specified by the state and are included in a state register of qualified operators. The rules do not, however, address the amount of time qualified operators are required to spend on site at the plant. EPA believes that this type of determinations should be left to the states' discretion.

Q: *Who in the state must maintain the list of qualified operators? Is it acceptable if the Public Water Supply Supervision Program (PWSS) does not maintain the list, but another agency in the state does?*

A: Yes, it is acceptable for a state agency other than the primacy agency to maintain the state's register of qualified operators. It is essential, however, for the PWSS Program to have access to that register.

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