Appendix H

State Reporting Guidance for the Arsenic Rule

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STATE REPORTING GUIDANCE FOR THE ARSENIC RULE

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Purpose of this Document

This document provides guidance to States, Tribes, and U.S. Environmental Protection Agency (EPA) Regions exercising primary enforcement responsibility under the Safe Drinking Water Act (SDWA). Throughout this document, the terms "State" or "States" are used to refer to all types of primacy agencies including U.S. territories, Indian tribes, and EPA Regions.

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. Thus, it does not impose legally binding requirements on EPA, States, Tribes, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA, State, and Tribal 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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Abbreviations and Acronyms

µg	Microgram, one-millionth of a gram (3.5×10^{-8} of an ounce)
µg/L	Micrograms per liter
ASTM	American Society for Testing and Materials
BAT	Best available technology
CFR	Code of Federal Regulations
CWS	Community Water System
DTF	Data transfer format
EPA	U.S. Environmental Protection Agency
EPTDS	Entry point to the distribution system
FR	Federal Register
FY	Fiscal Year
GW	Ground water
ICP-AES	Inductively coupled plasma atomic emission spectroscopy
ICP-MS	Inductively coupled plasma mass spectroscopy
IOCs	Inorganic contaminants
MCL	Maximum contaminant level
MCLG	Maximum contaminant level goal
mg	Milligram, one-thousandth of a gram; 1 milligram = 1,000 micrograms
mg/L	Milligrams per liter
M&R	Monitoring or reporting violations
NTNCWS	Non-transient non-community water system
OECA	Office of Enforcement and Compliance Assurance
ppb	Parts per billion
PN	Public notification
PWS	Public water system
PWS-ID	Public water system identification number
RAA	Running annual average
RTC	Return to Compliance
SDWA	Safe Drinking Water Act
SDWIS/FED	Safe Drinking Water Information System/Federal Version
SDWIS/STATE	Safe Drinking Water Information System/State Version
SM	Standard Method
SNC	Significant noncomplier
SOCs	Synthetic organic contaminants
SW	Surface water
URTH	Unreasonable risk to health
VOCs	Volatile organic contaminants

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I. Introduction

The purpose of this document is to define the reporting requirements and related Safe Drinking Water Information System/Federal Version (SDWIS/FED) Data Transfer Format (DTF) file layout for information required under the Arsenic and Clarifications to Compliance and New Source Contaminants Monitoring Rule published in the Federal Register on January 22, 2001 (66 FR 6976). This document addresses the requirements for State and Tribal reporting to EPA and the definitions of monitoring, reporting, violations, and return to compliance data applicable to community water systems (CWSs) and non-transient non-community water systems (NTNCWSs). Such reporting is required under Section 1445 of the SDWA. In this guidance, the term "State" also includes Indian Tribes with primacy (e.g., the Navajo Nation), which are determined according to the requirements of 40 CFR Subpart H.

The Final Arsenic Rule was published in the Federal Register on January 22, 2001 (66 FR 6976). The Rule is applicable to CWSs and NTNCWSs and was effective February 22, 2002. The compliance date for the new consumer confidence reporting requirements was also February 22, 2002 (40 CFR 141.6(j)).

The Final Rule establishes an arsenic maximum contaminant level (MCL) of 0.01 mg/L (10 µg/L or 10 ppb) (40 CFR 141.62(b)(16)) and finalizes a maximum contaminant level goal (MCLG) for arsenic of 0 mg/L (40 CFR 141.51(b)). A special rule requirement was published in the Arsenic Rule, "Arsenic sampling results will be reported to the nearest 0.001 mg/L (40 CFR 141.23(i)(4)," to demonstrate that EPA clearly intended 10 ppb (0.010 mg/L) to be used for determining compliance.

The compliance date for the revised arsenic MCL is January 23, 2006 (40 CFR 141.6(j)). To satisfy the arsenic monitoring requirements, all surface water systems must complete monitoring to determine compliance with the revised arsenic MCL by December 31, 2006. All ground water systems must complete monitoring to determine compliance with the revised arsenic MCL by December 31, 2007 (40 CFR 141.23(c)(1)).

The final rule clarifies compliance and new source contaminant monitoring requirements. The date for systems to begin to comply with the clarified monitoring and compliance determinations for inorganic contaminants (IOCs), volatile organic contaminants (VOCs), and synthetic organic contaminants (SOCs) is January 22, 2004 (40 CFR 141.6(k)).[1]

The Rule's clarifications to compliance specify that:

- Contaminants subject to 40 CFR 141.23(i)(2), 141.24(f)(13) & (15)(iii), and 141.24(h)(9) & (11)(iii) will be based on the running annual average of the initial MCL exceedances and subsequent State-required confirmation samples.

[1]The 2001 Arsenic Rule did not revise the compliance determination provisions governing the 50 ppb MCL for arsenic found at 40 CFR141.23(m) & (n). As a result, under the existing rules, systems would need to comply both with those provisions and with 40 CFR 141.23(i) from January 22, 2004 through January 22, 2006. EPA is considering a regulatory revision to clarify its intent that systems need comply ONLY with the standardized monitoring framework beginning on January 22, 2004 for all inorganics, including arsenic. EPA intends to consistently implement compliance determinations for IOCs, SOCs, and VOCs for all CWSs and NTNCWSs, as described in the preamble to the Final Rule (66 FR 6990).

- When a system fails to collect the required number of samples, compliance averages will be based on the total number of samples collected, not the number of samples required. Uncollected samples are still a monitoring and reporting violation.

- For purposes of calculating MCL averages, non-detections continue to be set at zero unless States specify another value (e.g., the detection limit or a fraction of the detection limit) (40 CFR 141.23(i), 141.24(f)(15), and 141.24(h)(11)).

- All new systems, or systems that use a new source of supply, that begin operation after January 22, 2004, must demonstrate compliance with the MCLs within a period of time specified by the State. The State must specify sampling frequencies to ensure that a system can demonstrate on-going compliance with MCLs (40 CFR 141.23(c)(9), 141.24(f)(22), and 141.24(h)(20)). This requirement is effective for all contaminants listed in 40 CFR 141.23(c) and 141.24.

This guidance document is designed for use by State program officials; however, States may at their discretion share components of this guidance with public water systems (PWSs), drinking water laboratories, and others in the drinking water community.

II. Federal Monitoring and Reporting Requirements

A. Monitoring Requirements for Arsenic Under the Final Arsenic Rule

1. Monitoring Location

Systems must sample at each entry point to the distribution system (EPTDS). Systems that use more than one source that are combined before distribution (e.g., an intermittent source of supply or a supply affected by seasonal demand) must sample at an entry point to the distribution system (EPTDS) during periods of normal operating conditions (i.e., when the water is representative of the water that usually enters the system) (40 CFR 141.23(a)(3)) unless:

- The State has determined that conditions make another sampling point more representative of each source (40 CFR 142.11(a)(1) and 141.23(a)(1)); or,

- The State has modified the monitoring requirements of a PWS that supplies water to one or more other PWSs and the interconnection of the systems justifies treating them as a single system for monitoring purposes (i.e., consecutive PWSs) (40 CFR 141.29).

2. Monitoring Frequency

The Rule makes the arsenic monitoring requirements consistent with monitoring for other IOCs regulated under the Phase II/V standardized monitoring framework. The compliance date for requirements related to the revised arsenic standard is January 23, 2006. The 2005-2007 compliance period is the first monitoring period under the new MCL. Because the Final Arsenic Rule allows grandfathered data and waivers, systems should not have to deviate from their current monitoring scheme.

Ground water systems required to sample once every three years must complete sampling by December 31, 2007, and surface water systems required to sample annually must complete sampling by December 31, 2006 (40 CFR 141.23(c)(1)). The State may require more frequent monitoring or may require confirmation samples for positive or negative results (40 CFR 141.23(g)). Similarly, systems may apply to the State to conduct more frequent monitoring (40 CFR 141.23(h)).

In accordance with the standardized monitoring framework, if compliance monitoring samples show arsenic levels at each sampling point below the MCL, ground water systems must continue to take routine samples once every three years at each sampling point, and surface water systems must take annual samples at each sampling point unless directed otherwise by the State (40 CFR 141.23(c)(1)).

States may allow systems to collect up to five samples which may be composited by the laboratory. The laboratory that analyzes the samples must use a method with a detection limit of 0.002 mg/L (2 µg/L; i.e., 1/5th of the MCL) (40 CFR 141.23(a)(4)). If the five composited samples are above 1/5th of the MCL, the system must take follow-up samples at each sampling point within 14 days (40 CFR 141.23(a)(4)). Compliance determinations will be based on the follow-up sample result. EPA encourages States to discontinue allowing systems to composite samples if arsenic is detected at levels greater than 1/5th the MCL.

To satisfy the monitoring requirements for the revised arsenic MCL, all new systems or systems that use a new source that begin operation after January 22, 2004, must begin complying with the clarified compliance and new source contaminant monitoring, in accordance with a State-specified plan (40 CFR 141.23(c)(9)).

3. Increased Monitoring

Any system that has a sampling point monitoring result that exceeds the MCL must increase the frequency of monitoring at that sampling point to quarterly sampling[2] (40 CFR 141.23(c)(7)). Quarterly sampling must begin the quarter after the exceedance occurred and continue until the State determines that the system is reliably and consistently below the MCL[3] (40 CFR 141.23(c)(7)&(8)). States may also set a sampling schedule as a condition to a variance, exemption, or enforcement action. States may require a system that fails to take a quarterly sample either to collect the missing sample as soon as possible or to collect the sample the following year in the quarter that was missed.

Systems triggered into increased monitoring will not be considered in violation of the MCL until they have completed one year of quarterly sampling.[4] However, if any sample result will cause the running annual average to exceed the MCL at any sampling point (e.g., the sampling result is four times the MCL), the system is out of compliance with the MCL immediately.

Systems with an MCL violation must meet all public notification (PN) requirements (40 CFR Part 141 Subpart Q). See the Public Notification section below.

B. Grandfathered Arsenic Data

1. Ground Water Systems

For ground water systems, the term grandfathered data refers to monitoring samples collected between January 1, 2005, the start of the first compliance period for ground water systems for the revised MCL, and January 23, 2006, the compliance date for the revised MCL. Because January 23, 2006, falls in the middle of a compliance period, States may allow systems to use grandfathered data collected after January 1, 2005, to satisfy the sampling requirements for the compliance period.

States may allow systems to grandfather ground water data under the following circumstances:

- The system collects its sample for the 2005-2007 compliance period between January 1, 2005 and January 23, 2006; and,

[2]States have the flexibility to require confirmation samples.

[3]Reliably and consistently below the MCL means that a ground water system has collected a minimum of two consecutive quarters of samples at the sampling point with the exceedance and a surface water system has collected four consecutive quarters of samples at the sampling point with the exceedance (40 CFR 141.23(c)(8)).

[4]For the purpose of calculating the running annual average, the initial exceedance is considered to be the first quarterly sample.

- The data are consistent with the analytical methodology approved for use by the January 22, 2001 Final Rule.

Data collected using inductively coupled plasma atomic emission spectroscopy (ICP-AES) technology are not eligible for grandfathering because EPA has determined that these methods are not adequate to "reliably determine the presence of arsenic . . . even at . . . 0.010 mg/L . . . for compliance monitoring of arsenic in drinking water" (65 FR 38913).[5]

Ground water systems that do not use grandfathered data must collect a sample by December 31, 2007, to demonstrate compliance with the revised MCL (40 CFR 141.23(c)(1)).

2. Surface Water Systems

For surface water systems, the term grandfathered data refers to monitoring samples collected between January 1, 2006, the start of the first compliance period for surface water systems for the revised MCL, and January 23, 2006, the compliance date for the revised MCL. States may allow systems to use grandfathered data collected after January 1, 2006, to satisfy the sampling requirements for the 2006 year.

States may allow systems to grandfather surface water data under the following circumstances:

- The system collects its annual sample for 2006 between January 1, 2006 and January 23, 2006; and,

- The data are consistent with the analytical methodology approved for use by this Rule.

Data collected using ICP-AES technology are not eligible for grandfathering because EPA has determined that these methods are not adequate to "reliably determine the presence of arsenic . . . even at . . . 0.010 mg/L . . . for compliance monitoring of arsenic in drinking water" (65 FR 38913).

Surface water systems that do not use grandfathered data must collect a sample by December 31, 2006, to demonstrate compliance with the revised MCL (40 CFR 141.23(c)(1)).

3. Grandfathering of Results Above the MCL

If grandfathered data are used to comply with the compliance period, and the analytical result is greater than 0.010 mg/L (10 µg/L), that system will be in violation of the revised MCL on January 23, 2006.

[5]After January 23, 2006, analytical methods using the ICP-AES technology may not be used because the detection limits for these methods are 0.008 mg/L (8 µg/L) or higher (40 CFR 141.23(k)(1)). This restriction means that the two ICP-AES methods (EPA Method 200.7 and SM 3120 B) may not be used for compliance determinations, the grandfathering of data, or waiver determinations.

C. Monitoring Waivers

Because the Final Rule incorporates arsenic into the standardized monitoring framework for IOCs, States may grant a nine-year monitoring waiver to a system.[6] States must consider all previous monitoring data; the variation in reported concentrations; and other factors that may affect concentrations such as changes in pumping rates, system configuration, operating procedures, or stream characteristics (40 CFR 141.23(c)(5)). States should also consider the quality and amount of data available, the length of time covered, the volatility/stability of the sampling results, and the proximity of results to the MCL. Source water assessments currently being conducted by the States are another valuable tool that may assist States in determining whether to grant a waiver. In deciding whether to grant a waiver, States should use all available information.

1. System Eligibility

To qualify for an arsenic waiver, a system must have data from at least three previous sampling periods. At least one sample has to be taken after January 1, 1990. The analytical results from all previous samples must be below the 10 ppb (0.010 mg/L) MCL, and the samples must be analyzed with EPA Methods 200.8 or 200.9, SM 3113B, 3114B, or ASTM D-2972-93C or D-2972-93B.

Systems may be eligible for waivers under the following conditions (40 CFR 141.23(c)(3) & (4)):

- Ground water systems must have conducted a minimum of three rounds of monitoring and must demonstrate that all previous analytical results were below the revised MCL. Once a waiver is issued, the system must take at least one sample during each nine-year period.

- Surface water systems must have monitored annually for at least three years and must demonstrate that all previous analytical results were below the MCL. Once a waiver is issued, the system must take at least one sample during each nine-year period.

D. Arsenic Violations

EPA views violations on a system-specific basis; therefore, violations should be reported to SDWIS/FED by system only (i.e., not by entry point or sampling point). For EPA purposes, each system can be in violation only one time for each type of violation, for each contaminant, and for each monitoring period - even though the PWS may have had multiple violations of the same type and for the same contaminant and monitoring period, at multiple sampling points. In choosing which sampling point to report for the same type of violation, always report the more severe violation.

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[6]Compliance with the existing 50 ppb standard is met through compliance with the old monitoring provisions for arsenic, which do not allow for monitoring waivers. Therefore systems may not currently be eligible for arsenic monitoring waivers. Once a State adopts arsenic into its standardized monitoring framework and adopts the revised arsenic MCL provisions, the primacy agency may begin granting monitoring waivers for the revised standard.

States should report federal MCL and monitoring and reporting (M&R) violations to SDWIS/FED within 45 days after the end of the quarter in which the violation occurs.

The SDWIS/FED arsenic contaminant code for violation reporting is 1005. **When reporting arsenic violations to SDWIS/FED, arsenic analytical results must be rounded to the nearest 0.001 mg/L (1 µg/L)** (40 CFR 141.23(i)(4)). Violations of the Arsenic Rule include:

1. MCL Violations

States must determine compliance based on the analytical result(s) obtained at each sampling point[7] (40 CFR 141.23(i)). A system is in violation if:

- Any one sampling point exceeds the MCL and then, after four consecutive quarterly samples, the running annual average exceeds the MCL.[8]

- Any result causes the running annual average to exceed the MCL at any sampling point (for example, the analytical result is greater than four times the MCL or two analytical results are greater than twice the MCL).

For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. Systems monitoring annually or less frequently whose sample result exceeds the MCL must revert to quarterly sampling for that contaminant the next quarter.[9] Systems are only required to conduct quarterly monitoring at the sampling point at which the sample was collected and for the specific contaminant that triggered the system into the increased monitoring frequency. An exceedance is not necessarily a violation. **It is EPA's position that systems triggered into increased monitoring will not be considered in violation of the MCL until they have completed one year of quarterly sampling,** unless any sample collected during quarterly monitoring would result in the annual average exceeding the MCL (40 CFR 141.23(i)). In this case, the sampling point will be considered in violation of the MCL immediately.

The running annual average is calculated from the results of the four previous quarterly samples. The first year, the running annual average would be calculated by averaging the results of Quarters 1-4. For the purpose of calculating the running annual average, the initial exceedance is considered to be the first quarterly sample. Starting with Quarter 5, the average is determined using the previous four quarters. Quarter 5 results encompass Quarters 2, 3, 4, and 5; Quarter 6 results encompass Quarters 3, 4, 5, and 6; etc.

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[7]For the purposes of compliance determination and monitoring requirements, the State must report results to the nearest 0.001 mg/L (40 CFR 141.23(i)(4)).

[8]States have the flexibility to require confirmation samples. The average of the initial sample and any confirmation samples will be used for the determination of compliance and future monitoring requirements.

[9]States have the flexibility to require confirmation samples. The average of the initial sample and any confirmation samples will be used for the determination of compliance and future monitoring requirements.

Systems may not monitor more frequently than specified by the State to determine compliance unless they have applied to and obtained approval from the State. If a system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance will be based on the running annual average of the samples collected. If a sample result is less than the method detection limit, zero will be used to calculate the annual average (40 CFR 141.23(i)(1) & (2)).

States have the flexibility to require confirmation samples for positive or negative results[10] (40 CFR 141.23(g)). States may require the collection of these additional samples no later than two weeks after the initial exceedance, to confirm the initial results. States may require more than one confirmation sample to determine the average exposure (40 CFR 141.23(g)). If confirmation samples are required by the State, the initial analytical result and the confirmation sample must be averaged and must be used for compliance determinations (40 CFR 141.23(i)(1) & (2)). States have the discretion to delete obvious sampling result errors (40 CFR 141.23(f)(3)).

The Rule requires that monitoring be conducted at all sampling points representative of normal operating conditions (40 CFR 141.23(a)(1), (2) & (3)). However, the State can require that monitoring and compliance determinations be based on a case-by-case analysis of individual drinking water systems. The State may determine compliance based on several factors, including the quantity of water supplied by a source, the duration of service of the source, and contaminant concentration.

EPA encourages drinking water systems to inform State regulators of their individual circumstances. Some systems have implemented elaborate plans including targeted, increased monitoring that is much more representative of the average annual mean contaminant concentration to which individuals are being exposed. Some States determine compliance based on a time- or flow-weighted average. Some States require that systems collect samples from wells that operate for only one month out of the year regardless of whether they are operating during scheduled sampling times. In many cases, the State can demonstrate that compliance is being calculated based on scientific methods that are more representative of the true contaminant concentration to which individuals are being exposed over a year, but this substantially increases the sampling and analytical costs.

For the purpose of compliance determination, analytical results for arsenic will be reported to the nearest 0.001 mg/L (40 CFR 141.23(i)(4)). For purposes of rounding, the last digit should be increased by one unit if the digit dropped is 5 or greater. If the digit dropped is 4 or less, do not alter the preceding number. For example, analytical results for arsenic of 0.0105 mg/L would round off to 0.011 mg/L while a result of 0.0104 mg/L would round off to 0.010 mg/L.

Several examples of reporting MCL violations are included in Appendix A.

2. M&R Violations

In accordance with 40 CFR 141.23(a), CWSs and NTNCWSs must collect compliance samples at all sampling points representative of normal operating conditions (40 CFR 141.23(a)(1), (2) & (3)).

[10]Confirmation samples are any samples that the State requires beyond the minimum federally required samples.

An M&R violation occurs and must be reported for any system that fails to:

- Collect the required number of samples during the specified time frame, in accordance with 40 CFR 141.23;
- Ensure samples are analyzed properly in accordance with 40 CFR 141.23; or,
- Submit all required monitoring information on-time in accordance with 40 CFR 141.31 and 40 CFR 142.15.

In SDWIS/FED, arsenic M&R violations refer to the period of time during which monitoring was to have been performed, such as a quarter, a year, three years, nine years, etc. For example, assume a PWS is required to monitor for arsenic annually. If this PWS fails to conduct the required monitoring during the calendar year 2008, an M&R violation is incurred. When this M&R violation is reported to SDWIS/FED, the State should supply the beginning date, and the ending date of the monitoring period. The beginning date of the yearly monitoring period in this example would be 01/01/2008, and the ending date of the monitoring period would be 12/31/2008. The monitoring period begin and end date for a PWS monitoring quarterly would span a three-month time frame. The monitoring period begin and end date for a PWS monitoring every three years would encompass a 36-month time frame. M&R violations would continue to occur for each monitoring period, until the system has returned to compliance.

SDWIS/FED M&R violations are expressed with severity indicators of **Major** or **Minor.** A Major M&R arsenic violation is defined as a monitoring or reporting violation in which no samples were collected and/or reported. A Minor arsenic violation is defined as a monitoring or reporting violation in which some, but not all, of the required samples were collected and/or reported. For States electing to report by sample point, any violation during a monitoring period will be a "Major" violation, since in this case it would be impossible for a PWS to conduct some but not all of the required monitoring. If reporting at the system level, systems with multiple sample points may conduct monitoring at some points but not all points; such violations would be coded as "Minor" violations. Systems that do not conduct monitoring at any of the points will have violations coded as "Major."

Table 1. Determination of SDWIS/FED Violation Begin and End Dates

Monitoring Period	Violation Begin-End Date
Quarterly	1/1/YYYY - 3/31/YYYY 4/1/YYYY - 6/30/YYYY 7/1/YYYY - 9/30/YYYY 10/1/YYYY - 12/31/YYYY
Annually	1/1/YYYY - 12/31/YYYY
Every 3 Years	1/1/YYYY - 12/31/YYYY
Every 9 Years	1/1/YYYY - 12/31/YYYY

Several examples of reporting M&R violations are included in Appendix A.

3. Variance/Exemption/Other Compliance Schedule Violations

a. Small System Variances

EPA did not identify small system variance technologies for arsenic under SDWA §1415(e). Therefore, small system variances are not available for the Final Arsenic Rule.

b. General Variances

A general variance allows a system to provide drinking water that may be above the MCL on the condition that the quality of the drinking water is still protective of public health. If a system cannot meet the arsenic MCL because of the characteristics of its raw water sources, it may be eligible for a variance under SDWA §1415(a) and 40 CFR 142.20(a) provided that:

- The system install a BAT (SDWA §1415(a)(1)(A) and 40 CFR 142.62(c));
- A State evaluation indicates that alternative sources of water are not reasonably available (SDWA §1415(a)(1)(A)); and,
- The quality of the water delivered under the variance will not result in an unreasonable risk to health (SDWA §1415(a)(1)(A)). A variance may allow a system to provide water that exceeds the MCL.

Eligibility for a variance requires that: the public be given an opportunity for a public hearing on the new schedule to comply with the revised MCL; the system install, operate, and maintain a BAT specified in the Final Arsenic Rule; and the system enter into a compliance schedule with the primacy agency (SDWA §1415(a)(1)(A) and 40 CFR 142.62(b) & (c)).

c. Exemptions

EPA's goal is to have all water systems comply with the 10 ppb arsenic MCL by January 23, 2006. EPA understands, however, that additional time may be necessary for some systems, and believes that exemptions under §1416 of the SDWA are an appropriate mechanism to provide this additional time. Exemptions can help ensure that systems which are unable to comply with the arsenic MCL will have the opportunity to gain the resources or take the steps needed to comply with the rule in an appropriate period of time. EPA feels that exemptions can be an especially effective tool to help small systems achieve and maintain compliance with the Arsenic Rule.

PWSs are required to meet the revised MCL for arsenic by January 23, 2006 (40 CFR 141.6(j)). SDWA §1416(a), 40 CFR 142.50, and 40 CFR 142.20(b) allow a State to grant an exemption to a PWS from the arsenic MCL if it meets all of the following four criteria:

- Due to compelling factors, the system is unable to achieve compliance by January 23, 2006 through any means, including treatment or an alternative source of water supply;
- The system was in operation by January 23, 2006, or if a not in operation by then, has no reasonable alternative source of drinking water available to it;

- The exemption will not result in an unreasonable risk to health; and,

- The system cannot reasonably make management or restructuring changes that would result in compliance or improve the quality of drinking water if compliance cannot be achieved.

If granted an exemption, a PWS would have an additional three years to comply (January 23, 2009). When granting an exemption, the State must issue a schedule requiring compliance with the MCL as expeditiously as practicable but no later than January 23, 2009 (SDWA §1416(a)(2)(A)). Systems serving fewer than 3,300 people may be eligible for up to three additional two-year exemptions, allowing them to delay compliance for a total of nine years beyond 2006 (40 CFR 142.20(b)(2) and 40 CFR 142.56). Therefore, some small systems may be given exemptions allowing them a total of 14 years after the published Rule to obtain needed financial assistance and implement compliance strategies to comply with the revised arsenic MCL. Guidance on how to implement the exemptions provision is included in the *Exemptions & the Arsenic Rule* (EPA 816-R-02-021).

d. Variance and Exemption Compliance Determination

When a PWS does not adhere to the variances, exemptions, or other compliance schedules stated under 40 CFR 142.20 and 142.62, a violation must be reported to SDWIS/FED. Refer to the *Implementation Guidance for Arsenic Rule* (EPA 816-K-02-018) for more detailed information on small system compliance technologies, general variance requirements, and exemption criteria.

E. Public Notification

Systems must provide public notice for violations and in certain other circumstances (40 CFR Part 141, Subpart Q). The revised PN Rule (40 CFR Part 141, Subpart Q) was effective for States and Tribes with primacy on May 6, 2002, or the date the revised primacy became effective, whichever was sooner.[11]

The May 2000 PN Rule divides the public notice requirements into three tiers based on the seriousness of the violation or situation. "Tier 1" applies to violations and situations with significant potential to have serious adverse effects on human health as a result of short-term exposure. Notice is required within 24 hours of the violation. "Tier 2" applies to other violations and situations with potential to have serious adverse effects on human health (i.e., failure to comply with the terms of a variance or an exemption). Notice must be sent within 30 days and must be repeated every three months as long as the violation exists, unless the State establishes another frequency, not to be less than once a year (40 CFR 141.203(b)(2)). Primacy agencies may grant extensions of up to three months for the initial notice under certain conditions. "Tier 3" applies to monitoring and testing violations not included in Tier 1 and Tier 2, operation under a variance or exemption, availability of unregulated contaminant monitoring results, and exceedance of the fluoride secondary MCL. Notices for Tier 3 violations can be combined into one annual notice, including the consumer confidence report (CCR), if timing and delivery requirements can be met.

[11]For Direct Implementation programs, the revised PN Rule went into effect October 31, 2000.

The Arsenic Rule requires CWSs and NTNCWSs to provide a Tier 2 public notice for an arsenic MCL violation and for failure to comply with the terms or schedule of a variance or an exemption, and to provide a Tier 3 public notice for a violation of the arsenic monitoring and testing procedure requirements and after the granting of a variance or an exemption (40 CFR Part 141, Subpart Q, Appendix A).

After providing notice to consumers, the water system must send the primacy agency a copy of each type of public notice (e.g., newspaper, radio, mail notices, etc.) along with a letter certifying that the system has met all of the PN requirements. The system must send this information to the State within 10 days of completion of each public notice (40 CFR 141.31(d)).

F. Significant Noncompliance

A system can be designated as a significant non-complier (SNC) when it either (1) has an MCL exceedance at any sampling point, or (2) commits a monitoring or reporting violation. The SNC framework is designed to assist States and EPA with prioritizing compliance efforts and providing consistent enforcement.

EPA's Office of Enforcement and Compliance Assurance (OECA) is in the process of developing new guidance to update its SNC definitions. At this time, EPA is using the following definitions to remain consistent with the Radionuclides Rule and OECA's draft guidance:

1. MCL violation:

   If EPA has not established an unreasonable risk to health (URTH) level, then a system is generally characterized as a SNC if it has an analytical result twice the MCL. For arsenic, this will be 0.020 mg/L (20 ppb) based on a running annual average on or after January 23, 2006.[12]

2. Monitoring and reporting violation:

   A system that monitors once a year or more frequently, is characterized as a SNC if it fails to monitor or report arsenic analytical results for two consecutive compliance periods. A system monitoring less than once a year (e.g., a ground water system monitoring once every three years), is characterized as a SNC if it fails to monitor or report arsenic analytical results for one compliance period.

[12]The January 23, 2006 compliance date for the revised arsenic MCL and the January 22, 2004 effective date for complying with clarifications to monitoring requirements, impact the SNC definition. From 2002 to January 22, 2004, one analytical result that is twice the MCL (2 X 0.05 mg/L or 0.100 mg/L) constitutes a SNC. On January 22, 2004, the clarifications to compliance requirements move arsenic into the standardized monitoring framework. By doing so, compliance is based on a running annual average. Therefore, from January 22, 2004 to January 23, 2006, a running annual average that exceeds 2X the MCL (2 X 0.05 mg/L or 0.100 mg/L) constitutes a SNC. After January 23, 2006, a running annual average that exceeds 2X the revised MCL (2 X 0.010 mg/L or 0.020 mg/L) constitutes a SNC.

G. SDWIS/FED Reporting

Table 1 is a summary of proposed Safe Drinking Water Information System/Federal (SDWIS/FED) reporting requirements for the Final Arsenic Rule. The summary contains SDWIS/FED violation and contaminant codes. It is important to note that the SDWIS/FED reporting requirements for the Final Arsenic Rule are no different from the existing reporting requirements for IOCs under the Phase II/V Rules.

Table 2. SDWIS/FED Codes for Federal Reporting under the Arsenic and Clarifications to Compliance and New Source Contaminants Monitoring Rule

Violation Code	Contaminant Code	Violation
01	1005	MCL, Single Sample
02	1005	MCL, Average
03	1005	Failure to Monitor/Report (M&R), Regular
04	1005	Failure to Monitor/Report (M&R), Check/Repeat/Confirmation
06	1005	Failure to Provide the Appropriate Public Notice
08	1005	Variance/Exemption/Other Compliance
72	1005	Consumer Confidence Report (CCR), Inadequate Reporting

For each arsenic violation listed above, the State reports the following data to SDWIS/FED. Section III (SDWIS/FED Data Transmittal) explains these data elements in more detail.

- A unique PWS-ID
- A unique violation ID
- A code identifying the contaminant for which the violation applies
- A code describing the type of violation
- Calendar date of the beginning of the monitoring period
- Calendar date of the end of the monitoring period
- Analysis Result causing the violation, rounded to the nearest 0.001 mg/l (1 ppb) **(For MCL violations only)**
- A code designating whether the violation is of Major or Minor severity **(For M&R violations only)**
- A source/entity ID at which the violation was incurred **(The 5-character Source/Entity ID if reporting by sampling point; leave blank to report by system)**

H. Return to Compliance and Enforcement Actions

When an MCL or M&R violation has been incurred, it must be reported to SDWIS/FED. In addition, the State should inform EPA when that violation has been appropriately resolved. A system has returned to compliance (RTC) after an MCL violation if subsequent analytical results are below the MCL. A system has RTC after an M&R violation if the system is reporting in accordance with requirements.

In addition, all formal enforcement actions taken against violations of this rule are required to be reported to SDWIS/FED. Both "returned to compliance" and formal enforcement should be linked to the specific violation(s) they address. The following describes the appropriate ways in which enforcement and follow-up actions, formal and informal (including returned to compliance), may be linked to Arsenic rule violations:

Associated Violation IDs (Y5000) - FY & VIOLATION ID NUMBER.

Entering the specific violation ID(s) to which the enforcement action is related will establish a link between the enforcement record and each violation record matching the specific violation ID. If no links are established (reported violation IDs not found/matched on the database) the enforcement record will be posted.

Associated Violation Contaminant Groups (Z5000) - TYPE, CONTAMINANT, MONITORING PERIOD BEGIN DATE (MO, DAY & YR)

Entering the Arsenic violation type code, the contaminant code, and the monitoring period begin date will establish a link between the enforcement action and all Arsenic violations that exactly match the enforcement link data. If no matches are found, the enforcement record will be posted.

Refer to the *SDWIS/FED Data Entry Instructions* for more detailed information.

III. SDWIS/FED Data Transmittal

A. Data Transfer File

The Data Transfer File (DTF) is the only format by which data can be entered into the SDWIS/FED data base.

Each Data Transfer File record is 80 characters in length and has the following format:

Definition	Positions	Example
Form ID	1-2	D1
Qualifier 1	3-11	PWS-ID
Qualifier 2	12-18	VIOLATION-ID
Qualifier 3	19-25	
Action Code	26	D, I, or M*
Data Element Number	27-31	Cnnnn
Data Value	32-71	
Reserved for SDWIS/FED	72-74	
Batch Sequence Number	75-80	NNNNNN**

* D = DELETE, I = INSERT, and M = MODIFY
** A format of MMDDYY is highly recommended

Table 3. SDWIS/FED DTF Format

FORM ID	DATA ADDRESS QUALIFIERS			ACT. CODE	DATA ELEM. NUM.	DATA VALUE	NOT USED	BATCH SEQUENCE NUMBER
	QUAL 1	QUAL 2	QUAL 3					
1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80

Table 4 presents the SDWIS/FED violation record data elements for reporting Arsenic Rule violations.

Table 4. SDWIS/FED DTF C1100 - Violation Record Data Elements

DTF Number	Format	Description	Permissible Values
C101	Character 9	PWS ID	Must be included within SDWIS/FED inventory
C1101	Character 7	Violation ID	Characters 1 & 2 must be the federal fiscal year in which the violation took place
C1103	Character 4	Contaminant Code	1005 - Arsenic
C1105	Character 2	Violation Type Code	02-MCL, Average 03-M&R 08-Variance/Exemption
C1107	Date 8 (YYYYMMDD)	Monitoring Period Begin Date	Date monitoring period begins
C1109	Date 8 (YYYYMMDD)	Monitoring Period End Date	Date monitoring period ends
C1131	Character 1	Major Violation Indicator	Y, N
C1123	Decimal 6.9	Analysis Result	Required for MCL violations only; must be ≥ 0; rounded to 0.001 mg/L

IV. Additional Sources for Technical Information on the Arsenic Rule

Additional technical information on SDWIS/FED reporting information can be obtained by contacting Valerie Love-Smith of the Infrastructure Program, Drinking Water Protection Division, Office of Ground Water and Drinking Water at (202) 564-6430, or from the following resources:

Arsenic and Clarifications to Compliance and New Source Monitoring Rule, EPA-815-Z-01-001, January 22, 2001.

Final Implementation Guidance for the Arsenic Rule, EPA-816-K-02-018, August 2002.

Arsenic and Clarifications to Compliance and New Source Monitoring Rule: A Quick Reference Guide, EPA-816-F-01-004, January 2001.

Technical Fact Sheet: Final Rule for Arsenic in Drinking Water, EPA-815-F-00-016, January 2001.

Final State Implementation Guidance for the Public Notification Rule, EPA-816-R-01-010, October 2001.

Revised Consolidated Summary of State Reporting Requirements for the Safe Drinking Water Information System (SDWIS).

SDWIS/FED Data Entry Instructions.

SDWIS/FED Online Data Dictionary.

SDWIS/FED Significant Non-Compliance Specifications, March 7, 1997.

Appendix A
Monitoring, Reporting, and Compliance Determination Examples

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Example 1. "Major" M&R Violation

A ground water (GW) system MD5234590 with 1 sampling point must collect its arsenic sample during the 2008-2010 compliance cycle. It's January of 2011 and the system has not sampled for arsenic during 2008 - 2010. The system is not in compliance and would therefore be required to begin collecting quarterly samples during the January through December 2011 time frame.

Violation Determination

The PWS failed to collect an arsenic sample during the monitoring period of 1/01/08 to 12/31/10. M&R violations are to be reported using the Major & Minor severity indicators. A Major M&R violation is defined as: "no" samples were collected/reported during the monitoring period. A Minor M&R violation is defined as: "some, but not all" samples were collected/reported during the monitoring period. In this example the system failed to collect any arsenic samples during the monitoring period and therefore committed a Major M&R violation.

The State, reporting at the system level, would report: 1- Arsenic Major M&R violation incurred during the 36-month monitoring period of (1/1/08-12/31/10).

Exhibit 1. Major M&R Violation

Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	*Qualifier 1*
C1101	Violation ID	1155111
C1103	Contaminant Code	1005
C1105	Violation Type Code	03
C1107	Monitoring Period Begin Date	20080101
C1109	Monitoring Period End Date	20101231
C1131	Major Violation Indicator	Y

DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	MD5234590	1155111		I	C1103	1005		
D1	MD5234590	1155111		I	C1105	03		
D1	MD5234590	1155111		I	C1107	20080101		
D1	MD5234590	1155111		I	C1109	20101231		

Example 2. MCL Average Violation

On July 17, 2008, GW system MD5234590 collects its 3-year compliance sample at its one sampling location. The 0.013 mg/L result exceeds the arsenic MCL of 0.010 mg/L. The system must begin collecting its quarterly samples during the 3rd quarter (i.e., September through December). When the analytical results for its April 7, 2009 sample are returned, it has four quarters of data and can calculate an annual average.

Example 2 - Arsenic Monitoring Results

Arsenic	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual Average
	7/17/08	10/12/08	1/23/09	4/07/09	
	0.013 mg/L	0.014 mg/L	0.014 mg/L	0.013 mg/L	0.014 mg/L

Violation Determination

The running annual average for compliance determination is 0.0135 mg/L. An arsenic MCL average violation has occurred and must be reported to SDWIS/FED, rounded to the nearest 0.001 mg/L (1 ppb). (For purposes of rounding, the last digit should be increased by one unit if the digit dropped is 5 or greater. If the digit dropped is 4 or less, do not alter the preceding number.) After rounding, the State would report to SDWIS/FED the annual average arsenic analysis result of 0.014 mg/L, incurred during quarter 4 of the four monitoring quarters (4/1/09-6/30/09).

Exhibit 2. MCL Average Violation

Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	*Qualifier 1*
C1101	Violation ID	0955333
C1105	Contaminant Code	1005
C1107	Monitoring Period Begin Date	20090401
C1109	Monitoring Period End Date	20090630
C1123	Analysis Result	0.014

DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	MD5234590	0955333		I	C1103	1005		
D1	MD5234590	0955333		I	C1105	02		
D1	MD5234590	0955333		I	C1107	20090401		
D1	MD5234590	0955333		I	C1109	20090630		

Example 3. MCL Average Violations at Multiple Entry Points

A surface water (SW) system samples for arsenic on September 3, 2006 at its 2 sample sites (source/entity ID #98775 and #98766). Since both sample site results numerically exceed the MCL, the system takes quarterly samples in December 2006, March 2007, and June 2007. The system then calculates an annual average arsenic concentration for each sample site.

September 3, 2006 Sample Results

Arsenic (sample site #98775) = 0.013 mg/L
Arsenic (sample site #98766) = 0.011 mg/L

Example 3 - Arsenic Monitoring Results

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual Average
	9/3/06	12/19/06	3/07/07	6/16/07	
Sample site #98775	0.013 mg/L	0.014 mg/L	0.013 mg/L	0.014 mg/L	0.014 mg/L
Sample site #98766	0.011 mg/L	0.012 mg/L	0.011 mg/L	0.013 mg/L	0.012 mg/L

The annual average arsenic concentration for sample site #98775, calculated after the 4th quarter of quarterly monitoring is 0.0135 mg/L, which rounds to 0.014 mg/L. The annual average arsenic concentration for sample site #98766, calculated after the 4th quarter of quarterly monitoring, is 0.0117 mg/L, which rounds to 0.012 mg/L. The annual average arsenic concentrations for both sample sites exceed the MCL.

Reporting Violations

Even though both entry points had Average MCL violations for arsenic during the same monitoring period, the State only has to report the highest concentration for each contaminant for each monitoring period. It will report that the annual average arsenic concentration exceeds the MCL with a value of 0.014 mg/L during the period of 4/1/07-6/30/07.

Exhibit 3. MCL Average Violations - Multiple Entry Points

Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	*Qualifier 1*
C1103	Violation ID	0755444
C1105	Violation Type	02
C1107	Compliance Period Begin Date	20070401
C1109	Compliance Period End date	20070630
C1123	Analysis Results	0.014

DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	MD5612950	0755444		I	C1103	1005		
D1	MD5612950	0755444		I	C1105	02		
D1	MD5612950	0755444		I	C1107	20070401		
D1	MD5612950	0755444		I	C1109	20070630		
D1	MD5612950	0755444		I	C1123	0.014		

Example 4. M&R Violation Determination at Multiple Entry Points

The contaminant is arsenic.
The MCL is 0.010 mg/L (reported to the nearest 0.001 mg/L).
The samples are taken from three different sample points within the PWS.

A Major M&R violation is defined as "no" samples were collected/reported during the monitoring period.
A Minor M&R violation is defined as "some, but not all" samples were collected/reported during the monitoring period.

Example 4 - Monitoring Results

	Monitoring Period	EP-1	EP-2	EP-3
Quarter 1	7/1/08 - 9/30/08	sampled	sampled	sampled
Quarter 2	10/1/08 - 12/31/08	no sampling	no sampling	no sampling
Quarter 3	1/1/09 - 3/31/09	sampled	no sampling	no sampling
Quarter 4	4/1/09 - 6/30/09	sampled	sampled	no sampling
Quarter 5	7/1/09 - 9/30/09	sampled	sampled	sampled
Quarter 6	10/1/09 - 12/31/09	sampled	sampled	sampled
Quarter 7	1/1/10 - 3/31/10	sampled	sampled	sampled
Quarter 8	4/1/10 - 6/30/10	sampled	sampled	sampled

In the monitoring period called quarter 2 above (10/1/08 to 12/31/08), none of the required samples were taken. In the monitoring periods called quarter 3 and quarter 4 above, some of the required samples, but not all, were taken. In the monitoring periods called quarter 5, quarter 6, quarter 7, and quarter 8 all required samples were taken.

Summary of Reporting Violations

- One "Major" violation during quarter 2.
- One "Minor" violation during quarter 3.
- One "Minor" violation during quarter 4.
- No violations during quarters 1, 5, 6, 7, or 8.

Exhibit 4. M&R Violations - Multiple Entry Points

Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	*Qualifier 1*
C1101	Violation ID	*Qualifier 2*
C1103	Contaminant Code	1005
C1105	Violation Type Code	03
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	(1 month later than C1107)
C1131	Major Violation Indicator	Y (Yes) or N (No)

DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	MD5612950	0955445		I	C1103	1005		
D1	MD5612950	0955445		I	C1105	03		
D1	MD5612950	0955445		I	C1107	20081001		
D1	MD5612950	0955445		I	C1109	20081231		
D1	MD5612950	0955445		I	C1131	Y		
D1	MD5612950	0955446		I	C1103	1005		
D1	MD5612950	0955446		I	C1105	03		
D1	MD5612950	0955446		I	C1107	20090101		
D1	MD5612950	0955446		I	C1109	20090331		
D1	MD5612950	0955446		I	C1131	N		
D1	MD5612950	0955447		I	C1103	1005		
D1	MD5612950	0955447		I	C1105	03		
D1	MD5612950	0955447		I	C1107	20090401		
D1	MD5612950	0955447		I	C1109	20090630		
D1	MD5612950	0955447		I	C1131	N		

Example 5A. Compliance Determination

A GW CWS serving 2,304 people has been in operation since 1995. Since no waivers are allowed under the existing arsenic monitoring requirements, the system has collected arsenic samples for 4 compliance periods (1993-1995, 1996-1998, 1999-2001, 2002-2004) at its only EPTDS. All the arsenic samples were analyzed by EPA Method 200.8 (ICP-MS) with a detection limit of 0.0014 mg/L. The results of the samples ranged from "non-detect" (< 0.0014 mg/L) to 0.004 mg/L. The system collected a sample on November 4, 2006 to satisfy 2005-2007 compliance period monitoring requirements.

Results

PWS ID: 5234590
Date: 11/04/06
Arsenic = < 0.002 mg/L

Monitoring Schedule

The system may continue to collect 1 sample every three years, with the next sample due between 2008-2010. Alternatively, the CWS could have applied to the State for a 9-year waiver as early as 2005, by grandfathering monitoring data from 1993-2004, if allowed by the State. Since the method used to analyze the samples was an EPA-approved method with detection limits significantly below the revised arsenic MCL of 0.010 mg/L, the State could use three rounds of monitoring data to issue the waiver. The system would not be required to monitor during the period 2005-2007 if the State issued the waiver before then. If the State issued a waiver, the system would be required to collect 1 sample during the 9-year compliance cycle from 2008-2016.

Violations

The State has no violations to report to SDWIS/FED.

Example 5B. M&R Violation (9-Year)

The State issued the above system a waiver. The system, therefore, would be required to collect one sample during the period from 2008-2016.

Results

PWS ID: MD1011100
Date: 2/09/2017
Arsenic = no sample collected 2008-2016.

The system has failed to take the one sample required under the monitoring waiver during the 9-year period from 01/01/08 to 12/31/2016.

Violation

The State will report to SDWIS/FED: M&R Violation (1/1/08-12/31/16) - Major (collected none of required samples).

Exhibit 5B. M&R Violation - 9-Year Cycle

Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	*Qualifier 1*
C1101	Violation ID	1710001
C1103	Contaminant Code	1005
C1105	Violation Type Code	03
C1107	Monitoring Period Begin Date	20080101
C1109	Monitoring Period End Date	20161231
C1131	Major Violation Indicator	Y

DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	MD1011100	1710001		I	C1103	1005		
D1	MD1011100	1710001		I	C1105	03		
D1	MD1011100	1710001		I	C1107	20080101		
D1	MD1011100	1710001		I	C1109	20161231		
D1	MD1011100	1710001		I	C1131	Y		

Example 6A. Compliance Determination Regarding Monitoring Waiver Eligibility

A SW CWS serving 9,023 people has been in operation since 2003. Since no waivers are allowed under the existing arsenic monitoring requirements, the system has collected annual arsenic samples for 3 years (2003, 2004, 2005) at its only EPTDS. All arsenic samples were analyzed by EPA Method 200.7 (ICP-AES) with a detection limit of 0.008 mg/L. The results of the samples ranged from "non-detect" (0.008 mg/L) to 0.010 mg/L. The system collected a sample on May 30, 2006 to determine compliance with the revised arsenic MCL (0.010 mg/L). However, the laboratory used EPA Method 200.8 (ICP-MS) to analyze the sample for this round of monitoring because EPA withdrew approval of the less sensitive method 200.7 (ICP-AES).

Results

PWS ID: MD4595230
Date: 5/30/06
Arsenic = 0.007 mg/L

Monitoring Schedule

In general, the system must continue to collect 1 sample every year or apply to the State for a 9-year waiver. In this case, the system may not use the data analyzed by EPA method 200.7 to apply for a waiver, since EPA withdrew approval for this method and it cannot be used after January 23, 2006 for compliance determinations, the grandfathering of data, or waiver determinations. The system must collect 2 additional annual samples prior to being eligible for a waiver. States may grant a waiver to SW systems provided they have monitored annually for at least three years.

Violations

The State has no violations to report to SDWIS/FED.

Example 6B. MCL Average Violation

As described in Example 6A, the system was not eligible for a waiver. The system, therefore, would be required to collect annual samples during the period from 2007-2010. During 2008, it collects its annual sample on 4/22/2008.

Results

PWS ID: MD4595230
Date: 4/22/2008
Arsenic = 0.011 mg/L

The system has numerically exceeded the MCL for arsenic and is thereby required to monitor quarterly beginning in the next quarter, and continue quarterly monitoring until the State determines the results are reliably and consistently below the MCL, or sets a more stringent monitoring schedule as a requirement of a variance, exemption, or enforcement action.

The results of the four quarterly samples (including 4/22/2008) are shown below.

Example 6B - Monitoring Results

Arsenic	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual Average
	4/22/08	8/22/08	12/22/08	2/22/09	
	0.011 mg/L	0.011 mg/L	0.010 mg/L	0.010 mg/L	0.011 mg/L

The annual average arsenic concentration calculated after the 2/22/2009 sample is 0.0105 mg/L, rounded to 0.011 mg/L.

Violation Determination

According to EPA guidance, the State will report the following violation to SDWIS/FED:
MCL average violation incurred during the year 4/1/08-3/31/09. The violation is reported for the 4th monitoring quarter (1/1/2009-3/31/2009).

Exhibit 6B. MCL Average Violation

Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	*Qualifier 1*
C1101	Violation ID	0927333
C1103	Contaminant Code	1005
C1105	Violation Type Code	02
C1107	Compliance Period Begin Date	20090101
C1109	Compliance Period End Date	20090331
C1123	Analysis Result	0.011

DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	MD4595230	0927333		I	C1103	1005		
D1	MD4595230	0927333		I	C1105	02		
D1	MD4595230	0927333		I	C1107	20090101		
D1	MD4595230	0927333		I	C1109	20090331		
D1	MD4595230	0927333		I	C1123	0.011		

Example 7. MCL Average Violation Determination

PWS ID: MD5495320 is a GW system with one sampling point. The system has elected to collect quarterly samples for arsenic starting in July of 2008. The previous sample was collected in July of 2007 and was less than the 0.010 mg/L MCL for arsenic.

Example 7 - Monitoring Results

	Monitoring Period	Result	MCL Violated	Annual Average
Quarter 1	7/1/08 - 9/30/08	0.009 mg/L	No	N/A
Quarter 2	10/1/08 - 12/31/08	0.010 mg/L	No	N/A
Quarter 3	1/1/09 - 3/31/09	0.010 mg/L	No	N/A
Quarter 4	4/1/09 - 6/30/09	0.015 mg/L	Yes	0.011 mg/L
Quarter 5	7/1/09 - 9/30/09	0.005 mg/L	No	0.010 mg/L
Quarter 6	10/1/09 - 12/31/09	0.011 mg/L	No	0.010 mg/L
Quarter 7	1/1/10 - 3/31/10	0.009 mg/L	No	0.010 mg/L
Quarter 8	4/1/10 - 6/30/10	0.018 mg/L	Yes	0.011 mg/L

Summary of Violation Determinations

- One MCL Average violation during quarter 4.
- One MCL Average violation during quarter 8.
- No violations during quarters 1, 2, 3, 5, 6 or 7.

A review of the data presented in this table shows that, after quarters 1, 2, and 3, when an annual average cannot be calculated, and when no values define a numerical violation of the MCL, there are no MCL violations to report. After quarter 4, the average of quarters 1, 2, 3, and 4 is 0.011 mg/L. This is an MCL violation.

After quarter 5, the RAA of quarters 2, 3, 4, and 5 is 0.01 mg/L.
After quarter 6, the RAA of quarters 3, 4, 5, and 6 is 0.010 mg/L (0.01025 rounded to 0.010 mg/L).
After quarter 7, the RAA of quarters 4, 5, 6, and 7 is 0.01 mg/L.
After quarter 8, the RAA of quarters 5, 6, 7, and 8 is 0.011 mg/L (0.01075 rounded to 0.011 mg/L).

Exhibit 7. MCL Average Violation - Ground Water

Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	*Qualifier 1*
C1101	Violation ID	*Qualifier 2*
C1103	Contaminant Code	1005
C1105	Violation Type Code	02
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	3 months later than C1107
C1123	Analysis Result	mg/L (rounded to the nearest 0.001 mg/L)

DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	MD5495320	0998333		I	C1103	1005		
D1	MD5495320	0998333		I	C1105	02		
D1	MD5495320	0998333		I	C1107	20090401		
D1	MD5495320	0998333		I	C1109	20090630		
D1	MD5495320	0998333		I	C1123	0.011		
D1	MD5495320	1002235		I	C1103	1005		
D1	MD5495320	1002235		I	C1105	02		
D1	MD5495320	1002235		I	C1107	20100401		
D1	MD5495320	1002235		I	C1109	20100630		
D1	MD5495320	1002235		I	C1123	0.011		

Example 8. Annual Average Determination

PWS ID: MD1022200 is a SW system with one sample site. The system uses a surface water source, accomplishes annual monitoring, and collected its 2007 sample in July with a result of 0.009 mg/L.

Example 8 - Monitoring Results

	Monitoring Period	Result	MCL Violated	Rounded Annual Average
Quarter 1	7/1/08 - 9/30/08	0.042 mg/L	Yes	0.011 mg/L*
Quarter 2	10/1/08 - 12/31/08	0.012 mg/L	Yes	0.014 mg/L*
Quarter 3	1/1/09 - 3/31/09	0.009 mg/L	Yes	0.019 mg/L*
Quarter 4	4/1/09 - 6/30/09	0.007 mg/L	Yes	0.018 mg/L*
Quarter 5	7/1/09 - 9/30/09	0.009 mg/L	No	0.009 mg/L
Quarter 6	10/1/09 - 12/31/09	0.011 mg/L	No	0.009 mg/L
Quarter 7	1/1/10 - 3/31/10	0.015 mg/L	Yes	0.011 mg/L
Quarter 8	4/1/10 - 6/30/10	0.009 mg/L	Yes	0.011 mg/L

*During quarter 1, the system had a result that was more than 4 times the MCL, which caused the system to be in violation before the annual compliance period was complete. In addition, the system remained in violation for the next three quarters, which utilize quarter 1 for the calculation of compliance and the annual average.[13]

When the data for quarter 1 above are reviewed, it is apparent that without regard for the data which may result from monitoring quarters 2, 3, and 4, the annual average will exceed the MCL (0.042 / 4 = 0.0105 rounded to 0.011 mg/L). Finally, after the data for monitoring quarter 5 above are available, the RAA of quarters 2, 3, 4, and 5 results in a value which is less than the MCL. When the data for monitoring quarter 6 is available, the RAA utilizing quarters 3, 4, 5, and 6 (0.009 mg/L) is less than the MCL.

Unfortunately, when the data for quarter 7 are available (0.015 mg/L), the RAA utilizing quarters 4, 5, 6, and 7 is calculated as 0.0105 mg/L rounded to 0.011 mg/L. This RAA is considered a violation of the MCL. Similarly, when the RAA is calculated after monitoring quarter 8, it is 0.011 mg/L: also a violation of the MCL.

[13]The system is out of compliance immediately if one sample result causes the running annual average to exceed the MCL, as stated in 40 CFR 141.23(i)(i).

Summary of Violation Determinations

- One MCL Average violation during quarter 1.
- One MCL Average violation during quarter 2 .
- One MCL Average violation during quarter 3 .
- One MCL Average violation during quarter 4 .
- One MCL Average violation during quarter 7 .
- One MCL Average violation during quarter 8.
- No violations during quarters 5 or 6.

Exhibit 8. MCL Average Violation - Surface Water System

Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	*Qualifier 1*
C1101	Violation ID	*Qualifier 2*
C1103	Contaminant Code	1005
C1105	Violation Type Code	02
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	3 months later than C1107
C1123	Analysis Result	mg/L (rounded to the nearest 0.001 mg/L)

DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	MD1022200	0800078		I	C1103	1005		
D1	MD1022200	0800078		I	C1105	02		
D1	MD1022200	0800078		I	C1107	20080701		
D1	MD1022200	0800078		I	C1109	20080930		
D1	MD1022200	0800078		I	C1123	0.011		

Each of the example reporting quarters 2, 3, 4, 7, and 8 will require a similar SDWIS/FED DTF entry. The violation ID will be unique for each quarter and will include, as the first 2 characters, the federal FY identifier for the violation quarter being reported. The beginning and end dates of the violation quarter will be unique and the analysis result will be unique.

Example 9. MCL Average Violations & RTC

PWS ID: MD1011100 uses a SW source and has one sample site. The system took its 2007 sample in July 2007 with a result of 0.005 mg/L. The system has elected to take quarterly samples starting in July 2008. The results of sample analysis are in the table below.

Example 9 - Monitoring Results

	Monitoring Period	Result	MCL Violated	Rounded Annual Average
Quarter 1	7/1/08 - 9/30/08	0.000 mg/L*	No	N/A
Quarter 2	10/1/08 - 12/31/08	0.020 mg/L	No	N/A
Quarter 3	1/1/09 - 3/31/09	0.025 mg/L	Yes	0.011 mg/L
Quarter 4	4/1/09 - 6/30/09	0.009 mg/L	Yes	0.014 mg/L
Quarter 5	7/1/09 - 9/30/09	0.000 mg/L*	Yes	0.014 mg/L
Quarter 6	10/1/09 - 12/31/09	0.009 mg/L	Yes	0.011 mg/L
Quarter 7	1/1/010 - 3/31/10	0.010 mg/L	No	0.007 mg/L
Quarter 8	4/1/10 - 6/30/10	0.010 mg/L	No	0.007 mg/L
Quarter 9	7/1/10 - 9/30/10	0.010 mg/L	No	0.010 mg/L
Quarter 10	10/1/10 - 12/31/10	0.009 mg/L	No	0.010 mg/L

*Values of zero are used when the sample analysis result is less than the detection limit.[14]

When the sample taken for monitoring quarter 1 above (7/1/08 to 9/30/08) is analyzed, the result is less than the analytical method detection limit, so the value is recorded as zero.

When the sample for monitoring quarter 2 is analyzed, the result is 0.020 mg/L. Although the result is numerically greater than the MCL, the result when added to the quarter 1 result and divided by 4 is less than the MCL, so no violation is defined. Because the quarter 2 monitoring result is greater than the MCL, the system's voluntary quarterly monitoring becomes mandatory.

When the results for monitoring quarter 3 are available, an MCL violation is defined, since the sum of quarters 1, 2, and 3 is 0.045 mg/L. When that value is divided by 4, the result is 0.01125 mg/L rounded to 0.011 mg/L, considered to be a violation of the MCL.

[14]If a monitoring result is less than the detection limit, zero will be used to calculate the annual average as stated in 40 CFR 141.24(f)(15)(v).

Similarly, when the results for monitoring quarter 4 are available, another MCL violation is present, since the sum of monitoring quarters 1, 2, 3, and 4 is 0.054. When this sum is divided by 4 and rounded, the result is 0.014 mg/L. Monitoring quarter 5 yields the same result as quarter 4 since the sum of monitoring quarters 2, 3, 4, and 5 is also 0.054 mg/L.

The results of quarter 6 monitoring represent the third consecutive monitoring quarter with results less than the MCL. However, when an RAA of monitoring quarters 3, 4, 5, and 6 is calculated, the result (0.011 mg/L) again exceeds the MCL because of the high analysis result for monitoring quarter 3 (1/1/09 to 3/31/09).

When monitoring quarters 7, 8, 9, and 10 are considered, no MCL violations are defined.

Summary of Violation Determinations

- One MCL violation during quarter 3.
- One MCL average violation during quarter 4.
- One MCL average violation during quarter 5.
- One MCL average violation during quarter 6.
- No MCL violations during quarters 1, 2, 7, 8, 9, and 10.

Exhibit 9. MCL Average Violation with RTC

Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	*Qualifier 1*
C1101	Violation ID	*Qualifier 2*
C1103	Contaminant Code	1005
C1105	Violation Type Code	02
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	3 months later than C1107
C1123	Analysis Result	mg/L (rounded to the nearest 0.001 mg/L)

DTF Transactions:

See following pages for table.

Example 9 - SDWIS/FED DTF Violation Transactions						
Columns 1-2	Columns 3-11	Columns 12-18	Columns 19-25	Column 26	Columns 27-31	Columns 32-71
D1	MD1011100	0910001		I	C1103	1005
D1	MD1011100	0910001		I	C1105	02
D1	MD1011100	0910001		I	C1107	20090101
D1	MD1011100	0910001		I	C1109	20090331
D1	MD1011100	0910001		I	C1123	0.011
D1	MD1011100	0910002		I	C1103	1005
D1	MD1011100	0910002		I	C1105	02
D1	MD1011100	0910002		I	C1107	20090401
D1	MD1011100	0910002		I	C1109	20090630
D1	MD1011100	0910002		I	C1123	0.014
D1	MD1011100	0910003		I	C1103	1005
D1	MD1011100	0910003		I	C1105	02
D1	MD1011100	0910003		I	C1107	20090701
D1	MD1011100	0910003		I	C1109	20090930
D1	MD1011100	0910003		I	C1123	0.014
D1	MD1011100	1010004		I	C1103	1005
D1	MD1011100	1010004		I	C1105	02
D1	MD1011100	1010004		I	C1107	20091001
D1	MD1011100	1010004		I	C1109	20091231
D1	MD1011100	1010004		I	C1123	0.011

Quarter 7, 8, 9, and 10 annual averages are below the detection limit; the State determines that the violation has been addressed and returns the PWS to compliance using the preferred Y5000 linking method.

Example 9 - SDWIS/FED DTF RTC Transactions						
Columns 1-2	Columns 3-11	Columns 12-18	Columns 19-25	Column 26	Columns 27-31	Columns 32-71
E1	MD1011100	1100001		I	C1203	20101213
E1	MD1011100	1100001		I	C1205	SOX
E1	MD1011100	1100001		I	Y5000	1010004

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