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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 141

SUMMARY: The U.S. Environmental Protection Agency (EPA) is finalizing a Safe Drinking Water Act (SDWA) rule that requires public water systems to collect occurrence data for contaminants that may be present in drinking water but are not yet subject to EPA's drinking water standards set under the SDWA. This rule identifies eleven analytical methods to support water system monitoring for a total of 30 chemical contaminants, consisting of nine cyanotoxins and one cyanotoxin group; two metals; eight pesticides plus one pesticide manufacturing byproduct (hereinafter collectively referred to as ''pesticides''); three brominated haloacetic acid disinfection byproduct groups; three alcohols; and three semivolatile organic chemicals. EPA is also announcing a public meeting and webinar to discuss the implementation of the fourth Unregulated Contaminant Monitoring Rule.

DATES: This final rule is effective on January 19, 2017, 30 days after publication in the **Federal Register**.

The 5-year UCMR 4 program will take place from January 2017 through December 2021, with sample collection occurring between January 1, 2018, and December 31, 2020.

To minimize the impact of the rule on small systems (those serving 10,000 or fewer people), EPA pays for the sample kit preparation, sample shipping fees and analysis costs for these systems. In addition, **no small system** will be required to monitor for **both** cyanotoxins and the 20 additional UCMR contaminants.

List 1 Analytes (SDWARS refers to this monitoring as Assessment Monitoring 3 "AM3") - Sampling will take place twice a month for four consecutive months (total of eight sampling events) for SW and GWUDI systems. These water systems will collect samples during the monitoring timeframe of March through November (excluding December, January and February). GW systems are excluded from cyanotoxin monitoring.

One Cyanotoxin Group using EPA Method 546 (Adda ELISA) ''total microcystins'' **[est cost of analysis $171/sample event (SE)]**

Seven Cyanotoxins using EPA Method 544 (SPE LC–MS/MS) [est cost of analysis $498/SE]

microcystin-LA
microcystin-LF
microcystin-LR
microcystin-LY
microcystin-RR
microcystin-YR
nodularin

Two Cyanotoxins using EPA Method 545 (LC/ESI–MS/MS) [est cost of analysis $525/SE]

Anatoxin-a
Cylindrospermopsin

Phased Sample Analysis for Microsystins: Three samples will be collected at the EPTDS for cyanotoxins. One sample will be collected for EPA Method 546 (Adda ELISA), another for potential analysis by EPA Method 544, and another for analysis by EPA Method 545.

If the EPTDS ELISA result is less than 0.3 micrograms per liter (µg/L) (i.e., the reporting limit for total microcystins), then the sample collected for Method 544 will not be analyzed for that sample event and only the Adda ELISA result will be reported to EPA. If the ELISA result is greater than or equal to 0.3 µg/L, the result will be reported to EPA and the EPA method 544 sample will then be analyzed to identify and quantify nodularin and the six specific microcystins congeners. Cylindrospermopsin and anatoxin-a will only be monitored at the EPTDS, with analysis by EPA Method 545.

If the EPTDS ELISA result is less than 0.3 micrograms per liter (mg/L) (*i.e.,* the reporting limit for total microcystins), then the sample collected for Method 544 will not be analyzed for that sample event and only the Adda ELISA result will be reported to EPA. If the ELISA result is greater than or equal to 0.3 mg/L, the result will be reported to EPA and the EPA Method 544 sample will then be analyzed. Cylindrospermopsin and anatoxin-a will only be monitored at the EPTDS, with analysis by EPA Method 545.

In lieu of the proposed source-water ELISA monitoring, this final rule requires PWSs to answer four simple ''metadata'' questions (identifying the appropriate responses from the options provided) to help EPA understand the source water quality at the time their EPTDS samples are collected.

1. Bloom Occurrence - *Question:* Preceding the finished water sample collection, did you observe an algal bloom in your source waters near the intake?
2. Cyanotoxin Occurrence - *Question:* Preceding the finished water sample collection, were cyanotoxins ever detected in your source waters near the intake and prior to any treatment (based on sampling by you or another party)?
3. Indicator of Possible Bloom-Treatment - *Question:* Preceding the finished water sample collection, did you notice any changes in your treatment system operation and/or treated water quality that may indicate a bloom in the source water?
4. Indicator of Possible Bloom-Source Water Quality Parameters - *Question:* Preceding the finished water sample collection, did you observe any notable changes in source water quality parameters (if measured)?

See Table 1 – Unregulated Contaminant Monitoring Reporting Requirements items 29-30 for the questions and response choices that you will find in the data reporting system (your CDX account, SDWARS4).

20 Additional List 1 Chemicals - Monitoring for the 20 additional UCMR 4 contaminants will be based on the traditional UCMR sampling frequency and timeframe. For SW and GWUDI systems, sampling will take place for four consecutive quarters over the course of 12 months (total of four sampling events). Sampling events will occur three months apart.

In SDWARS the monitoring is referred to as Assessment Monitoring 1 "AM1" for 17 contaminants in Metals, Pesticides, Semi-volatile organics and Alcohols. Assessment Monitoring 2 "AM2" refers to HAAs and their indicators, TOC & Bromide. The HAAs are collected at the distribution sites used for DBP monitoring and the TOC & Bromide samples are collected at the source water entry point. Also refer to the Sampling Location information below for further details.

Two Metals using EPA Method 200.8 (ICP–MS) or alternate SM or ASTM [est cost of analysis $89/SE]

Germanium
Manganese

Nine Pesticides using EPA Method 525.3 (SPE GC/MS) [est cost of analysis $436/SE]

alpha-hexachlorocyclohexane.
chlorpyrifos.
dimethipin.
Ethoprop
oxyfluorfen
Profenofos
tebuconazole.
total permethrin (cis- & trans-)
tribufos

Three Brominated HAA Groups using EPA Method 552.3 (GC/ECD) or 557 (IC/ESI–MS/MS) [est cost of analysis $215/SE]

HAA5
HAA6Br
HAA9
Also includes sampling for indicators, **total organic carbon (TOC) and bromide**, using methods approved for compliance monitoring **[est cost of analysis $64/TOC SE and $58/Bromide SE]**

If a water system is not subject to HAA5 monitoring under the D/DBPRs, the water system is not required to collect and analyze UCMR 4 HAA samples.

Three Alcohols using EPA Method 541 (GC/MS) [est cost of analysis $382/SE]

1-butanol
2-methoxyethanol
2-propen-1-ol

Three Semivolatile Organic Chemicals (SVOCs) using EPA Method 530 (GC/MS) [est cost of analysis $436/SE]

butylated hydroxyanisole
o-toluidine
quinolone

Representative Sampling - UCMR 4 maintains the option for **large GW systems** that have **multiple EPTDS**s to sample, with prior approval, at representative sampling locations rather than at each EPTDS. Representative sampling plans approved under prior UCMRs will be recognized as valid for UCMR 4. Systems must submit a copy of documentation from their state or EPA representing the prior approval of their alternative sampling plan. Any *new* GW representative monitoring plans must be submitted to EPA for review (by the state or EPA) within 120 days from publication of this final rule.

Consistent with previous UCMRs and as described in §141.40, Table 1, systems that purchase water with multiple connections from the same wholesaler may select one representative connection from that wholesaler. This EPTDS sampling location must be representative of the highest annual volume connections.

Sampling Locations - Sample collection for the UCMR 4 contaminants will take place at the EPTDS for all contaminant groups except for the HAAs, which will take place in the distribution system. Sampling for the HAA indicators, **TOC and bromide**, will take place at a single source water influent for each treatment plant. This indicator-monitoring requirement does not pertain to consecutive systems (*i.e.,* those purchasing water from other systems). For purposes of TOC and bromide sampling, EPA defines source water influent under UCMR as untreated water entering the water treatment plant (*i.e.,* at a location prior to any treatment). SW and GWUDI systems subject to TOC monitoring under the D/DBPRs will use their TOC source water sampling site(s).

SDWARS 4, an updated version of the data reporting system used in previous UCMR actions, will include improvements in the user interface and new QC checks will be built into the system to review the data in real-time. Consistent with prior UCMR cycles, states and EPA will have access to data once posted by the laboratory and reviewed by the PWS (or 60 days after the laboratory posting,

whichever comes first). EPA will offer two database training sessions in 2017 to help users become familiar with the new system. One training session will be for the water systems and the other training session will be for the laboratories. A future **Federal Register** announcement will provide more details on these training sessions.

EPA will hold the fourth UCMR 4 public stakeholder meeting in Washington, DC, on **April 12, 2017**. Attendees can participate in person or via webinar. Topics will include the final UCMR 4 requirements for monitoring, sampling and reporting, analytical methods, the laboratory approval process, GW representative monitoring plans and consecutive system monitoring plans. Those who wish to participate in the public meeting, whether in person or via webinar, need to register in advance no later than 5:00 p.m., eastern time on April 7, 2017, by going to *https:// www.eventbrite.com/e/ucmr-4-public- stakeholder-meeting-registration- 28264984329.* Further details about registration and participation can be found on EPA's Unregulated Contaminant Monitoring Program ''Meetings and Materials'' Web site at *https://www.epa.gov/dwucmr.*

Reporting and Recordkeeping:

(1) If you have received a letter from EPA or your State concerning your required monitoring and your system does not meet the applicability criteria for UCMR, or if a change occurs at your system that may affect your requirements under UCMR, you must mail or email a letter to EPA. The letter must be from your PWS Official and must include your PWS Identification (PWSID) Code along with an explanation as to why the UCMR requirements are not applicable to your PWS, or have changed for your PWS, along with the appropriate contact information.

(2) You must provide your **sampling location(s) and inventory information by December 31, 2017**, using EPA's electronic data reporting system. You must submit, verify or update the following information for each sampling location, or for each approved representative sampling location: PWSID Code; PWS Name; PWS Facility Identification Code; PWS Facility Name; PWS Facility Type; Water Source Type; Sampling Point Identification Code; Sampling Point Name; and Sampling Point Type Code.

(3) You must submit a copy of the existing alternate EPTDS sampling plan or your representative well proposal, as appropriate, **April 19, 2017**. You must submit the following information for each proposed representative sampling location: PWSID Code; PWS Name; PWS Facility Identification Code; PWS Facility Name; PWS Facility Type; Sampling Point Identification Code; and Sampling Point Name.

(4) Large systems may change their monitoring schedules up to **December 31, 2017**, using EPA's electronic data reporting system. After this date has passed, if your PWS cannot sample according to your assigned sampling schedule (*e.g.,* because of budget constraints, or if a sampling location will be closed during the scheduled month of monitoring), you must mail or email a letter to EPA, prior to the scheduled sampling date. You must include an explanation of why the samples cannot be taken according to the assigned schedule, and you must provide the alternative schedule you are requesting. You must not reschedule monitoring specifically to avoid sample collection during a suspected vulnerable period. You are subject to your assigned UCMR sampling schedule or the schedule that you revised on or before December 31, 2017, unless and until you receive a letter from EPA specifying a new schedule.

(5) You must **provide your sampling location(s) by December 31, 2017, using EPA's electronic data reporting system**. If this information changes, you must report updates, including new sources and sampling locations that are put in use before or during the PWS' UCMR sampling period, to EPA's electronic data reporting system **within 30 days of the change**.

TABLE 1—UNREGULATED CONTAMINANT MONITORING REPORTING REQUIREMENTS

Data element	Definition
1. Public Water System Identification (PWSID) Code.	The code used to identify each PWS. The code begins with the standard 2-character postal State abbreviation or Region code; the remaining 7 numbers are unique to each PWS in the State. The same identification code must be used to represent the PWS identification for all current and future UCMR monitoring.
2. Public Water System Name	Unique name, assigned once by the PWS.
3. Public Water System Facility Identification Code.	An identification code established by the State or, at the State's discretion, by the PWS, following the format of a 5-digit number unique within each PWS for each applicable facility (*i.e.,* for each source of water, treatment plant, distribution system, or any other facility associated with water treatment or deliv- ery). The same identification code must be used to represent the facility for all current and future UCMR monitoring.
4. Public Water System Facility Name.	Unique name, assigned once by the PWS, for every facility ID (*e.g.,* Treatment Plant).
5. Public Water System Facility Type.	That code that identifies that type of facility as either: CC = consecutive connection. DS = distribution system. IN = source water influent. SS = sampling station. TP = treatment plant. OT = other.
6. Water Source Type	The type of source water that supplies a water system facility. Systems must report one of the following codes for each sampling location: SW = surface water (to be reported for water facilities that are served entirely by a surface water source during the twelve-month period). GW = ground water (to be reported for water facilities that are served entirely by a ground water source during the twelve-month period). GU = ground water under the direct influence of surface water (to be reported for water facilities that are served all or in part by ground water under the direct influence of surface water at any time during the twelve-month sampling period), and are not served at all by surface water during this period. MX = mixed water (to be reported for water facilities that are served by a mix of surface water, ground water and/or ground water under the direct influence of surface water during the twelve-month period).
7. Sampling Point Identification Code.	An identification code established by the State, or at the State's discretion, by the PWS, that uniquely identifies each sampling point. Each sampling code must be unique within each applicable facility, for each applicable sampling location (*i.e.,* entry point to the distribution system, source water influent or distribution system sample at maximum residence time). The same identification code must be used to represent the sampling location for all current and future UCMR monitoring.
8. Sampling Point Name	Unique sample point name, assigned once by the PWS, for every sample point ID (*e.g.,* Entry Point).

Data element	Definition
9. Sampling Point Type Code	A code that identifies the location of the sampling point as either: SR = source water taken from plant influent; untreated water entering the water treatment plant (*i.e.,* a location prior to any treatment). EP = entry point to the distribution system. DS = distribution system sample.
10. Disinfectant Type	All of the disinfectants/oxidants that have been added prior to the entry point to the distribution system. Please select all that apply: PEMB = Permanganate. HPXB = Hydrogen peroxide. CLGA = Gaseous chlorine. CLOF = Offsite Generated Hypochlorite (stored as a liquid form). CLON = Onsite Generated Hypochlorite. CAGC = Chloramine (formed with gaseous chlorine). CAOF = Chloramine (formed with offsite hypochlorite). CAON = Chloramine (formed with onsite hypochlorite). CLDB = Chlorine dioxide. OZON = Ozone. ULVL = Ultraviolet light. OTHD = All other types of disinfectant/oxidant. NODU = No disinfectant/oxidant used.
11. Treatment Information	Treatment information associated with the sample point. Please select all that apply: CON = Conventional (non-softening, consisting of at least coagulation/sedimentation basins and filtration). SFN = Softening. RBF = River bank filtration. PSD = Pre-sedimentation. INF = In-line filtration. DFL = Direct filtration. SSF = Slow sand filtration. BIO = Biological filtration (operated with an intention of maintaining biological activity within filter). UTR = Unfiltered treatment for surface water source. GWD = Groundwater system with disinfection only. PAC = Application of powder activated carbon. GAC = Granular activated carbon adsorption (not part of filters in CON, SCO, INF, DFL, or SSF). AIR = Air stripping (packed towers, diffused gas contactors).

	POB = Pre-oxidation with chlorine (applied before coagulation for CON or SFN plants or before filtration for other filtration plants). MFL = Membrane filtration. IEX = Ionic exchange. DAF = Dissolved air floatation. CWL = Clear well/finished water storage without aeration. CWA = Clear well/finished water storage with aeration. ADS = Aeration in distribution system (localized treatment). OTH = All other types of treatment. NTU = No treatment used. DKN = Do not know.
12. Disinfectant Residual Type	Disinfectant residual type in the distribution system for each HAA sample. CL2 = Chlorine (*i.e.,* originating from addition of free chlorine only). CLO2 = chlorine dioxide. CLM = Chloramines (originating from with addition of chlorine and ammonia or pre-formed chloramines). CAC = Chlorine and chloramines (if being mixed from chlorinated and chloroaminated water). NOD = No disinfectant residual.
13. Sample Collection Date	The date the sample is collected, reported as 4-digit year, 2-digit month, and 2-digit day (YYYY/MM/DD).
14. Sample Identification Code	An alphanumeric value up to 30 characters assigned by the laboratory to uniquely identify containers, or groups of containers, containing water samples collected at the same sampling location for the same sampling date.
15. Contaminant	The unregulated contaminant for which the sample is being analyzed.
16.Analytical Method Code	The identification code of the analytical method used.
17.Extraction Batch Identification Code.	Laboratory assigned extraction batch ID. Must be unique for each extraction batch within the laboratory for each method. For CCC samples report the Analysis Batch Identification Code as the value for this field. For methods without an extraction batch, leave this field null.
18. Extraction Date	Date for the start of the extraction batch (YYYY/MM/DD). For methods without an extraction batch, leave this field null.
19. Analysis Batch Identification Code.	Laboratory assigned analysis batch ID. Must be unique for each analysis batch within the laboratory for each method.
20. Analysis Date	Date for the start of the analysis batch (YYYY/MM/DD).
21. Sample Analysis Type	The type of sample collected and/or prepared, as well as the fortification level. Permitted values include: CF = concentration fortified; the concentration of a known contaminant added to a field sample reported with sample analysis types LFSM, LFSMD, LFB, CCC and QCS. CCC = continuing calibration check; a calibration standard containing the contaminant, the internal standard, and surrogate analyzed to verify the existing calibration for those contaminants. FS = field sample; sample collected and submitted for analysis under this rule. IS = internal standard; a standard that measures the relative response of contaminants.

Data element	Definition
	LFB = laboratory fortified blank; an aliquot of reagent water fortified with known quantities of the contaminants and all preservation compounds. LRB = laboratory reagent blank; an aliquot of reagent water treated exactly as a field sample, including the addition of preservatives, internal standards, and surrogates to determine if interferences are present in the laboratory, reagents, or other equipment. LFSM = laboratory fortified sample matrix; a UCMR field sample with a known amount of the contaminant of interest and all preservation compounds added. LFSMD = laboratory fortified sample matrix duplicate; duplicate of the laboratory fortified sample matrix. QCS = quality control sample; a sample prepared with a source external to the one used for initial calibration and CCC. The QCS is used to check calibration standard integrity. QHS = quality HAA sample; HAA sample collected and submitted for quality control purposes. SUR = surrogate standard; a standard that assesses method performance for each extraction.
22.Analytical Results—Sign	A value indicating whether the sample analysis result was: (<) ''less than'' means the contaminant was not detected, or was detected at a level below the Minimum Reporting Level. (=) ''equal to'' means the contaminant was detected at the level reported in ''Analytical Result— Measured Value.''
23.Analytical Result—Measured Value.	The actual numeric value of the analytical results for: Field samples; laboratory fortified matrix samples; laboratory fortified sample matrix duplicates; and concentration fortified.
24. Additional Value	Represents the true value or the fortified concentration for spiked samples for QC Sample Analysis Types (CCC, EQC, LFB, LFSM and LFSMD). For Sample Analysis Type FS and LRB and for IS and surrogate QC Contaminants, leave this field null.
25. Laboratory Identification Code ..	

26. Sample Event Code	QC contaminants, leave this field null. The code, assigned by EPA, used to identify each laboratory. The code begins with the standard two-character State postal abbreviation; the remaining five numbers are unique to each laboratory in the State. A code assigned by the PWS for each sample event. This will associate samples with the PWS monitoring plan to allow EPA to track compliance and completeness. Systems must assign the following codes: SEC1, SEC2, SEC3, SEC4, SEC5, SEC6, SEC7 and SEC8—represent samples collected to meet UCMR Assessment Monitoring requirements for cyanotoxins; where "SEC1" represents the first sampling period, "SEC2" the second period and so forth, for all eight sampling events. SEA1, SEA2, SEA3 and SEA4—represent samples collected to meet UCMR Assessment Monitoring re-
27. Bloom Occurrence	quirements for the additional contaminants; where "SEA1" and "SEA2" represent the first and second sampling period for all water types; and "SEA3" and "SEA4" represent the third and fourth sampling period for SW and GU sources only. A yes or no answer provided by the PWS for each cyanotoxin sample event. *Question:* Preceding the finished water sample collection, did you observe an algal bloom in your source waters near the intake? YES = if yes, select all the YESs that apply: YD = yes, on the day the UCMR cyanotoxin sample was collected. YW = yes, between the day the sample was taken and the past week. YM = yes, between the past week and past month. YY = yes, between the past month and past year. YP = yes, prior to the past year. NO = have never seen a bloom.
28.Cyanotoxin Occurrence	A yes or no answer provided by the PWS for each cyanotoxin sample event. *Question:* Preceding the finished water sample collection, were cyanotoxins ever detected in your source waters near the intake and prior to any treatment (based on sampling by you or another party)? YES = if yes, select all the YESs that apply: YD = yes, on the day the UCMR cyanotoxin sample was collected. YW = yes, between the day the sample was taken and the past week. YM = yes, between the past week and past month. YY = yes, between the past month and past year. YP = yes, prior to the past year. NO = have never detected cyanotoxins in source water. NS = unaware of any source water cyanotoxin sampling.
29.Indicator of Possible Bloom—Treatment.	Select all that apply (*i.e.,* all that were detected) if you answered YES to detecting cyanotoxins in source water: MIC = Microcystins. CYL = Cylindrospermopsin. ANA = Anatoxin-A. SAX = Saxitoxins. OTH = Other. DK = do not know. A yes or no answer provided by the PWS for each cyanotoxin sample event. *Question:* Preceding the finished water sample collection, did you notice any changes in your treatment system operation and/or treated water quality that may indicate a bloom in the source water? YES = if yes, select all that apply: DFR = Decrease in filter runtimes. ITF = Increase in turbidity in filtered water. ICD = Need for increased coagulant dose. TOI = Increase in taste and odor issues in finished water. IOD = Need for increase in oxidant/disinfectant dose. IDB = Increase in TTHM/HAA5 in finished water.

Data element	Definition
30. Indicator of Possible Bloom—Source Water Quality Parameters.	OTH = Describe other changes. NO = no changes. A yes or no answer provided by the PWS for each cyanotoxin sample event. *Question:* Preceding the finished water sample collection, did you observe any notable changes in source water quality parameters (if measured)? YES = if yes, select all that apply to the source water: ITP = Increase in water temperature. ITU = Increase in turbidity. IAL = Increase in alkalinity. ITO = Increase in total organic carbon. ICD = Increase in chlorine demand. IPH = Increase in pH. ICA = Increase in chlorophyll a. IPY = Increase in phycocyanin. INU = Increase in nutrients (example: nitrogen or phosphorus). OTH = Describe other changes. NO = no changes observed.