



# **Stage 1 Disinfectants/ Disinfection Byproducts Rule**

## **Frequently Asked Questions**



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## 1.0 Stage 1 Disinfectants/Disinfection Byproducts Rule

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### 1.1 Disinfectants

#### 1.1.1 Chlorine and Chloramines

For further information, see the following rule sections:

Citation	Part Title
§141.32(e)(76), (77)	Public Notification
§141.201	Public Notification of Drinking Water Violations
§141.54	Maximum Residual Disinfectant Level Goals
§141.65	Maximum Residual Disinfectant Levels
§141.131(c)(1), (2), (3)	Analytical Requirements
§141.132(c)(1)(i), (ii), (iii)	Monitoring Requirements
§141.133(c)(1)(i), (ii)	Compliance Requirements
§141.134(c)	Reporting and Recordkeeping Requirements

**Q:** *Under the Surface Water Treatment Rule water systems can measure heterotrophic plate counts (HPC) in lieu of chlorine residuals. If the results of the HPC are acceptable (< 500 cfu/ml) they are determined to be in compliance with the requirement for a detectable residual in the distribution system. Will these systems now be required to measure a chlorine residual to ensure they do not exceed the MRDL?*

**A:** Yes. The Stage 1 DBPR requires that disinfection residuals be measured to ensure the MRDL is not exceeded. Therefore, HPC measurements cannot be performed in lieu of this testing. However, where detectable residuals are not found, HPCs may be conducted for SWTR compliance.

**Q:** *Our state requires daily chlorine residual measurements to be taken throughout the distribution system. What samples should be considered when calculating compliance with the MRDL?*

**A:** For the Stage 1 DBPR's MRDL, compliance is based upon the samples collected under §141.132(c)(1). The samples are collected at the same time and place as coliform samples as specified in §141.21. Subpart H systems may use samples collected under the requirements of the SWTR ( §141.74(c)(3)(i)) in lieu of taking separate samples. The system's monitoring plan will indicate which samples are to be used for compliance determinations.

**Q:** *Can systems use additional chlorine sampling sites (if states have approved additional sites beyond the TCR)?*

**A:** Yes, if these are included in the monitoring plan.

**Q:** *Does the Stage 1 DBPR apply to chlorine added to the treatment process as an oxidant?*

**A:** Yes. The requirements are applicable to chlorine added anywhere in the treatment process due to the potential formation of TTHM and HAA5.

- Q:** For a system to comply with the MRDLs for chlorine and chloramine, what residual disinfectant concentration should be measured?
- A:** For a system that uses free chlorine for residual maintenance, either free or total chlorine measurement is acceptable. For a system that uses chloramines for residual maintenance, the measure must be combined or total chlorine.

### 1.1.2 Chlorine Dioxide

For further information, see the following rule sections:

Citation	Part Title
§141.32(e)(78)(i), (ii)	Public Notification
§141.201	Public Notification of Drinking Water Violations
§141.54	Maximum Residual Disinfectant Level Goals
§141.65	Maximum Residual Disinfectant Levels
§141.131(c)(1), (2), (3)	Analytical Requirements
§141.132(c)(2)(i), (ii), (iii)	Monitoring Requirements
§141.133(c)(2)(i), (ii)	Compliance Requirements
§141.134(c)	Reporting and Recordkeeping Requirements

**Q:** Does daily monitoring for chlorine dioxide mean 7 days a week? Some systems are not staffed on the weekend. Do systems that add chlorine dioxide need to have someone in on the weekend in order to stay in compliance?

**A:** Yes, systems will have to conduct this monitoring daily. Systems have 3 or 5 years, depending on source water type and size, to get the plant staffed for conducting the required monitoring or change the disinfectant. This monitoring is required and must be conducted daily due to the acute health risks associated with chlorine dioxide.

**Q:** What systems are required to monitor for chlorine dioxide and chlorite?

**A:** All nontransient noncommunity and community systems that use chlorine dioxide, regardless of the purpose, (e.g., disinfection, oxidation, or maintenance of a residual) must monitor for both chlorine dioxide and for the disinfection byproduct, chlorite. Transient noncommunity systems that use chlorine dioxide must monitor for chlorine dioxide, but not for chlorite. There is no provision under the rule for reduced chlorine dioxide monitoring even if the chlorine dioxide is not used for primary disinfection. If the system is using chlorine dioxide intermittently, the system is not required to conduct the daily monitoring for chlorine dioxide and chlorite for days when the chlorine dioxide is not in use or monthly monitoring for chlorite if the chlorine dioxide has not been used at all for the entire month. Monthly monitoring for chlorite is required if chlorine dioxide is used at any time during the month.

- Q:** *If my system is triggered into repeat ClO<sub>2</sub> sampling and I have booster chlorination, the rule says one of the repeat samples must be “as close to the first customer as possible.” Does this mean the first customer in the entire distribution system, or the first customer after booster chlorination?*
- A:** The term “first customer” refers to the first customer in the distribution system. However, the sample that is taken at the longest residence time for compliance with ClO<sub>2</sub> monitoring requirements at §141.132(c)(2)(ii) should be downstream of the point of booster chlorination.

## 1.2 Disinfection Byproducts

### 1.2.1 TTHM and HAA5

For further information, see the following rule sections:

Citation	Part Title
§141.32(e)(79)	Public Notification
§141.201	Public Notification of Drinking Water Violations
§141.53	Maximum Contaminant Level Goals
§141.64	Maximum Contaminant Levels
§141.131(b)(1), (2)	Analytical Requirements
§141.132(b)(1)(i), (ii), (iii), (iv)	Monitoring Requirements
§141.133(b)(1)(i), (ii), (iii)	Compliance Requirements
§141.134(b)	Reporting and Recordkeeping Requirements

- Q:** *If a system rechlorinates in the distribution system, are these rechlorination stations considered “separate plants” under the Stage 1 D/DBPR?*
- A:** No, these rechlorination stations are not generally considered separate plants for minimum monitoring determinations. However, they should be taken into consideration when developing monitoring plans so that maximum residence time/maximum DBP formation is seen, and depending upon the specifics of the system the state may wish to consider these stations as “separate plants”.
- Q:** *The TTHM Rule requires systems to take all required samples within a 24-hour period. The Stage 1 Rule, however, does not specify a time-frame when all the samples need to be collected. When should systems take their required TTHM/HAA5 samples?*
- A:** EPA believes that most systems will find it advantageous to take all their samples in one day but this is not required by the Stage 1 DBPR. However, states may require systems to collect all their TTHM/HAA5 samples within a specified period of time. In either case, systems must specify when their TTHM/HAA5 samples will be taken in their monitoring plan.

- Q:** *With respect to the new compliance requirements for TTHM testing that take effect in 2002 (or 2004 for small systems), when the new TTHM MCL comes into effect, will compliance be calculated based on the samples collected in the 2001 (or 2003) calendar year? Or, are they calculated based on the samples collected during the 2002 (or 2004) calendar year? At what point does the waterworks go out of compliance between the annual average of 0.100 mg/L and 0.080 mg/L?*
- A:** Compliance with the new MCL is based on samples taken beginning in the first quarter of 2002/2004. During the first year of compliance calculation if the sum of fewer than four quarters of data exceeds 0.320mg/L for TTHM or 0.240mg/L for HAA5, the system is immediately in violation (since they will exceed the MCL even if the remaining quarters are zero).
- Q:** *Can you be on routine monitoring for TTHMs and reduced monitoring for HAA5, or vice versa?*
- A:** No, a system cannot qualify for reduced monitoring for one contaminant and not for the other.
- Q:** *Will systems currently on reduced TTHM monitoring for the 1979 TTHM Rule be able to remain on reduced monitoring under the Stage 1 DBPR?*
- A:** Unless these systems conducted TTHM/HAA5 monitoring under the ICR, and have qualified with those samples, they will have to revert to routine monitoring under the Stage 1 DBPR until they re-qualify for reduced monitoring. Systems must have an annual average less than or equal to 0.040 mg/L and 0.030 mg/L for TTHM and HAA5 respectively before they can qualify for reduced monitoring.
- Q:** *To qualify for reduced TTHM and HAA5 monitoring, a Subpart H system must have one year of source water TOC data. To remain on reduced monitoring does the system need to have TOC data (i.e., is this a one time average or a rolling average)?*
- A:** To qualify for reduced TTHM and HAA5 monitoring, a Subpart H system must have one year of source water TOC data with an annual average no more than 4.0 mg/L prior to treatment. To remain on reduced monitoring the Subpart H system's annual average TOC level, before any treatment, must be less than or equal to 4.0 mg/L TOC. This is based on a rolling annual average and is not a one-time test. If a plant does not use conventional treatment, it is not required to monitor monthly for TOC for the enhanced coagulation requirement. However, if it wants to qualify for, and remain on, reduced monitoring for TTHM and HAA5, it must monitor monthly for TOC before any treatment.
- Q:** *Will states and systems need to adjust their monitoring and compliance activities based on the quarters created by the publication date of the rules on December 16? (i.e., will states and systems be allowed to start the new quarter on January 1 rather than December 16?)*
- A:** This issue was addressed with a technical correction to the rule published in the *Federal Register* on January 16, 2001. Monitoring and compliance activities will take effect beginning on January 1 following the December 16 compliance dates in the rule as published on December 16, 1998.



- Q:** *Please clarify compliance dates for monitoring under this rule. The rule states that the systems must comply with the rule requirements beginning January 1, 2002, or 2004 depending on the system size and source. What is the definition of beginning? Does this mean that systems must conduct their monitoring for TTHM and HAA5 a year in advance to determine compliance on December 16, 2001 (or 2003)? Or, do they start the monitoring in the first quarter of 2002 (or 2004) to determine compliance after the fourth quarter of 2002 (or 2004)?*
- A:** Monitoring begins in first quarter 2002/2004, with compliance determined after the fourth quarter, if quarterly samples are required. If the TTHM and HAA5 results are less than or equal to 0.080 mg/L or 0.060 mg/L respectively, the PWS is in compliance. If the results are greater than 0.080 mg/L or 0.060 mg/L for systems monitoring annually (or less frequently), the system goes to increased (quarterly) monitoring.
- Q:** *Can states phase out the TTHM rule faster than the DBPR allows?*
- A:** Yes, but only if states adopt and implement the Stage 1 DBPR ahead of schedule.
- Q:** *Can samples be taken for operational purposes and not be used for compliance?*
- A:** Yes. Systems are encouraged to take operational samples as necessary. Operational samples do not have to be used for compliance; however all samples used for compliance purposes must be noted in the system's monitoring plan.
- Q:** *Under the Stage 1 DBPR, if a system must increase its chlorine or chloramine levels to address an emergency (e.g. a main break or other contamination event), and is scheduled to collect DBP samples, should the system reschedule its TTHM/HAA5 sampling?*
- A:** The system is required to monitor during normal operating conditions, this includes changes in disinfection levels caused by water quality fluctuations. However, if the system is experiencing an emergency, and must increase its chlorine or chloramine levels during the period that monitoring is required under the sampling schedule, the system must consult with the state to determine if sampling may be delayed until the emergency has ended, and normal operation is resumed.
- Q:** *How can systems with more than one treatment plant determine compliance if each plant provides a different percentage of the system's supply? Averaging of all of the samples taken from a surface water source providing 90% of the systems water and a ground water plant serving the other 10% may not truly reflect the level of TTHMs and HAA5 in the entire system.*
- A:** EPA believes that for systems with more than one treatment plant, the quarterly average, representative of each treatment plant, should be determined separately. The quarterly average for the entire system should be calculated by weighing the averages for each of the treatment plants (total number of treatment plants = n) as follows:

(Quarterly average for samples representing treatment plant 1)

X (fraction of flow\*into system from plant 1)

+ (Quarterly average for samples representing treatment plant 2)

X (fraction of flow\* into system from plant 2)

+ ... (Quarterly average for samples representing treatment plant n)

X (fraction of flow\* into system from plant n)

= quarterly average for the system

\* for the purposes of this determination only, flow is defined as the average daily flow for the subject treatment plant during the subject compliance period.

(Note: this formula is taken directly page 13 of EPA's 1983 Guidance titled: Trihalomethanes in Drinking Water - Sampling, Analysis, Monitoring, and Compliance).

For added explanation, we offer the following based on the above formula:

Plant 1 serves 90% of the water to the system and has a quarterly average of 120 ppb for TTHM and plant 2 serves the other 10% and has a quarterly average of 40 ppb for TTHM or  $(120 \times 0.9) + (40 \times 0.1) = 112$  ppb as a quarterly average for the system.

**Q:** *Assume a system has multiple wells and a single surface water source. Are the TTHM and HAA5 monitoring requirements for each plant, ground water and surface water, based upon the requirements for Subpart H systems?*

**A:** Yes. A system that uses ground water as well as surface water or ground water under the influence of surface water as part of their source is considered a Subpart H system. The monitoring requirements for all plants are as established in the rule for Subpart H systems. See also Section IV-G: Determining Monitoring Frequency for TTHM and HAA5 Sampling, Mixed Sources (Surface Water and Ground Water), Example SG3.

**Q:** *If a Subpart H system serving greater than or equal to 10,000 persons has two treatment plants and the distribution system is configured in such a way that one of the samples (e.g., max residence time) is in effectively the same location for both plants can the system use one sample to cover both treatment plants or does the system have to take two samples? In the most simple example, can the system take 7 samples instead of 8 with one sample counting for two?*

**A:** If a system can demonstrate in its monitoring plan to the satisfaction of the state that a sample taken within the distribution system effectively covers the monitoring requirements for two plants, it could count one sample as meeting the intent of the regulation. States should be reviewing the sampling plan to determine if by not taking a sample the system will still have data reflective of the spacial and temporal conditions in the distribution system for byproduct formation. However, this would not be considered appropriate for systems which are only required to take samples at one location per plant.

**Q:** *If a system uses surface water to supplement its ground water source on a seasonal basis what kind of system is it, Subpart H or ground water? What is the routine monitoring frequency for TTHM and HAA5 and how does the system qualify for reduced monitoring?*

**A:** The system would monitor according to the subpart H requirements during any quarter when using either surface water or ground water under the influence of surface water, the sample shall be taken so the results are representative of the surface source. When only using ground water, the system would monitor according to the requirements for a ground water system. (See the table under §141.132) The compliance calculations are based on a running annual average computed quarterly. If the running annual average computed quarterly for TTHM and HAA5 is less than or equal to 0.040 mg/L and 0.030 mg/L, respectively, and meets the TOC levels required for the months that the system uses surface water, the system qualifies for reduced monitoring.

See also Section IV-G: Determining Monitoring Frequency for TTHM and HAA5 Sampling, Mixed Sources (Surface Water and Ground Water), Example SG4.

**Q:** *How does a system determine its month of warmest water temperature for the purposes of monitoring for TTHM and HAA5 on a yearly or less frequent basis under the Stage 1 DBPR?*

**A:** Systems should monitor the temperature of their treated water or use historical data to ensure they are collecting samples during the month of warmest water temperatures (i.e. when disinfection byproduct formation is accelerated). For most systems this is likely to occur in July, August, or September. If the system operates during these months, this would likely be the time to take the TTHM and HAA5 samples. Systems that do not operate during these months must take their samples during the warmest month in which they operate. This requirement is designed to allow less frequent monitoring by collecting samples during worst case conditions.

**Q:** *Why are the levels of TTHM and HAA5 established at lower concentrations to qualify for reduced monitoring than to stay on reduced monitoring once qualified?*

**A:** Routine monitoring for TTHMs and HAA5 gives an indication of “average” disinfection byproduct occurrence in the distribution system. On the other hand, sampling requirements for reduced monitoring are designed to ensure that the sample measures “worst case” conditions for occurrence of the disinfection byproducts. Thus, these worst case samples are expected to contain higher concentrations of DBPs than the average of routine samples.

**Q:** *If a system is conducting routine yearly monitoring for TTHM/HAA5 and exceeds the MCL for either DBP in this yearly sample, is the system in violation under the Stage 1 DBPR?*

**A:** The system is not immediately in violation. The system must increase their monitoring to quarterly the very next quarter. If after a year of quarterly monitoring the system exceeds the MCL as an annual average, the system is in violation. If the system fails to perform all of the quarterly monitoring, compliance will be determined based on the available data and the system will also have a monitoring violation.

**Q:** *If the system uses an ICR approved lab to do the testing for TTHM and HAA5 in the first year, can it use the data collected to qualify for reduced TTHM and HAA5 monitoring?*

**A:** If the state approves the lab, then the system can use the data to qualify for reduced TTHM and HAA5 monitoring provided that the data meets all the other D/DBPR compliance sampling and analysis requirements. In addition, Subpart H systems must meet

applicable TOC levels. Systems which collected TTHM and HAA5 data for applicability monitoring under the IESWTR (see Q and A in section 2.2) can use that data if the samples were analyzed by a certified laboratory using approved ICR methods.

**Q:** *Do TTHM and HAA5 samples have to be collected at the same time and location?*

**A:** Yes, they should. However, there is no regulatory requirement to sample at the same time and location. The system has to specify locations and schedules for collecting samples in its monitoring plan.

**Q:** *Does the use of any oxidant mean that my system is required to sample for TTHMs?*

**A:** A system that uses an oxidant that can also be used as a disinfectant (such as ClO<sub>2</sub> or O<sub>3</sub>) must sample for TTHMs. However, a ground water system that uses an oxidant that is NOT a disinfectant (such as KMnO<sub>4</sub> for taste and odor oxidation) and does not add another disinfectant to their water, is not required to monitor for TTHMs.

**Q:** *Do systems that only add ozone have to monitor for TTHM and HAA5?*

**A:** Yes, all systems that supply water treated with a chemical disinfectant are required to monitor for TTHM and HAA5.

### 1.2.2 Bromate

For further information, see the following rule sections:

Citation	Part Title
§141.32(e)(80)	Public Notification
§141.201	Public Notification of Drinking Water Violations
§141.53	Maximum Contaminant Level Goals
§141.64	Maximum Contaminant Levels
§141.131(b)(1), (2)	Analytical Requirements
§141.132(b)(3)(i), (ii)	Monitoring Requirements
§141.133(b)(2)	Compliance Requirements
§141.134(b)	Reporting and Recordkeeping Requirements

**Q:** *May bromate monitoring be modified for systems based on the population served (as TTHM and HAA5 monitoring is structured)?*

**A:** No, there are no provisions in the Stage 1 DBPR to monitor for bromate based on system type and/or size.

- Q:** *Do systems using low levels of ozone at the beginning of the plant for purposes of enhancing filtration need to test for bromate under this rule?*
- A:** Yes. The rule specifies that any community or nontransient noncommunity system that uses ozone, for disinfection or oxidation, must take one bromate sample per month per treatment plant using ozone at the entrance to the distribution system. (See §141.132(b)(3))

### 1.2.3 Chlorite

For further information, see the following rule sections:

Citation	Part Title
§141.32(e)(81)	Public Notification
§141.201	Public Notification of Drinking Water Violations
§141.53	Maximum Contaminant Level Goals
§141.64	Maximum Contaminant Levels
§141.131(b)(1), (2)	Analytical Requirements
§141.132(b)(2)(i), (ii)	Monitoring Requirements
§141.133(b)(3)	Compliance Requirements
§141.134(b)	Reporting and Recordkeeping Requirements

- Q:** *May chlorite monitoring be modified for systems based on the population served (as TTHM and HAA5 monitoring is structured)?*
- A:** No, there are no provisions in the Stage 1 DBPR to monitor for chlorite based on system type and/or size.
- Q:** *Daily monitoring means 7 days a week. Some systems are not staffed on the weekend. Do systems that add chlorine dioxide need to have someone in on the weekend in order to stay in compliance?*
- A:** Yes, systems required to conduct daily monitoring under the Stage 1 DBPR will have to conduct this monitoring daily. The system has 3 or 5 years, depending on its source water type and size, to get the plant staffed for conducting the required monitoring or change their disinfectant. This monitoring is required and must be conducted daily due to the acute health risks associated with chlorine dioxide.
- Q:** *Can you use analytical methods other than those listed in the Federal Register?*
- A:** The methods in the rule must be used.
- Q:** *When we have to do additional sampling because of an exceedence of 1.0 mg/L chlorite at the entrance to the distribution system, say 1.5 mg/L, and chlorite in the distribution is less than that level, can we assume that if the level at the entrance to the distribution system is 1.2 mg/L, the level in the distribution will be lower and forego monitoring?*
- A:** If the system exceeds 1.0 mg/L, the system MUST conduct the additional monitoring (3 samples in the distribution system) the following day.

**Q:** *Do the MCL and monitoring requirements for chlorite apply to transient systems that use chlorine dioxide?*

**A:** The MCL and monitoring requirements for chlorite apply only to community and nontransient noncommunity systems that use chlorine dioxide. Chlorite is not regulated for transient systems.

**Q:** *Does EPA intend for daily chlorite samples to be sent out to a certified laboratory for analysis or could systems do hand held testing at the entrance to the distribution system for chlorite?*

**A:** The original rule requires that the analysis be performed by a certified laboratory, however, EPA updated the rule through technical corrections published in the *Federal Register* on January 16, 2001 to allow daily chlorite sampling and analysis to be performed by a party approved by the state.

### 1.3 Disinfection Byproduct Precursors

For further information, see the following rule sections:

Citation	Part Title
§141.32(e)(79)	Public Notification
§141.201	Public Notification of Drinking Water Violations
§141.131(d)(1), (2), (3), (4), (5)	Analytical Requirements
§141.132(d)(1), (2)	Monitoring Requirements
§141.133(d)	Compliance Requirements
§141.134(d)	Reporting and Recordkeeping Requirements
§141.135 [entire part]	Treatment Technique for Control of DBP Precursors

**Q:** *Do lime softening plants need to consider alternative compliance criteria and/or Step 1 TOC removal requirements or can they go right to the Step 2 bench-scale testing?*

**A:** EPA believes that all lime softening plants will meet at least one of the alternative compliance criteria, one of the additional alternative compliance criteria for softening plants, or will be able to achieve step 1 TOC removal requirements. The Step 2 bench testing procedures are not designed for softening systems since the step 2 procedure is designed to lower pH while the softening process raises pH. Thus Step 2 does not apply to softening systems.

**Q:** *Some treatment plants operate seasonally. How do you determine quarterly averages?*

**A:** These systems must use the average of the available data in each quarter the plant operates.

**Q:** *Would you ever end up with a treated water TOC higher than an untreated source water TOC?*

- A:** This may happen as a result of the analytical methods used to measure TOC where minor variations (measurement error) may show a treated water TOC slightly higher than a source water TOC level.
- Q:** *When the treated water TOC level is greater than the untreated water TOC level, what number should be used in the monthly calculation?*
- A:** There are two ways to calculate compliance with the Step 1 TOC removal requirements. The first is to calculate the actual percentage of TOC removal from the source and treated waters for that month [141.135(c)(1)(i)]. In any month where the treated water TOC level is greater than the source water TOC level, the monthly calculation would be a negative number. Second, the system could use an alternative compliance calculation method. For example, if the system's treated or source water TOC is less than 2.0 mg/L the system would assign the value of 1.0 for that month. For any month that a system practicing softening removes at least 10 mg/L of hardness (as CaCO<sub>3</sub>) the system would assign the value of 1.0 for that month [141.135(c)(2)(i)].
- Q:** *Does the addition of a disinfectant affect where and when source water TOC sampling is performed?*
- A:** Yes, TOC monitoring must occur before any disinfectant is added into the system.
- Q:** *If a system meets one of the alternative compliance criteria is it exempted from implementing enhanced coagulation?*
- A:** If a system meets one of the alternative compliance criteria as a running annual average, calculated quarterly, they are in compliance with the precursor removal treatment technique and do not have to meet the Step 1 TOC removal requirements. For those systems that must implement enhanced coagulation or enhanced softening, alternative compliance criteria can also be used for compliance calculations on a month-by-month basis. (See § 141.135(c)(2))
- Q:** *If a system has met the same alternative compliance criterion for the past four quarters does this mean it is in compliance for the previous year or for the following year?*
- A:** This system is in compliance for the previous year.
- Q:** *Does a system always have to use the same alternative compliance criterion to avoid employing enhanced coagulation?*
- A:** In order to avoid employing enhanced coagulation, the system must meet the same alternative compliance criterion for the past four quarters to calculate a running annual average. If it cannot meet this same criterion for four quarters, the system is required to perform enhanced coagulation and perform the compliance calculations required in §141.135(c). However, once a system is required to employ enhanced coagulation, they may employ alternative compliance criteria on a month-by-month basis (§141.135(c)(2)(i)-(v)) in lieu of performing the calculations in §141.135(c)(1). Alternative compliance criteria used on a month-by-month basis for calculating compliance can change depending on the time of year and the characteristics of the water.

**Q:** *If I meet an alternative compliance criterion for the month and have exceeded the Step 1 removal requirements, should I use 1.0 or the calculated number in my compliance calculations?*



- A:** You should use the calculated number, since if you exceed the Step 1 removal requirements, this number will be greater than 1.0. This number will “help” the quarterly average you calculate assuming you have a month where your TOC percent removal ratio is less than 1.0.
- Q:** *Does the state need to approve all TOC percent removal levels under the Stage 1 DBPR?*
- A:** The state is only required to approve the Step 2 removal levels, not the Step 1 TOC removal levels.
- Q:** *What should a conventional softening system do if it must meet the TOC removal requirements under the Stage 1 DBPR by dropping alkalinity and then must recarbonate to adjust pH and alkalinity for achieving compliance with the Lead and Copper Rule?*
- A:** The system may use either the TOC percentage removal requirement or the alternative compliance criteria (less than 60 mg/L (as CaCO<sub>3</sub>) to comply with the rule. The system may then recarbonate to comply with the Lead and Copper Rule. Treated water alkalinity, for purposes of compliance with the Stage 1 DBPR, should be measured prior to recarbonation and may be measured anywhere in the treatment plant.
- Q:** *Do labs have to be certified to conduct TOC monitoring?*
- A:** A system must use a party approved by EPA or the state to measure TOC, with any of the methods specified in the regulations. Use of a certified laboratory is not required.
- Q:** *Is GAC effective in removing DBPs? May it be used by conventional plants in lieu of the treatment technique for DBP precursor removal under the Stage 1 DBPR?*
- A:** The system may use GAC if it provides adequate TOC removal to allow the system to meet either Step 1 or one of the alternative compliance criteria for finished water. GAC is effective depending on the type of carbon used, the contact time, and the nature of the DBPs. Depending on the type of carbon used, it can also be expensive and cause operational and disposal problems. EPA recommends that systems not use GAC for removal of DBPs after flocculation but instead use it for DBP precursor (TOC) removal, if necessary. GAC can be used to “enhance” enhanced coagulation and TOC removal in conventional plants. However, because GAC tends to work most effectively when used in tandem with enhanced coagulation rather than in lieu of, it is not normally a substitute for DBP precursor removal.
- Q:** *How often does a system doing Step 2 have to perform bench- or pilot-scale testing?*
- A:** The rule only requires that it be performed; the frequency is determined by the state. In the EPA guidance on Enhanced Coagulation, the recommended frequency for the Step 2 bench- or pilot-scale testing is at least quarterly for the first year. If source water quality changes significantly on a more frequent basis, Step 2 testing may need to be conducted more frequently. The minimum levels of TOC removal will be determined by this testing and established as regulatory requirements by the state.
- The guidance manual (EPA 815-R-99-012) is available at EPA’s website: [www.epa.gov/safewater/mdbp/implement.html](http://www.epa.gov/safewater/mdbp/implement.html) or from NSCEP at 1.800.490.9198.
- Q:** *Why are enhanced coagulation and enhanced softening only required at conventional plants?*
- A:** Enhanced coagulation and enhanced softening involve the addition of higher levels of coagulants (i.e., higher than is required for turbidity removal). Therefore, a sedimentation

(solids removal) process is necessary to remove solids prior to filtration. Without sedimentation, the solids would plug the filters, and result in short filter runs and poor operation. In the Stage 1 DBPR, the precursor removal requirements apply to those systems best able to remove DBP precursors at relatively low cost.

**Q:** *Do you change Step 2 TOC removal requirements when there is a routine seasonal change in source water quality?*

**A:** The frequency of the Step 2 bench- or pilot-scale testing is determined by the state. In the EPA guidance on Enhanced Coagulation, the recommended frequency for the Step 2 bench- or pilot-scale testing is at least quarterly for the first year. If source water quality changes significantly on a more frequent basis, Step 2 testing may need to be conducted more frequently. The minimum levels of TOC removal will be determined by this testing and established as regulatory requirements by the state. In addition, it may vary on a seasonal basis if approved by the state.

The EPA guidance manual (EPA 815-R-99-012) is available at [www.epa.gov/safewater/mdpb/implement.html](http://www.epa.gov/safewater/mdpb/implement.html) or from NSCEP at 1.800.490.9198

**Q:** *For the “simultaneous” paired sample, what is the time-lag allowed between samples (accounting for detention time)?*

**A:** The rule requires the paired samples to be collected “at the same time.” In practice EPA expects that systems will typically collect the source water sample followed, in a few minutes to a few hours, by the treated water sample. In situations where raw water quality fluctuates frequently, the system may need to provide a time-lag between the samples equal to the residence time of the water between sampling points. This will ensure the samples accurately reflect the actual TOC removal. In all cases systems should address their sampling procedure in their monitoring plans.

**Q:** *If a system treats blended water from two very different source waters (one source meets an alternative compliance criterion, the second source does not) may the system forego enhanced coagulation?*

**A:** The enhanced coagulation/enhanced softening requirements are based on the source water TOC and alkalinity. All measurements and compliance determinations must be made on the water that is actually treated in the plant under normal operating conditions. If that water is comprised of a blend from multiple sources, the composition of the blend will determine whether alternative compliance criteria are met or whether achieving the minimum TOC removal requirements of enhanced coagulation is necessary.

**Q:** *What if for one month water is not amenable to enhanced coagulation?*

**A:** Compliance is based on a running annual average. The system may elect to use the calculated data, use an alternative compliance criterion (if possible) that month, or apply for a Step 2 removal requirement for the month.

- Q:** *If a system is unable to meet any alternative compliance criteria or Step 1 TOC removal requirements in the first quarter of monitoring, can it decide to go to Step 2 immediately, rather than waiting for the full year of data collection?*
- A:** The system may elect to conduct the necessary bench-scale testing immediately but because compliance is based on a running annual average, the system is not eligible for Step 2 removal until one year of data have been collected.
- Q:** *If a system, through excessive lime softening, lowers the alkalinity to below 60 mg/L and/or removes at least 10 mg/L of magnesium hardness and, therefore, meets one or more of the compliance criteria, why does it need to do the TOC monitoring? Do states have the flexibility to allow such systems to forego TOC monitoring?*
- A:** States do not have the flexibility to allow systems to forego TOC monitoring. EPA believes that systems may not always meet one of the alternative compliance criteria, and that the system needs to have the data in such cases to determine compliance. Additionally, in order to qualify for, and remain on, reduced monitoring for TTHM and HAA5 these Subpart H systems must continue to perform monthly TOC monitoring of untreated source water.
- Q:** *If a softening system wishes to use the additional alternative compliance criteria for softening systems and its jar-testing demonstrates a finished water alkalinity below 60 mg/L, but samples in the plant that incorporate the prescribed coagulant dose still exceed 60 mg/L, is the system in compliance with the Step 2 requirements?*
- A:** There are no Step 2 provisions for softening systems. The alkalinity or magnesium hardness removal levels must be met in the full-scale plant. For non-softening systems, Step 2 determines a removal requirement, not a coagulant dose requirement.
- Q:** *How should the state deal with the situation where the full-scale results do not achieve the required step 2 TOC removals predicted by jar testing?*
- A:** Failure to meet step 2 TOC removal requirements results in a violation. The system should be encouraged to experiment with acids, alternative coagulants, etc. to improve TOC removal and ensure compliance.
- Q:** *May a system grandfather Step 2 jar testing results in advance of the effective date of the Stage 1 D/DBPR requirements provided that the system meets all the technical criteria specified in the rule?*
- A:** To meet the special primacy requirements, the state has to develop Step 2 methodology. If a system wishes to begin testing early, the system should ensure that the state has submitted its Step 2 methodology to EPA for approval.
- Q:** *If there is a group of surface water intakes close to each other, can they do one raw water TOC sample?*
- A:** No, Because the TOC levels in surface water can vary greatly by time and location in a water body. Plants are required to take TOC samples at each intake, because the samples must reflect the treated water samples.

- Q:** *Section 141.135(b)(3) says that once the state approves a Step 2 TOC removal percentage, the state may make that percentage retroactive. However, Section 141.133(d) says that systems which do not meet the Step 1 requirements during the first 12 months are not eligible for retroactive approval of Step 2 requirements. Which is correct?*
- A:** Both are correct. Section 141.133(d) limits what may be done in the first year for a system which elects to enter the compliance period uninformed. Systems may begin monitoring in 2001/2003 to determine whether Step 1 levels can be met. This monitoring is not mandatory and failure to monitor during the 12 months prior to the compliance date is not a violation. However, failure to conduct this monitoring makes a system ineligible for retroactive approval of a step 2 alternative TOC removal level during 2002/2004. After 2002/2004, all systems are eligible for retroactive step 2 approval, whether the early monitoring was conducted or not. The M-DBP FACA negotiating committee and EPA believed that systems should not be allowed to claim ignorance of whether compliance had been achieved, but also recognized that future changes in source water quality may affect a system's ability to achieve compliance. To balance these two, the rule allows for retroactive approval of Step 2 criteria if the system has data that indicates that the system has taken prudent measures to comply. Failure to determine compliance status is not prudent. Such retroactive approval is not available for MCL compliance or for compliance with other treatment techniques.
- Q:** *How does a system that is treating for zebra mussel control by injecting chlorine at the intake collect untreated source water samples for TOC?*
- A:** The system may have to discontinue its chlorine feed for a brief period in order to collect the sample. Alternatively, the state may allow a grab sample at the entrance to the intake to the plant before any treatment. This situation should be addressed in the system's monitoring plan.
- Q:** *TOC measurements are limited to two significant figures. The use of these values in compliance calculations under §141.135(c) cannot produce a value with a greater number of significant figures. However, systems are required to compare the value calculated for compliance to 1.00 which has three significant figures. How do you reconcile this?*
- A:** The increase in significant figures was an oversight by EPA. The intent was for systems to compare the calculated value at two decimal places.

## **1.4 Monitoring**

### **1.4.1 General Monitoring Issues**

- Q:** *How do you determine TOC levels to qualify for or remain on reduced monitoring for TTHM and HAA5 if you have multiple treatment plants? Can you have reduced monitoring for one plant and not another? Or should all the plants be treated the same?*
- A:** Systems cannot be on reduced monitoring for TTHM and HAA5 at one of their plants and routine monitoring for another because compliance is based on the TTHM and HAA5 levels for the entire system. Each plant's source water TOC level must be less than or equal to 4.0 mg/L.

**Q:** *If you have both ground water and surface water the system is considered to be a Subpart H system. As a Subpart H system, is it required to follow the monitoring for Subpart H systems for all of their treatment plants including ground water plants?*

**A:** Yes. If the system is a Subpart H system the monitoring requirements for Subpart H systems apply to all plants whether ground water or surface water.

**Q:** *How does a system (either ground water or surface water) determine the month of warmest water temperature, when there is little or no temperature variability?*

**A:** To meet this requirement systems should regularly monitor their source and distribution water temperatures or use historical data. In cases where the water temperature is very constant, the system may consult with the state regarding the proper month in which to conduct sampling. The results of this consultation would then be incorporated into the system's monitoring plan. The state may also be able to better spread out the monitoring to avoid lab capacity issues.

### 1.4.2 Monitoring Plans

For further information, see the following rule sections:

Citation	Part Title
§141.132(a)(1), (2), (3)	Monitoring Requirements (General requirements)
§141.132(f)(1), (2), (3)	Monitoring Requirements (Monitoring plans)

**Q:** *Under the Stage 1 DBPR, when does the monitoring plan need to be completed?*

**A:** The monitoring plan must be complete and available for inspection by the state and public no later than 30 days following the applicable compliance dates in § 141.130(b). Subpart H systems > 3,300 must submit their monitoring plans with their first monitoring report.

**Q:** *Do all monitoring plans have to be reviewed and approved by the state to ensure the system is planning monitoring that will achieve compliance in all areas of the Stage 1 DBPR?*

**A:** States are encouraged to review or approve monitoring plans. States will generally check the monitoring plans during the sanitary surveys or other visits. Subpart H systems serving >3,300 must submit monitoring plans to the state for review. States may require plans to be submitted by any other system and may require changes to the plan.

**Q:** *How should a system determine residence times and conduct monitoring under the Stage 1 DBPR if it has a complicated distribution system?*

**A:** This should be addressed in the monitoring plan for the system and should be reviewed by the state to ensure the system will be in compliance. In the monitoring plan, the system should indicate why samples are being taken in a particular location. EPA intends for sites to be generally selected based on best professional judgement rather than on computer analyses and tracer studies.

- Q:** *Is there a restriction on how often a system can revise their monitoring plan?*
- A:** The frequency of allowable modifications to the monitoring plan is not addressed in the rule. Clearly changes in sources, disinfectants, etc. will make modifications necessary and sometimes unpredictable. EPA believes this is best left up to states' discretion. Any time a Subpart H system serving greater than 3,300 people modifies its sampling plan, the system must submit this modified sampling plan to the state.

### 1.4.3 Multiple Wells Drawing from a Single Aquifer

For further information, see the following rule sections:

Citation	Part Title
§141.132(a)(2)	Monitoring Requirements (General requirements)

- Q:** *If a system has multiple wells drawing from the same aquifer, what is the monitoring frequency for TTHM and HAA5?*
- A:** The wells may be treated as one plant for the purposes of determining monitoring frequency for TTHM and HAA5. This is true even if each well or some of the wells have their own treatment.
- Q:** *If a system has one treatment plant with multiple wells from different aquifers, how is the monitoring frequency determined?*
- A:** If all the sources are combined into a single treatment plant, the number of samples required for that plant is determined by system size.

### 1.4.4 Reporting and Recordkeeping

For further information, see the following rule sections:

Citation	Part Title
§141.134(b)& (c)	Reporting and Recordkeeping Requirements

- Q:** *Section 141.134, reporting and recordkeeping requirements for TTHM/HAA5, chlorite, bromate, chloramines and chlorine, requires systems to report “whether the MCL (or MRDL) was exceeded.” The requirements for systems monitoring for chlorine dioxide, on the other hand, are to report “whether the MRDL was exceeded” and “whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute or chronic.” Does the requirement to report “whether the MCL (or MRDL) was exceeded,” mean the system should report any single sample that exceeds the MCL (or MRDL) or only report exceedences that result in violations?*
- A:** For each compliance period, Systems are required to report results of all samples whether or not they exceed the MCL or MRDL, they are also required to report any violations of the MCL or MRDL, based upon the compliance determination for the monitoring period for which they are reporting.

### 1.4.5 Consecutive Systems

For further information, see the following rule sections:

Citation	Part Title
§141.132(f)(3)	Monitoring Requirements (Monitoring plans)

**Q:** *Will a wholesale system be required to change its treatment process if there is an MCL or MRDL exceedance in system that purchases its water?*

**A:** Each system is responsible for achieving and maintaining compliance. In most cases EPA expects wholesalers to cooperate with purchased water systems to ensure their compliance but, as previously mentioned, each water system is ultimately responsible for its own compliance.

**Q:** *Does this rule apply to consecutive systems that buy chlorinated water and that do not add a chemical disinfectant?*

**A:** EPA believes that all consumers should be protected against DBPs. EPA anticipates clarifying requirements for those systems in the Stage 2 DBPR. Until the Stage 2 rule is finalized, EPA anticipates that states will specify how consecutive systems that purchase disinfected water but do not add a disinfectant must monitor.

## 2.0 General Program Requirements

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### 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 Stage 1 DBPR?*

**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 Stage 1 DBPR?*

**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 Stage 1 DBPR, a state can obtain interim primacy for the Stage 1 DBPR 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 Stage 1 DBPR.

- 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 Stage 1 DBPR 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.

## **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.