Response to Comments on the Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) Proposal

Office of Water (4607M)
EPA 815-R-21-008
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Abbreviations and Acronyms

11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic Acid
4:2 FTS	1H, 1H, 2H, 2H-perfluorohexane Sulfonic Acid
6:2 FTS	1H, 1H, 2H, 2H-perfluorooctane Sulfonic Acid
8:2 FTS	1H, 1H, 2H, 2H-perfluorodecane Sulfonic Acid
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic Acid
ACIL	American Council of Independent Laboratories
ACWA	Association of California Water Agencies
ADONA	4,8-dioxa-3H-perfluorononanoic Acid
AES	Atomic Emission Spectrometry
AMWA	Association of Metropolitan Water Agencies
ASDWA	Association of State Drinking Water Administrators
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASTM	ASTM International
AWIA	America's Water Infrastructure Act of 2018
AWWA	American Water Works Association
CARE	Citizens Against Ruining the Environment
CASRN	Chemical Abstracts Service Registry Number
CCL	Contaminant Candidate List
CCR	Consumer Confidence Report
CFR	Code of Federal Regulations
CT DPH	Connecticut Department of Public Health
CWA	Clean Water Act
CWS	Community Water System
DBP	Disinfection Byproduct
D/DBPR	Disinfectants and Disinfection Byproducts Rule
DWSRF	Drinking Water State Revolving Fund
ECOS	Environmental Council of States
EO	Executive Order
EJ	Environmental Justice
EPA	United States Environmental Protection Agency
EPTDS	Entry Point to the Distribution System
FAC	Federal Advisory Committee
FACA	Federal Advisory Committee Act
FR	Federal Register
FY	Fiscal Year
GW	Ground Water
GWRMP	Ground Water Representative Monitoring Plan
GWUDI	Ground Water Under the Direct Influence of Surface Water
HA	Health Advisory
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid (GenX)
HRL	Health Reference Level
ICP	Inductively Coupled Plasma
ICR	Information Collection Request
IDC	Initial Demonstration of Capability
IRIS	Integrated Risk Information System
LADWP	Los Angeles Department of Water and Power

LCMRL	Lowest Concentration Minimum Reporting Level
LC/MS/MS	Liquid Chromatography/Tandem Mass Spectrometry
LIMS	Laboratory Information Management System
MDBP	Microbial and Disinfection Byproduct
MDH	Minnesota Department of Health
MDL	Method Detection Limit
MRL	Minimum Reporting Level
MWRA	Massachusetts Water Resources Authority
MX	Mixed Water
NCOD	National Contaminant Occurrence Database
NDAA	National Defense Authorization Act for Fiscal Year 2020
NGWA	National Ground Water Association
NJDEP	New Jersey Department of Environmental Protection
NRDC	Natural Resources Defense Council
NEtFOSAA	N-ethyl Perfluorooctanesulfonamidoacetic Acid
NFDHA	Nonafluoro-3,6-dioxaheptanoic Acid
ng/L	Nanogram per Liter
NMeFOSAA	N-methyl Perfluorooctanesulfonamidoacetic Acid
NPDWR	National Primary Drinking Water Regulation
NTNCWS	Non-transient Non-community Water System
OGWDW	Office of Ground Water and Drinking Water
OMB	Office of Management and Budget
PA DEP	Pennsylvania Department of Environmental Protection
PEER	Public Employees for Environmental Responsibility
PFAS	Per- and Polyfluoroalkyl Substances
PFBA	Perfluorobutanoic Acid
PFBS	Perfluorobutanesulfonic Acid
PFDA	Perfluorodecanoic Acid
PFDoA	Perfluorododecanoic Acid
PFEESA	Perfluoro (2-ethoxyethane) Sulfonic Acid
PFHpA	Perfluoroheptanoic Acid
PFHpS	Perfluoroheptanesulfonic Acid
PFHxA	Perfluorohexanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFMBA	Perfluoro-4-methoxybutanoic Acid
PFMPA	Perfluoro-3-methoxypropanoic Acid
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PFPeA	Perfluoropentanoic Acid
PFPeS	Perfluoropentanesulfonic Acid
PFTA	Perfluorotetradecanoic Acid
PFTrDA	Perfluorotridecanoic Acid
PFUnA	Perfluoroundecanoic Acid
PN	Public Notice
PRA	Paperwork Reduction Act
PT	Proficiency Testing
PWS	Public Water System

PWSID	Public Water System Identification Number
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RFA	Regulatory Flexibility Act
SBA	United States Small Business Administration
SBREFA	Small Business Regulatory Enforcement Fairness Act
SDWA	Safe Drinking Water Act
SDWARS	Safe Drinking Water Accession and Review System
SDWIS/Fed	Safe Drinking Water Information System Federal Reporting Services
SM	Standard Methods for the Examination of Water and Wastewater
SOP	Standard Operating Procedure
SPE	Solid Phase Extraction
SRMD	Standards and Risk Management Division
SWTR	Surface Water Treatment Rule
TTHM	Total Trihalomethanes
TOF	Total Organic Fluorine
TOP	Total Oxidizable Precursors
UCMR	Unregulated Contaminant Monitoring Rule
UMRA	Unfunded Mandates Reform Act of 1995
U.S.	United States
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency

1. Introduction and Overview

Background

As part of the responsibilities under the Safe Drinking Water Act (SDWA), the Environmental Protection Agency (EPA) implements Section 1445(a)(2), "Monitoring Program for Unregulated Contaminants." This section, as amended in 1996, requires that, once every five years, EPA issue a new list of up to 30 unregulated contaminants to be monitored by public water systems (PWSs), fund shipping and analytical costs for PWSs serving 10,000 or fewer people, and ensure that all monitoring results are entered into the Agency's publicly available National Contaminant Occurrence Database (NCOD). The Unregulated Contaminant Monitoring Rule (UCMR) is part of SDWA's risk-based process for developing drinking water standards based on sound science. Contaminants considered for inclusion in UCMR may be present in drinking water and have impacts on human health but are not yet subject to EPA's drinking water standards set under SDWA. The UCMR program provides EPA and other interested parties with nationally representative occurrence data for such unregulated contaminants in drinking water. This dataset allows the Agency to assess the number of people potentially being exposed to certain contaminants and provides an estimate of the levels of that exposure. UCMR monitoring yields occurrence data that EPA uses to inform regulatory and other risk management decisions related to drinking water contaminants.

Section 2021 of America's Water Infrastructure Act of 2018 (AWIA) (Public Law 115-270) amended SDWA and specifies that, subject to the availability of appropriations and sufficient laboratory capacity, EPA's UCMR program, beginning with the fifth UCMR (UCMR 5), must require all PWSs serving 3,300 to 10,000 people and a nationally representative sample of PWSs serving fewer than 3,300 people to monitor for the contaminants in a particular UCMR cycle (i.e., "small systems"). The Agency continues to ensure that PWSs systems serving a population more than 10,000 people (i.e., "large systems") participate in UCMR monitoring.

Section 7311 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) (Public Law 116-92) amended SDWA and specifies that EPA shall include in UCMR 5 all per- and polyfluoroalkyl substances (PFAS) that are not subject to a national primary drinking water regulation (NPDWR) and for which a drinking water method has been validated by the Administrator.

EPA proposed "Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems and Announcement of a Public Meeting" on March 11, 2021 (86 FR 13846; USEPA, 2021a). The proposal identified three analytical methods to support PWS monitoring for a total of 30 contaminants (29 PFAS and lithium) and identified other proposed changes relative to UCMR 4 (81 FR 92666, December 20, 2016; USEPA, 2016a).

EPA requested comments on the proposal and the public comment period closed on May 10, 2021. The Agency received 75 sets of comments from organizations and individuals, and all are included and addressed in this document. All comments can be found in the UCMR 5 public docket at https://www.regulations.gov/ under Docket ID No. EPA-HQ-OW-2020-0530.

EPA specifically sought public comment on the following: proposed UCMR 5 contaminants and their associated analytical methods and minimum reporting levels (MRLs), as well as other priority contaminants; proposed changes to reporting requirements and timeframes; appropriateness of the proposed data elements relative to the proposed UCMR 5 contaminants; and several other issues. After considering the comments, EPA developed the final UCMR 5 and provided rationale for the agency's approach in the Federal Register notice.

Who Submitted Comments

EPA received 75 sets of comments from a variety of stakeholders. Exhibit 1 categorizes comments by organization type.

Exhibit 1: Commenters	
Organization Type	**Count of Comments**
Academia	8
Anonymous	3
Drinking Water Organization	7
Federal Agency	1
Laboratory	5
Non-governmental Organization	11
Other Industry Representatives	11
Private Citizen	16
Public Water System (PWS)	6
State Agency	5
Industrial Water Treatment	2
Total	**75**

Comment Organization

Each set of public comments was assigned a unique Document ID in the UCMR 5 public docket. The Document ID is the UCMR 5 Docket ID No. (EPA-HQ-OW-2020-0530) with an additional four-digit identifier. For example, comment number 47 has the Document ID EPA-HQ-OW-2020-0530-0047. Prior to receiving any comments via the public docket, EPA posted 46 documents to support the proposed rule. Thus, the first public comment received is number 47, the second is 48, etc. Exhibit 2 provides the Document ID, corresponding comment number, and submitter information for all comments received. Clicking the blue hyperlinked Document ID for each comment in Exhibit 2 will take the reader to the original comment submission in the public docket, where additional information can be viewed, such as tables, figures, attachments, and references that may have been included within the context of the original submission. If such additional information was included with a comment, EPA has provided a note within the comment text (presented in Section 2 of this document) and the Document ID link. If footnotes were used, they are provided within the comment text as [FN#:]. The original comment submissions can also be accessed by searching for the associated Document ID on https://www.regulations.gov/ under Docket ID No. EPA-HQ-OW-2020-0530.

Topical Categorization of Comments and Document Organization

EPA developed a list of topics based on distinct areas of the proposal that received public comments. The complete list of topics is provided in Appendix 1. Each set of comments was read by EPA and specific comment excerpts within each set were assigned a topic(s), as appropriate. Comment excerpts from different stakeholders that addressed similar subjects were then grouped under the corresponding topic.

Section 2 of this document presents the public comments and EPA responses by topic. EPA developed an *Agency Topic Discussion* to collectively address the comments received on each topic, which appears at the beginning of each topic section. Throughout this document, the *Agency Topic Discussions* have a green header and background. Following the *Agency Topic Discussion* are comment excerpts assigned to the topic, organized numerically by comment number. No grammatical or spelling edits were made to the text of the comments received; they are presented in this document verbatim. The comment excerpts for each topic and their

corresponding responses are presented under a blue header and have a white background. Clicking on the blue hyperlinked comment number appearing at the beginning of each excerpt will take the reader to Exhibit 2, which presents the full Document ID, submitter name, and organization. Exhibit 2 should be referenced for the full list of commenters and a link to the original comment submission in the UCMR 5 public docket. Each comment excerpt is followed by an *Individual Response* from EPA, which directs the reader to the associated *Agency Topic Discussion(s)* and, where appropriate, provides supplemental comment-specific responses that are not addressed in the *Agency Topic Discussion*. Clicking on the blue hyperlinked topic(s) in the *Individual Response* will digitally direct the reader to the corresponding *Agency Topic Discussion(s)* in this document.

Cross Referencing of Responses

Comment excerpts that addressed multiple topics within a sentence or paragraph could not practically be divided. For these excerpts, EPA has identified and digitally cross referenced all associated *Agency Topic Discussions* in the *Individual Responses* to provide clarity, avoid redundancy, and ensure consistency. If a response for a comment excerpt cross references multiple discussions, the excerpt is only presented under one of those topics (i.e., the most relevant topic). This is to improve readability and ensure that all comments are included in entirety only once in this document. It is important to note that while most *Agency Topic Discussions* address multiple comments, not all related excerpts are presented thereafter; related excerpts in other sections throughout the document instead digitally cross reference that specific discussion in their *Individual Response*.

Exhibit 2: List of Comments				
Comment Information		**Submitter Information**		
#	**Document ID**	**First Name**	**Last Name**	**Organization Name**
47	EPA-HQ-OW-2020-0530-0047	Sandra	Beckler	Private Citizen
48	EPA-HQ-OW-2020-0530-0048	Alyssa	Rozycki	Private Citizen
49	EPA-HQ-OW-2020-0530-0049	Erik	Olson *et al.*	Natural Resources Defense Council (NRDC) *et al.*
50	EPA-HQ-OW-2020-0530-0050	Scott	Woodbury	Private Citizen
51	EPA-HQ-OW-2020-0530-0051	Charles	Woessner	Private Citizen
52	EPA-HQ-OW-2020-0530-0052	Scott	Taylor	Lamont Public Utility District, California
53	EPA-HQ-OW-2020-0530-0053	William	Mitch	Private Citizen/Academia
55	EPA-HQ-OW-2020-0530-0055	Nikki	Aronhalt	Law Offices of Miller and Axline
56	EPA-HQ-OW-2020-0530-0056	Leanna	Pohevitz *et al.*	Private Citizen/Academia
57	EPA-HQ-OW-2020-0530-0057	Patsy	Root	IDEXX Laboratories, Inc.
58	EPA-HQ-OW-2020-0530-0058	Erik	Olson *et al.*	NRDC; Safer Chemicals, Healthy Families
59	EPA-HQ-OW-2020-0530-0059	Charles	Job	National Ground Water Association (NGWA)
61	EPA-HQ-OW-2020-0530-0061	Michael	Messner	Private Citizen
62	EPA-HQ-OW-2020-0530-0062	Anonymous		Anonymous
63	EPA-HQ-OW-2020-0530-0063	Anonymous		Anonymous
64	EPA-HQ-OW-2020-0530-0064	Susan	Richardson	Private Citizen/Academia
65	EPA-HQ-OW-2020-0530-0065	Madeline	O'Dwyer	Private Citizen/Academia
66	EPA-HQ-OW-2020-0530-0066	Andrew	Eaton	Eaton Environmental Water Quality Consulting, LLC

Exhibit 2: List of Comments				
Comment Information		**Submitter Information**		
#	**Document ID**	**First Name**	**Last Name**	**Organization Name**
67	EPA-HQ-OW-2020-0530-0067	Laura	Moreno	Private Citizen
68	EPA-HQ-OW-2020-0530-0068	G. Tracy	Mehan	American Water Works Association (AWWA)
69	EPA-HQ-OW-2020-0530-0069	Hanna	Um	Private Citizen/Academia
70	EPA-HQ-OW-2020-0530-0070	Cassandra	Hadwen	Citizens Against Ruining the Environment (CARE)
71	EPA-HQ-OW-2020-0530-0071	John	Caloritis	The Metro Group, Inc.
72	EPA-HQ-OW-2020-0530-0072	Michael	Bourgeois	Association of Water Technologies
73	EPA-HQ-OW-2020-0530-0073	Patsy	Root	IDEXX Water
74	EPA-HQ-OW-2020-0530-0074	David	Crow	Garratt-Callahan
75	EPA-HQ-OW-2020-0530-0075	Michael	Plewa	Private Citizen/Academia
76	EPA-HQ-OW-2020-0530-0076	Gale	Pisha	Private Citizen
77	EPA-HQ-OW-2020-0530-0077	Jacquelyn	Drechsler *et al.*	Private Citizen
78	EPA-HQ-OW-2020-0530-0078	Peggy	Kurtz	Private Citizen
79	EPA-HQ-OW-2020-0530-0079	Ayesha	Khan	Private Citizen
80	EPA-HQ-OW-2020-0530-0080	Donna	Yannazzone	Private Citizen
81	EPA-HQ-OW-2020-0530-0081	Diane	VanDe Hei	Association of Metropolitan Water Agencies (AMWA)
82	EPA-HQ-OW-2020-0530-0082	Sabrina	Tenteromano	Private Citizen
83	EPA-HQ-OW-2020-0530-0083	Sandeep	Burman	Minnesota Department of Health (MDH)
84	EPA-HQ-OW-2020-0530-0084	Tom	Ei	Chemours Company
85	EPA-HQ-OW-2020-0530-0085	Molly	Findlay	Private Citizen
86	EPA-HQ-OW-2020-0530-0086	Lori	Mathieu	Connecticut Department of Public Health (CT DPH)
87	EPA-HQ-OW-2020-0530-0087	Major	Clark III *et al.*	Office of Advocacy, U.S. Small Business Administration (SBA)
88	EPA-HQ-OW-2020-0530-0088	Zoe	Nelson	Private Citizen
89	EPA-HQ-OW-2020-0530-0089	Donald	Welsh	Environmental Council of States (ECOS)
90	EPA-HQ-OW-2020-0530-0090	Mike	Keegan	National Rural Water Association
91	EPA-HQ-OW-2020-0530-0091	Monica	Rodriguez	Private Citizen
92	EPA-HQ-OW-2020-0530-0092			Garratt-Callahan
93	EPA-HQ-OW-2020-0530-0093	Robert	Bowcock	Integrated Resource Management, Inc.
94	EPA-HQ-OW-2020-0530-0094	Erin	Brockovich	Private Citizen
95	EPA-HQ-OW-2020-0530-0095	Cate	Baroni	Private Citizen
96	EPA-HQ-OW-2020-0530-0096	Bridger	Ruyle *et al.*	Private Citizen/Academia
97	EPA-HQ-OW-2020-0530-0097	Madeline	Voitier	Association of California Water

Exhibit 2: List of Comments				
Comment Information		**Submitter Information**		
#	**Document ID**	**First Name**	**Last Name**	**Organization Name**
				Agencies (ACWA)
98	EPA-HQ-OW-2020-0530-0098	David	Coppes	Massachusetts Water Resources Authority (MWRA)
99	EPA-HQ-OW-2020-0530-0099	Lynn	Thorp	Clean Water Action, Clean Water Fund
100	EPA-HQ-OW-2020-0530-0100	Anonymous		Anonymous
101	EPA-HQ-OW-2020-0530-0101	Chuck	Chaitovitz	American Chemistry Council; U.S. Chamber of Commerce; *et al.*
102	EPA-HQ-OW-2020-0530-0102	Stephen	Risotto	American Chemistry Council
103	EPA-HQ-OW-2020-0530-0103	G. Tracy	Mehan	AWWA
104	EPA-HQ-OW-2020-0530-0104	Patrick	McDonnell	Pennsylvania Department of Environmental Protection (PA DEP)
105	EPA-HQ-OW-2020-0530-0105			Rockland Water Coalition
106	EPA-HQ-OW-2020-0530-0106	Razmik	Manoukian	Los Angeles Department of Water and Power (LADWP)
107	EPA-HQ-OW-2020-0530-0107	Spencer	Bruce	Louisville Water Company, Kentucky
108	EPA-HQ-OW-2020-0530-0108	Jeffrey	Longsworth *et al.*	The PFAS Regulatory Coalition
109	EPA-HQ-OW-2020-0530-0109	Matthew	Corson	American Water
110	EPA-HQ-OW-2020-0530-0110	Judy	Morgan	Pace Analytical
111	EPA-HQ-OW-2020-0530-0111	Joshua	Kaul *et al.*	Wisconsin Department of Justice *et al.*
113	EPA-HQ-OW-2020-0530-0113	Timothy	Whitehouse	Public Employees for Environmental Responsibility (PEER)
114	EPA-HQ-OW-2020-0530-0114	J. Alan	Roberson	Association of State Drinking Water Administrators (ASDWA)
115	EPA-HQ-OW-2020-0530-0115	Marcy	Savage	Alliance to Prevent Legionnaires' Disease, Inc.
116	EPA-HQ-OW-2020-0530-0116	D. David	Altman	Little Hocking Water Association, Inc., Ohio
117	EPA-HQ-OW-2020-0530-0117	Judy	Morgan	American Council of Independent Laboratories (ACIL)
118	EPA-HQ-OW-2020-0530-0118			3M Company
119	EPA-HQ-OW-2020-0530-0119	Anna	Reade	NRDC; Green Science Policy Institute; Earthjustice
120	EPA-HQ-OW-2020-0530-0120	Erik	Olson	NRDC *et al.*
121	EPA-HQ-OW-2020-0530-0121	Aly	Trombitas	Private Citizen/Academia
122	EPA-HQ-OW-2020-0530-0122	Patricia	Ingelido	New Jersey Department of Environmental Protection (NJDEP)

Exhibit 2: List of Comments				
Comment Information		**Submitter Information**		
#	**Document ID**	**First Name**	**Last Name**	**Organization Name**
123	EPA-HQ-OW-2020-0530-0123	Libby	Ashworth	Private Citizen
124	EPA-HQ-OW-2020-0530-0124	Alice	Yates	American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)

2. Comments and EPA Responses by Topic

As used in this document, the following terms will be used to address those cases where EPA received more than two comments: multiple = 3-6; many = 7+.

General Comments

Agency Discussion on SDWA Authorities (1445(a)(2), 1445(a)(1)(A))

Agency Topic Discussion: EPA received multiple comments regarding the basis for and/or approach to UCMR 5 monitoring. Section 1445(a)(1)(A) of SDWA, as amended in 1996, requires that every person subject to requirements under SDWA must establish and maintain records, conduct water monitoring, and provide any information that the Administrator may require by regulation to carry out the requirements of the act. As part of the Agency's responsibilities under SDWA, EPA implements Section 1445(a)(2), "Monitoring Program for Unregulated Contaminants." The Agency is using SDWA Section 1445(a)(2) authority as the basis for promulgating this final rule.

Comments Received on SDWA Authorities (1445(a)(2), 1445(a)(1)(A))

Comment Excerpt from Commenter 87

The Proposed Rule

Congress enacted the Safe Drinking Water Act [FN7: 42 U.S.C. § 300(f) et seq.] (SDWA) in 1974 to "establish standards and treatment requirements for public water supplies, control underground injection of wastes, finance infrastructure projects, and protect sources of drinking water." [FN8: Congressional Research Service. Safe Drinking Water Act (SDWA): A Summary of the Act and Its Major Requirements (7- 5700), Prepared by Mary Tiemann. March 1, 2017, accessed May 3, 2021.] In 1986, the SDWA was amended to require the EPA to "promulgate regulations requiring every public water system to conduct a monitoring program for unregulated contaminants." [FN9: Pub. L. 99-339, Title III, 100 Stat. 666 (1986).] In 1996, the SDWA was again amended to require the EPA to "publish a list of contaminants . . . not subject to any proposed or promulgated national primary drinking water regulation, which are known or anticipated to occur in public water systems, and which may require regulation under this title." [FN10: Pub L. 104-182, Title I, 110 Stat. 1615 (1996).] EPA subsequently promulgated the First Unregulated Contaminant Monitoring Rule, or UCMR 1, on September 17, 1999 [FN11: 64 F.R. 50556 (Sept. 17, 1999).]. Since that time, EPA has promulgated three additional UCMRs: UCMR 2, UCMR 3, and UCMR 4 [FN12: 72 F.R. 367 (Jan. 4, 2007), 77 F.R. 43523 (July 25, 2012), 81 F.R. 92666 (Dec. 20, 2016).]. Each of these UCMRs identified unregulated contaminants that required monitoring by certain PWS. In 2018, the SDWA was again amended by the America's Water Infrastructure Act of 2018 [FN13: Pub. L. 115-270, Title I, 132 Stat. 3765 (2018).], which mandated the monitoring of the UCMR specified unregulated contaminants by "public water systems serving between 3,300 and 10,000 persons" but only "subject to the availability of appropriations for such purposes." Similarly, the 2018 amendment authorized EPA to require "a representative sample of public water systems serving fewer than 3,300 persons . . . to monitor [the unregulated contaminants]" also only "subject to the availability of appropriations for such purposes." [FN14: Pub. L. 115-270, § 2021(j)(A)-(B).]

On March 11, 2021 the EPA issued this proposed rule under the statutory authority of the SDWA as amended. The proposed rule identifies 30 new unregulated contaminants, including 29 PFAS chemicals as well as lithium, to be monitored by certain PWS. In addition, the proposed rule modifies certain procedural and substantive requirements for those PWS regulated by the proposed rule as discussed further below.

EPA and Advocacy have previously agreed that, for purposes of the RFA and the UCMR, "small public water

Comments Received on SDWA Authorities (1445(a)(2), 1445(a)(1)(A))

systems" or "small PWS" include those public water systems serving 10,000 or fewer persons [FN15: 63 F.R. 44512 (August 19, 1998)].

Individual Response: Please see Discussion on SDWA Authorities (1445(a)(2), 1445(a)(1)(A)) and Sampling Design.

Comment Excerpt from Commenter 103

[In addition to these comments regarding implementation, EPA faces two substantial challenges that require the drinking water program to obtain assistance from its sister offices at EPA:]
2. Resources should be applied toward UCMR developing the high-quality occurrence data it was intended to collect, not overcoming the shortcomings of the Toxic Substances Control Act (TSCA), Emergency Planning and Community Right-to-Know Act (EPCRA), and Clean Water Act (CWA) programs, or the lack of a well-designed and funded federal research agenda geared toward supporting SDWA regulatory decision-making.
Neither of these two challenges are new to the drinking water program. AWWA has called on EPA to address these concerns on a number of previous occasions. With implementation of UCMR 5, the lack of substantive progress will however lead to confusion and distrust in the nation's drinking water supply, EPA and EPA's regulatory programs. None of these outcomes are warranted and all can be overcome through effective agency action.

Individual Response: Please see Discussion on SDWA Authorities (1445(a)(2), 1445(a)(1)(A)). EPA offices are working together to fill important research gaps and improve occurrence monitoring.

Agency Discussion on Interrelationship of CCL, UCMR, and Regulatory Determinations

Agency Topic Discussion: EPA received many comments related to the relationship between UCMR, Contaminant Candidate List (CCL), and Regulatory Determinations. None of them resulted in a change to the proposed UCMR 5 but the topic is addressed further in this section.

Under the 1996 amendments to SDWA, Congress established a risk-based approach for determining which contaminants of emerging concern would become subject to drinking water standards. Under the first step, EPA is required to publish, every five years, a list of contaminants that are not yet regulated but which are known or anticipated to occur in PWSs; this is the CCL. Under the second step, EPA must require, every five years, monitoring of up to 30 unregulated contaminants to determine their occurrence in drinking water systems; this is the UCMR program. Under the third step, EPA is required to determine, every five years, and for at least five CCL contaminants, whether or not to begin the process of developing an NPDWR for each contaminant; this is known as a Regulatory Determination and involves evaluating the following questions:

(1) May the contaminant have an adverse effect on human health?
(2) Is the contaminant known to occur or substantially likely to occur in PWSs with a frequency and at levels of public health concern?
(3) In the sole judgement of the Administrator, does regulation of such contaminants present a meaningful opportunity for risk reduction for people served by PWSs?

Data generated from UCMR are used in the regulatory determination process along with other sources of contaminant occurrence data. SDWA requires EPA to publish a maximum contaminant level goal and issue NPDWRs for contaminants the Agency determines should be regulated (i.e., positive regulatory determinations). For contaminants with sufficient health and occurrence information to determine the contaminant does not present a meaningful opportunity for risk reduction, a negative determination is made.

Agency Discussion on Interrelationship of CCL, UCMR, and Regulatory Determinations

Contaminants that receive negative determinations are evaluated in future CCLs to determine if new data are available on health effects and/or occurrence that warrant listing on future CCLs. Decisions as to whether or not to regulate the contaminant in drinking water will continue to be made following the Agency's Regulatory Determination process. The Six-Year Review Process is the appropriate avenue to identify current NPDWRs as candidates for potential regulatory revisions. EPA may develop and issue a Health Advisory (HA) to guide State initiatives when a contaminant may be a local, but not a national concern. For those contaminants without sufficient information to allow the Agency to make a regulatory determination, EPA will continue to work with internal and external researchers or find other avenues to fill the data and information gaps. The occurrence data collected through the UCMR program are stored and publicly available in the NCOD to facilitate analysis and review of contaminant occurrence, and support the Administrator's determination on whether regulation of a contaminant is in the public health interest, as required under SDWA section 1412(b)(1).

The Final Regulatory Determinations for CCL 4 Contaminants were published on March 3, 2021 (86 FR 12272; USEPA, 2021b). Following publication of the proposed UCMR 5, the Draft CCL 5, which includes lithium and PFAS as a group, was published on July 19, 2021 (86 FR 37948; USEPA, 2021c).

Comments Received on Interrelationship of CCL, UCMR, and Regulatory Determinations

Comment Excerpt from Commenter 65

The UCMR program is a crucial step in the regulatory determination process. It is my hope that with these changes, UCMR 5 can be used to accurately map out the current threat level of PFAS around the country and to serve as the necessary foundation for protecting vulnerable populations such as children and to assessing the environmental justice implications of rampant PFAS contamination.

Individual Response: Please see Discussion on Interrelationship of CCL, UCMR, and Regulatory Determinations, EO 13045: Protection of Children from Environmental Health Risks and Safety Risks, and EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 89

I. On the 29 PFAS identified in the proposed UCMR 5.

ECOS appreciates the consideration of the 29 PFAS outlined in the proposed UCMR5, especially given the detections of PFAS identified in UCMR3 (at reporting levels of 20 nanograms per liter [ng/L] for perfluorooctanoic acid [PFOA] and perfluorononanoic acid [PFNA] and 40 ng/L for perfluorooctane sulfonic acid [PFOS], for example, as compared to the proposed reporting levels of <5 ng/L for these three PFAS in UCMR5). While monitoring data gathered through the UCMR are always instrumental to understanding the frequency of and levels at which unregulated contaminants occur in public water systems (PWSs), the data on these PFAS in UCMR5 will be especially important to inform late stages of EPA's establishment of national drinking water standards for PFOA and PFOS under the Safe Drinking Water Act (SDWA) as well as to dictate future policy decisions, including Regulatory Determinations for additional PFAS. Therefore, it is critical that the contaminants chosen and data gathered are thoughtfully considered.

Individual Response: Please see Discussion on Interrelationship of CCL, UCMR, and Regulatory Determinations, Regulatory Development, PFAS Contaminants – Miscellaneous Comments, and 29 PFAS Using EPA Methods 533 and 537.1.

Comments Received on Interrelationship of CCL, UCMR, and Regulatory Determinations

Comment Excerpt from Commenter 114

ASDWA recommends that EPA restore the connection between the Contaminant Candidate List (CCL) and UCMRs. Future UCMRs should be designed to generate robust national occurrence data to assist in the decision-making for regulatory determinations from the CCL. The inclusion of lithium, a contaminant not listed on the Fourth Contaminant Candidate List (CCL4) as opposed to other CCL4 contaminants with health effects data and analytical methods, appears to be a missed opportunity to move additional CCL4 contaminants through future regulatory determinations.

Individual Response: Please see Discussion on Interrelationship of CCL, UCMR, and Regulatory Determinations.

Comment Excerpt from Commenter 114

2. Needed Contaminant Research

ASDWA and its members support sampling for the proposed PFAS and lithium, however we urge EPA to restore the connection between the UCMR and CCL. ASDWA has consistently supported the regulatory process from the 1996 SDWA Amendments (CCL, UCMR, Regulatory Determination, 6 Year Review). This process is science- based, and makes regulatory determinations only after considering health effects, occurrence and determining that a regulation can improve public health protection. This process, when supported with adequate data, is preferable to regulating based on arbitrary target numbers or focusing on contaminants with high media profiles but where regulation is not supported by reliable data. The UCMR was developed in coordination with the CCL to provide EPA and others with scientifically valid data on the occurrence of contaminants in drinking water and develop national occurrence data to inform EPA regulatory and other risk management decisions for drinking water contaminant candidates. This is a crucial element of the SDWA regulatory process.

The proposed UCMR5, however, only utilizes two of the contaminants identified in CCL 4, and this calls into question the regulatory relationship between CCL4 and UCMR5. The SDWA regulatory development involves selecting contaminants from the CCL for the UCMR to develop robust national occurrence data for a regulatory determination, followed by the development of a rule (or not), and a six-year review of the rule. ASDWA recognizes the EPA prerogative to include other, non-CCL priority contaminants in the UCMR, but by only including two contaminants from CCL 4 in the proposed UMCR, this suggests that the SDWA regulatory development process is not working as intended.

Individual Response: Please see Discussion on Interrelationship of CCL, UCMR, and Regulatory Determinations and Contaminant Selection Process and Supporting Documents.

Comment Excerpt from Commenter 118

3M Company (“3M”) is providing comments to the Environmental Protection Agency (“EPA”) regarding the Revisions to the Unregulated Contaminant Monitoring Rule (“UCMR 5”) for Public Water Systems and Announcement of Public Meeting, 86 Fed. Reg. 13846 (Mar. 11, 2021) (the “Proposed Regulations”), issued pursuant to the Safe Drinking Water Act (“SDWA”). As a science-based company with substantial experience, expertise, and product stewardship related to these compounds, 3M appreciates the opportunity to comment on the Proposed Regulations. 3M also appreciates that the Proposed Regulations recognize the importance of data and science- driven analysis underlying any future actions taken on PFAS. Our comments focus on the inclusion of 29 per and polyfluoroalkyl substances (“PFAS”) in the proposal. 3M believes the collection of drinking water occurrence data using validated methods will be critical to informing future EPA decisions.

Sound Occurrence Data is Critical to Informed, Science-Based Decisions.

Comments Received on Interrelationship of CCL, UCMR, and Regulatory Determinations

UCMR 5 and the past monitoring rules provide drinking water occurrence data that can be used to inform future decision-making by EPA and others. As the Federal Register notice states, the Proposed Regulations "would provide EPA, states, and communities with scientifically valid data on the national occurrence of [the listed] contaminants in drinking water. The data represent one of the primary sources of national occurrence data in drinking water that EPA uses to inform regulatory and other risk management decisions for drinking water contaminant candidates." 86 Fed. Reg. at 13848.

UCMR data based on sound testing methodology are foundational to responsible and science based decisions and serve as a critical, national data source for EPA to evaluate and rely on in taking regulatory and other actions. For example, one of the primary uses for UCMR data is support for a regulatory determination under the SDWA. One of the criteria for a regulatory determination is that EPA must determine that a contaminant is known to occur or there is a substantial likelihood that it will occur in public water supplies with a frequency and at levels of public health concern. See SDWA § 1412(b)(1)(A)(ii). Accordingly, the collection of occurrence data is an initial, critical step in making regulatory determinations and is paramount to reaching thoughtful, science-based regulatory determinations under the SDWA. For these reasons, 3M supports the continued development of UCMR data for the PFAS listed in the Proposed Regulations.

Individual Response: Please see Discussion on Interrelationship of CCL, UCMR, and Regulatory Determinations, PFAS Contaminants – Miscellaneous Comments, and 29 PFAS Using EPA Methods 533 and 537.1.

Comment Excerpt from Commenter 122

That being said, NJDEP urges EPA to also consider drinking water occurrence data for PFAS that are available from sources other than UCMR monitoring in making Regulatory Determinations for PFAS. As discussed in EPA (2021a) and EPA (2021b), extensive drinking water occurrence data for PFAS that was collected by numerous states was used by EPA in making positive Regulatory Determinations for PFOA and PFOS, and additional state data continues to become available.

Individual Response: Please see Discussion on Interrelationship of CCL, UCMR, and Regulatory Determinations and Regulatory Development.

Agency Discussion on Timeline of Activities

Agency Topic Discussion: EPA received a comment requesting the Agency to adhere to the statutory schedule for rule promulgation under 42 U.S.C. 300 j-4(a)(2)(B)(i). EPA worked expeditiously to promulgate this final UCMR 5 in accordance with statutory requirements. SDWA Section 1445(a)(2), Monitoring Program for Unregulated Contaminants, as amended in 1996, requires that once every five years, beginning in August 1999, EPA issue a list of no more than 30 unregulated contaminants to be monitored by PWSs. The 5-year UCMR 5 cycle spans January 2022 through December 2026, with preparations in 2022, sample collection between January 1, 2023, and December 31, 2025, and completion of data reporting in 2026.

Comments Received on Timeline of Activities

Comment Excerpt from Commenter 103

In review of the proposal, AWWA commends EPA on its work to-date and has identified opportunities to streamline and improve on EPA's proposal. AWWA hopes that these comments will assist EPA in finalizing the UCMR 5 in a timely manner and support the collection of useful data to support future drinking water risk management decision- making. These recommendations are discussed in detail in the attached comments.

Comments Received on Timeline of Activities

1. UCMR has a strict statutory schedule, requiring promulgation in 2021 [FN2: U.S. Code 300 j-4(a)(2)(B)(i), "Not later than 3 years after August 6, 1996, and every 5 years thereafter, the Administrator shall issue a list …"]. AWWA encourages EPA to finalize the current UCMR 5 on that schedule, so that EPA, water systems, and laboratories can adequately prepare, and monitoring can begin as required by SDWA.

Individual Response: Please see Discussion on Timeline of Activities.

Agency Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach

Agency Topic Discussion: EPA received many comments supporting the UCMR program and the importance of monitoring for unregulated contaminants, particularly PFAS. The Agency agrees that protecting the quality of drinking water is an important part of safeguarding public health and appreciates the commenters' support for the UCMR program. Drinking water protection is a shared responsibility and includes roles for many stakeholders such as PWSs, Tribes, laboratories, States, and the public; participation in UCMR represents part of that shared responsibility. The public benefits from the information about whether or not unregulated contaminants are present in their drinking water. If contaminants are not found, consumer confidence in their drinking water should improve. If contaminants are found, related health effects may be avoided when subsequent actions, such as regulations, are implemented, reducing, or eliminating those contaminants.

Comments Received on General Support of UCMR Program and Proposed UCMR 5 Approach

Comment Excerpt from Commenter 63

Argued by the World Health Organization, it is explicitly stated that clean sanitary water is a human right. Since 2017, "2.2 billion" people have been restricted and limited on safe drinking water. Contaminated water leads to a high level of transmission of diseases and preventable health risks. It is estimated that "829,000" people die every year resulting from unsafe drinking water. This is a number that is far too high for preventable diseases with the monitoring and cleaning of drinking water making it safe. The World Health Organization stated that they estimate half the population will be living in areas with unsafe stressed drinking water by the year 2025 increasing that number of deaths drastically if something is not done, this proposed rule is a step in the right direction. (Drinking).

I agree with the proposed rule and recommend that there is this expansion of the UCMR 5 by expanding the number of water systems being monitored, the number of PFAS, and by adding lithium into be monitored.

Individual Response: Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach and Sampling Design.

Comments Received on General Support of UCMR Program and Proposed UCMR 5 Approach
Comment Excerpt from Commenter 68 The American Water Works Association (AWWA) appreciates the opportunity to comment on the U.S. Environmental Protection Agency's (EPA) Information Collection Request (ICR) for the Fifth Unregulated Contaminant Monitoring Rule (UCMR 5). The monitoring that occurs under the UCMR as defined by the Safe Drinking Water Act (SDWA) is an essential component of EPA's drinking water regulatory program. AWWA strongly supports the implementation of UCMR on its statutory cycle and the cost-effective collection of data to characterize occurrence of contaminants in drinking water. Without sound, national occurrence data it is not possible to identify potential contaminants that warranty regulation, to determine if additional risk management measures are needed, nor to determine what regulatory approach would be appropriate. Consequently, AWWA recommends that the Office of Management and Budget (OMB) approve EPA's final Information Collection Request for UCMR 5 with revisions. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach.
Comment Excerpt from Commenter 85 Without clean, safe water, every community is truly impoverished. The lack of regulation of contaminants in our water is a stain on the United States and a disgusting breach of public trust. For the sake of profit, in full awareness, companies have opted to poison the environment, animals and humans. causing myriad cancers and irreparable harm to our waterways and wildlife. These companies have shown themselves incapable of ethical action, and therefore MUST be regulated - this is also for their own good! No person, no matter how privileged, is safe from these ubiquitous contaminants poisoning us all. It's like letting your dog poop on the street continually for years and hoping you never get any on your shoes. Thank you for bringing this issue to the fore. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach.
Comment Excerpt from Commenter 88 The people in Rockland do NOT want dangerous bioaccumulation of toxic chemicals in their body. We want clean water. Water companies have no right to poison our water supply and disregard the aftermath - we demand accountability and cleanup. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach.
Comment Excerpt from Commenter 89 The Environmental Council of States (ECOS) submits the following comments to the U.S. Environmental Protection Agency (EPA) on the 29 per and polyfluoroalkyl substances (PFAS) proposed to be included in the fifth Unregulated Contaminant Monitoring Rule (UCMR5). As the nonpartisan association of state environmental agency leaders, ECOS appreciates the opportunity to express its support of and make suggestions for the UCMR5 rule. Given the variety of standpoints and actions on PFAS, these comments are written on behalf of ECOS members but do not necessarily reflect the concerns of individual states. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach.

Comments Received on General Support of UCMR Program and Proposed UCMR 5 Approach
Comment Excerpt from Commenter 91 Monitoring our drinking water is a first and important step in assuring we're drinking clean water. This is a basic requirement for life. Don't let corporate interests lead to people being poisoned by contaminated water. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach.
Comment Excerpt from Commenter 97 II. Comments ACWA generally supports the proposed UCMR 5, however, ACWA has several recommendations that would make the rule more workable for both public water systems and EPA. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach. Specific ACWA recommendations, and responses to those recommendations, are discussed elsewhere.
Comment Excerpt from Commenter 100 I believe it is a good idea to test the water for hazardous chemicals as this can affect the health and safety of both people and the environment. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach.
Comment Excerpt from Commenter 103 The American Water Works Association (AWWA) appreciates the opportunity to comment on the U.S. Environmental Protection Agency (EPA)'s proposed Fifth Unregulated Contaminant Monitoring Rule (UCMR 5). The monitoring that occurs under the UCMR program as defined in the Safe Drinking Water Act (SDWA) is an essential component of EPA's drinking water regulatory program [FN1: U.S. Code 300 j-4(a)(2), "…shall require monitoring of drinking water supplied by public water systems and shall vary the frequency and schedule for monitoring requirements for systems based on the number of persons served by the system, the source of supply, and the contaminants likely to be found…shall issue a list pursuant to subparagraph (A) of not more than 30 unregulated contaminants to be monitored by public water systems and to be included in the national drinking water occurrence data base maintained pursuant to subsection (g)."]. AWWA strongly supports the implementation of UCMR on its statutory cycle and the cost-effective collection of data to characterize the occurrence of contaminants in drinking water. Without sound, national occurrence data it is not possible to understand which potential contaminants warrant regulation, to determine if additional risk management measures are needed, or what regulatory approach would be appropriate. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach and SDWA Authorities (1445(a)(2), 1445(a)(1)(A)).
Comment Excerpt from Commenter 103 AWWA commends EPA on its proposal for the fifth round of Unregulated Contaminant Monitoring Rule (UCMR 5) monitoring. EPA is developing the current round in a unique time in the program's history. In crafting UCMR 5, the Agency must: 1. Meet a strict statutory schedule. 2. Respond to public concern and consider Congressional direction included in the America's Water Infrastructure Act of 2018 (Public Law No: 115-270) (AWIA 2018) expanding the scope of UCMR to all systems serving more than 3,300 persons, more than doubling the number of communities conducting

Comments Received on General Support of UCMR Program and Proposed UCMR 5 Approach
sampling. 3. Respond to public concern and comply with Congressional direction included in the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116-92) (NDAA 2020) requiring inclusion of per and polyfluoroalkyl substances (PFAS) detectable with an EPA validated method in UCMR 5. 4. Organize and undertake the logistics associated with laboratory approval, data collection, and data quality assurance with limited insight into EPA's current budget priorities. AWWA supports the Agency's approach to require monitoring for lithium in addition to PFAS. The addition of lithium monitoring effectively balances EPA's statutory obligation, data needed to support timely, high priority drinking water standard development, and EPA's programmatic capacity. AWWA has developed the following recommendations to improve and streamline EPA's proposal. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach.
Comment Excerpt from Commenter 104 Thank you for the opportunity to comment on the U.S. Environmental Protection Agency's (EPA's) proposed Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5), published on Thursday, March 11, 2021 at 86 FR 13846. The Commonwealth of Pennsylvania, Department of Environmental Protection (PA DEP), offers the following comments. PA DEP supports and agrees with the intent of EPA's proposed revisions on the following key areas: • PA DEP agrees with EPA's decision to include monitoring for 29 PFAS chemicals and lithium for this round of UCMR monitoring. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach.
Comment Excerpt from Commenter 110 Pace Analytical commends the Agency for the substantial work to generate the 5th UCMR and for its longstanding efforts to protect both our environment and public health. We know EPA is prioritizing the addressing of environmental justice issues and inequity, particularly as they relate to ensuring all Americans are supplied water that is safe and with minimal risk from harmful contaminants. **Individual Response:** Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach and EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
Comment Excerpt from Commenter 114 The Association of State Drinking Water Administrators (ASDWA) appreciates the opportunity to offer comments on the "Revisions to the Unregulated Contaminant Monitoring Rule (UCMR5) for Public Water Systems" as published in the March 11, 2021 Federal Register (86 FR 13846). ASDWA is the national, nonpartisan, non-profit association representing the collective interests of the drinking water program administrators in the 50 states, five territories, the District of Columbia, and the Navajo Nation. ASDWA's members implement the Safe Drinking Water Act (SDWA) every day to ensure the protection of public health. The primacy agencies are co-regulators with the Environmental Protection Agency (EPA) in the development and implementation of drinking water regulations. As such, ASDWA's members have a unique relationship with EPA when compared to other drinking water stakeholders such as the regulated community, i.e., the water systems. ASDWA's members typically provide a range of implementation assistance to the Agency for UCMRs and intend to do so for UCMR5.

Comments Received on General Support of UCMR Program and Proposed UCMR 5 Approach

ASDWA commends the Environmental Protection Agency (EPA) for developing this proposed rule in accordance with SDWA and addressing the changes to the rule required by Congress. As required by the 2020 National Defense Authorization Act (PL 116-92), EPA must include all per and polyfluoroalkyl substances (PFAS) for which EPA has validated a method to measure the level in drinking water. However, the 29 PFAS included in the proposed UCMR5 will not count towards the limit of 30 contaminants to be monitored under UCMRs. As required by the 2018 America's Water Infrastructure Act (PL 115-270), all PWS serving 3,300 or more people are required to conduct monitoring under UCMR5 (subject to the availability of appropriations and sufficient laboratory capacity). ASDWA supports these revisions to UCMR5, consistent with the law and recognizes the work ahead for EPA with medium and small systems' UCMR5 monitoring.

ASDWA supports EPA's continued investigation of contaminants through UCMR5, as UCMRs are a critical component of the regulatory development process in Section 1412(b) of the Safe Drinking Water Act (SDWA) in developing robust national occurrence data. However, robust occurrence data is one component of the regulatory development and the health effects research is not keeping up with UCMR monitoring. This health effects data is critical, and it provides the important contextual information on what the occurrence data means for public health protection. This health effects research is critical for the EPA Administrator to make the judgement call on whether a national regulation provides a meaningful opportunity for risk reduction as required by the SDWA.

Individual Response: Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach and Interrelationship of CCL, UCMR, and Regulatory Determinations.

Comment Excerpt from Commenter 121

Impact

The inclusion of these 30 substances in monitoring will give the EPA, as well as their associated public health and conservation partners, a strong base of data from which to monitor and research the human and ecological health impacts of PFAS in the water. This rule fulfills a key goal of the EPA's 2019 PFAS Action Plan, which highlights research, monitoring, enforcement, and risk communication surrounding PFAS in drinking water [FN5: EPA. EPA PFAS Action Plan: Program Update. Published online February 2020. https://www.epa.gov/sites/production/files/2020-01/documents/pfas_action_plan_feb2020.pdf].

Individual Response: Please see Discussion on General Support of UCMR Program and Proposed UCMR 5 Approach.

Agency Discussion on Regulatory Development

Agency Topic Discussion: EPA received many comments regarding the Agency's process for developing drinking water regulations, including input on which UCMR 5 contaminants to prioritize and data EPA should consider when developing any future NPDWRs. EPA is committed to advancing science, improving data, and using its authority to help protect public health. On October 18, 2021, EPA Administrator Michael S. Regan announced the Agency's PFAS Strategic Roadmap (USEPA, 2021d), laying out a whole-of-agency approach to addressing PFAS, including nationwide monitoring in drinking water through UCMR (more information on the actions the Agency is taking to address PFAS). Please see the Risk Communication section for more information on EPA's current health assessments for PFAS.

With the final CCL 4 Regulatory Determinations for PFOA and PFOS published in March 2021 (USEPA, 2021b), EPA is moving forward with the NPDWR development process for these two chemicals. As part of this process,

Agency Discussion on Regulatory Development

EPA is evaluating the best available science to establish a protective Maximum Contaminant Level Goal and assessing the available technologies to set the enforceable limits. EPA expects to issue a proposed regulation in Fall 2022 (before the Agency's statutory deadline of March 2023). The Agency anticipates issuing a final regulation in Fall 2023 after considering public comments on the proposal. EPA is aware of PFAS monitoring efforts by States and local communities to better understand PFAS occurrence in drinking water, including both Statewide drinking water monitoring efforts and targeted sampling at locations that have potentially been impacted by releases or locations where PFAS-containing materials are known to have been used. While these efforts are not discussed in detail here, the "Final Regulatory Determination 4 Support Document" presents a sample-level summary of the results for PFOA and PFOS individually and includes discussion on State monitoring efforts as well as uncertainties in occurrence data (USEPA, 2021e; more information on the regulatory development process).

Comments Received on Regulatory Development

Comment Excerpt from Commenter 59

In the letter to EPA of June 3, 2020, joined by NGWA and eight other prominent water associations, the associations asked that EPA (1) engage with outside experts to develop and review a public health risk assessment for PFAS, (2) with all key stakeholder establish the adequacy of analytical methods and capacity, effective risk communication, and sustainable treatment options, among other important factors, (3) accelerate research on water treatment, occurrence, and health effects to support future decision making and contaminant prioritization, and (4) leverage available regulatory tools in other statutes to gather occurrence and health risk assessment data and organize them to support research and decision making, using regulatory tools that include the Toxics Release Inventory, Sections 4 and 8 of the Toxic Substances Control Act, and the Unregulated Contaminant Monitoring Rule.

Individual Response: Please see Discussion on Regulatory Development and Risk Communication.

Comment Excerpt from Commenter 95

PFAs are know to be dangerous and harmful and pose a myriad of risks to those who consume them. Please make PFAS and lithium subject to national primary drinking water regulations and regulate them in order to ensure the safety of the community and people within!

Individual Response: Please see Discussion on Regulatory Development and Interrelationship of CCL, UCMR, and Regulatory Determinations.

Comment Excerpt from Commenter 97

b. Focus on the Most Prevalent PFAS in Water Systems in Future Regulatory Actions
EPA is proposing to require public water systems to collect national occurrence data for 29 PFAS and lithium [FN7: 86 Fed. Reg. 13846 (Mar. 11, 2021), click here {https://www.govinfo.gov/content/pkg/FR-2021-03-11/pdf/2021-03920.pdf}]. EPA will use the data collected through the final version of the UCMR 5 to inform its decision-making process on which contaminants to regulate under the Safe Drinking Water Act (SDWA) [FN8: 85 Fed. Reg. at 13851 (Mar. 11, 2021), click here {https://www.govinfo.gov/content/pkg/FR-2021-03-11/pdf/2021-03920.pdf}]. There are currently no national primary drinking water regulations for PFAS. However, as mentioned above, EPA recently began the process to set enforceable drinking water standards for PFOA and PFOS.

It is unlikely that EPA will choose to regulate all 29 PFAS proposed to be monitored under the UCMR 5. As a result, ACWA suggests that EPA take a tailored regulatory approach and focus on the most prevalent PFAS

Comments Received on Regulatory Development

found in water systems in its future regulatory actions. By focusing on this smaller subset of PFAS, EPA would increase the odds of prompt regulatory action and channel resources to effectively address PFAS contamination.

For example, in California there is a subset of nine PFAS that occur at higher frequency, all of which are currently listed in the proposed UCMR 5. These include: (1) PFOS, (2) perfluorohexanesulfonic acid (PFHxS), (3) PFOA, (4) PFBS, (5) perfluorohexanoic acid (PFHxA), (6) perfluoroheptanoic acid (PFHpA), (7) perfluorononanoic acid (PFNA), (8) perfluorodecanoic acid (PFDA), and (9) 4,8-dioxa-3H-perfluorononanoic acid (ADONA) [FN9: California Water Boards, Chart #5 - Detection Frequency by PFAS Chemicals (2019/2020), click here {https://www.waterboards.ca.gov/pfas/drinking_water.html}].

I. Conclusion

ACWA appreciates the opportunity to comment on EPA's proposed UCMR 5. ACWA urges EPA to provide additional flexibility in the UCMR 5.

Individual Response: Please see Discussion on Regulatory Development.

Comment Excerpt from Commenter 108

Additionally, the Coalition supports EPA's continued efforts to collect toxicology data relating to the public health risks, or lack thereof, to inform future regulation. Absent sound toxicology data, the results of monitoring data collected pursuant to this rule will be of limited utility. In order to prioritize regulation of those contaminants that pose the greatest risk to human health, including vulnerable populations, EPA must analyze this monitoring data in conjunction with sound toxicology data. Accordingly, the Coalition supports EPA's continued efforts to collect toxicology data so that the information can be used, in conjunction with monitoring data collected pursuant to this rule, to support EPA's future decisions regarding whether or not to regulate particular contaminants on a national level.

This rulemaking is an important and significant step in EPA's development of occurrence data, which will be used as a basis to support future regulatory determinations and other actions to protect public health. While EPA is working through its long established processes and rulemaking procedures, Congress is considering ways to expedite and fund various national standards-setting approaches. In December 2019, Congress passed and, then, the President signed into law the National Defense Authorization Act (NDAA) (P.L. 116-92) that requires EPA to include each PFAS in UCMR5 for which a drinking water method has been validated by the Administrator, and that are not subject to a national primary drinking water regulation. These Congressional actions, combined with EPA's efforts, are important national developments, and we hope that states will support those efforts through collaboration and shared expertise instead of individual, conflicting, or duplicative actions that some states have pursued.

Individual Response: Please see Discussion on Regulatory Development, Interrelationship of CCL, UCMR, and Regulatory Determinations, and General Support of UCMR Program and Proposed UCMR 5 Approach.

Comment Excerpt from Commenter 108

III. Proposed Rulemaking

The UCMR5 proposal is an important step in EPA's PFAS Action Plan to collect drinking water occurrence data for a broader group of PFAS, building on the collection of monitoring data for the six PFAS that took place under UCMR3.

A. The Coalition Supports Evaluation of PFAS Compounds on an Individual Basis.

Comments Received on Regulatory Development

As described in the rulemaking, EPA has proposed Assessment Monitoring for 29 PFAS contaminants. The Coalition supports EPA's approach to evaluating different PFAS on an individual basis. From a toxicological perspective, regulatory agencies must have adequate science for determining health-based values before promulgating individual- compound standards, limits, and related regulations. The toxicities and other characteristics of different PFAS compounds vary widely. As such, it is not scientifically appropriate to group PFAS compounds together for purposes of risk assessment. Further, the Agency should not assume that exposures to mixtures of PFAS necessarily bioaccumulate in humans in interchangeable 1:1 ratios.

The Coalition supports the proposed rulemaking's specificity in identifying which PFAS compounds must be monitored. We recommend that future regulation of individual PFAS substances reflect peer-reviewed science regarding the physical, chemical, and toxicological properties of each individual compound. Today, only nine compounds have any documented human health concerns or EPA Integrated Risk Information System assessments in progress. The rest have no EPA health assessments or occurrence data in public water systems.

Individual Response: Please see Discussion on Regulatory Development, Risk Communication, and PFAS Contaminants.

Comment Excerpt from Commenter 111

INTRODUCTION

The States have a strong interest in ensuring that their residents have access to safe drinking water. Although numerous studies have shown that exposures to PFAS negatively affect human health, there is currently no national requirement that all public water systems test for and remove unsafe levels of PFAS in drinking water [FN5: See Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate, 86 Fed. Reg. 12,272, 12,278 (Mar. 3, 2021) (to be codified at 40 C.F.R. pt. 141).]. Millions of people across the United States are exposed to PFAS contaminated drinking water and widespread releases of PFAS into the environment. The States have limited resources to comprehensively assess and address PFAS. Therefore, it is crucial for EPA to broadly regulate PFAS under the SDWA to protect public health and the environment and to do so in accordance with the States' proposed enhancements to the UCMR 5.

Congress long ago recognized the substantial threat that unsafe drinking water poses and passed the SDWA to limit exposures to harmful contaminants [FN6: Safe Drinking Water Act of 1974, Pub. L. No. 93-523, 88 Stat. 1660.]. The SDWA requires that the EPA, among other things, establish "primary drinking water regulations" applicable to public water systems to limit exposure to contaminants that the EPA has determined "may have any adverse effect on the health of persons." [FN7: 42 U.S.C. § 300f.] The SDWA established the UCMR to identify contaminants that pose a threat to public health and to gather national occurrence data about those contaminants from public water systems. If EPA determines, based on the information gathered from the UCMR, that a particular contaminant is present in drinking water systems and a drinking water standard is necessary to protect public health, then EPA will make a determination to regulate and establish a maximum contaminant level (MCL) for the contaminant [FN8: Id., § 300f(b)(1)(A)–(B), (E)]. "[T]he purpose of the MCLs is to protect the public, as much as feasible, from the adverse health effects of drinking contaminated water." [FN9: City of Waukesha v. EPA, 320 F.3d 228, 243 (D.C. Cir. 2003); see also infra at X (explaining that, in limited circumstances where a MCL is not feasible, EPA may require a treatment technology rather than a MCL).]

The States support EPA's recent determination to regulate perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) under the SDWA [FN10: See Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate, 86 Fed. Reg. 12,272 (Mar. 3, 2021) (to

Comments Received on Regulatory Development

be codified at 40 C.F.R. pt. 141)]. We also recognize that EPA's proposal to require monitoring of 29 PFAS in the UCMR 5 is a move in the right direction to address PFAS contamination and exposure. That said, there is an urgent need for the federal government to aggressively and holistically regulate these compounds—to prevent the ongoing PFAS contamination of drinking water supplies.

Ultimately, regulation should address the manufacturing and processing of these chemicals and their use in food, food packaging, and in consumer products across all environmental media. [FN11: Although these comments are focused on drinking water standards for PFAS as a class, there is also an urgent need to develop comprehensive standards for PFAS compounds across the board, including but not limited to, surface water quality standards, pre-treatment standards for industrial users; storm water discharge permits; and limits for land application of sludge. In addition, there is an urgent need to develop scientific understanding of the shorter-chain PFAS being developed as replacement chemicals. Fortunately, some product manufacturers and retailers have proactively taken measures to phase out PFAS from their supply chains. We urge EPA to phase out all "non-essential" uses of PFAS.] While we acknowledge that this is not directly relevant to the proposed UCMR 5, to remedy PFAS contamination, we urge EPA to apply the full breadth of its statutory authorities to regulate these substances—not just pursuant to the SDWA but also pursuant to the Toxic Substances Control Act, the Clean Water Act, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation and Liability Act. We applaud EPA's recent formation of the EPA Council on PFAS and its "PFAS 2021- 2025—Safeguarding America's Waters, Air and Land" strategy to tackle PFAS approaches holistically and in a coordinated, expansive fashion.

Individual Response: Please see Discussion on Regulatory Development.

Comment Excerpt from Commenter 111

PFAS are Toxic "Forever" Chemicals

In recognition of the harmful effects and persistence of PFAS, EPA has begun the process of regulating two of the long-chain [FN20: Defined as perfluorocarboxylic acids with 8 or carbons and perfluorosulfonic acids with 6 or more carbons.] PFAS (PFOA and PFOS) pursuant to the SDWA [FN21: Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate, 86 Fed. Reg. 12,272 (Mar. 3, 2021) (to be codified at 40 C.F.R. pt. 141)]. Many of the undersigned State Attorneys General commented on EPA's Preliminary Determination to regulate PFOA and PFOS [FN22: See Attorneys General of Wisconsin, et al., Comment Letter on the Preliminary Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List (Jun. 10, 2020), https://www.regulations.gov/comment/EPA-HQ-OW-2019-0583-0258]. There is substantial scientific evidence demonstrating that some long-chain PFAS, including PFOA and PFOS, have adverse effects on human health [FN23: See Attorneys General of Wisconsin, et al., Comment Letter on the Preliminary Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List (Jun. 10, 2020), https://www.regulations.gov/comment/EPA-HQ-OW-2019-0583-0258. See also Agency for Toxic Substance and Disease Registry, Perfluoroalkyls - ToxFAQs™ (Mar. 2018), https://www.atsdr.cdc.gov/toxfaqs/tfacts200.pdf]. The toxicity of PFOA and PFOS to humans and animals has been studied for decades, including internal tests conducted by 3M on PFOS and by DuPont on PFOA [FN24: See, e.g., Office of Minn. Attorney General Keith Ellison, State's Second Amended Exhibit List, https://www.ag.state.mn.us/Office/Cases/3M/StatesExhibits.asp (last visited Apr. 27, 2021) (providing documentation of, inter alia, research performed by 3M and DuPont regarding the toxic effects of PFOA and PFOS exposure to humans and animals)]. As recited in the EPA's Final Regulatory Determination to regulate PFOA and PFOS, the vast body of research demonstrates serious adverse health effects associated with exposure to PFOA and PFOS, including "decreases in female fecundity and fertility, decreased birth weights in

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offspring and other measures of postnatal growth," as well as "high cholesterol, increased liver enzymes, decreased vaccination response, thyroid disorders, pregnancy-induced hypertension and preeclampsia, and cancer."[FN25: Preliminary Determination, 85 Fed. Reg. at 14,115–16; see also Agency for Toxic Substances & Disease Registry, What are the health effects?, https://www.atsdr.cdc.gov/pfas/health-effects.html (last visited Apr. 27, 2021) (reporting that human exposure to PFAS, such as PFOA and PFOS, may increase the risk of cancer, alter the immune system, increase cholesterol levels, interfere with natural hormones, decrease fertility, and affect the growth, learning, and behavior of infants and children); Cal. Water Bds., Per and Polyfluoroalkyl Substances (PFAS), https://www.waterboards.ca.gov/pfas (last updated Apr. 14, 2021) (human exposure to PFAS, such as PFOA and PFOS, may also result in low birth weight, birth defects, delayed puberty onset, increased risk of thyroid disease, and increased risk of asthma).]

Various PFAS show similar indicia of toxicity, environmental persistence (hence, the common reference to PFAS as "forever" chemicals), bioaccumulation, and ubiquity in the environment [FN26: Attorneys General of New York et al., Comment Letter on the Advance Notice of Proposed Rulemaking, Addition of Certain Per and Polyfluoroalkyl Substances; Community Right-to- Know Toxic Chemical Release Reporting (Feb. 3, 2020), https://www.regulations.gov/document?D=EPA-HQ-TRI-2019-0375-0086]. Additionally, some chemicals in the PFAS class are precursors that are known to break down or transform to PFOA and PFOS in the environment and the human body [FN27: Buck RC, Franklin J, Berger U, Conder JM, Cousins IT, de Voogt P, Jensen AA, Kannan K, Mabury SA, van Leeuwen SP. Perfluoroalkyl and polyfluoroalkyl substances in the environment: terminology, classification, and origins. Integrated Envtl. Assessment and Mgmt. 2011 Oct;7(4):513–541. https://www.ncbi.nlm.nih.gov/pubmed/21793199; Concawe, Environmental Fate and Effects of Poly and Perfluoroalkyl Substances (PFAS), Report No. 8/16 - Environmental Science for the European Refining Industry (2016), https://www.concawe.eu/wp-content/uploads/2016/06/Rpt_16-8.pdf]. Release of a single precursor may result in formation of multiple intermediate PFAS with different terminal PFAS products. Other PFAS have similar health risks as PFOA and PFOS and are, in some cases— as with 6:2 fluorotelomer alcohol (6:2 FTOH)—more toxic than their terminal perfluoroalkyl acid products [FN28: Rice PA, Aungst J, Cooper J, Bandele O, Kabadi SV. Comparative analysis of the toxicological databases for 6:2 fluorotelomer alcohol (6:2 FTOH) and perfluorohexanoic acid (PFHxA). Food and Chem. Toxicology. 2020;138:111210. https://doi.org/10.1016/j.fct.2020.111210]. "The widespread use, large number, and diverse chemical structures of PFAS pose challenges to any sufficiently protective regulation […] Regulating only a subset of PFAS has led to their replacement with similar hazards." [FN29: Bălan SA, Mathrani VC, Guo DF, Algazi AM. Regulating PFAS as a Chemical Class under the California Safer Consumer Products Program. Environ. Health Perspectives 2021 Feb 17;129(2). https://doi.org/10.1289/EHP7431.]

Epidemiologic studies have shown that potential adverse human health effects from exposure to longer-chain perfluoroalkyl acids (PFAAs) include increased serum cholesterol, immune dysregulation, pregnancy-induced hypertension, and kidney and testicular cancers [FN30: Id.; see also Steenland K, Fletcher T, Stein CR, Bartell SM, Darrow L, Lopez-Espinosa M, Ryan PB, Savitz DA. Review: Evolution of evidence on PFOA and health following the assessments of the C8 Science Panel. Environ. International. 2020 Dec;145:106125. https://doi.org/10.1016/j.envint.2020.106125]. Long-chain PFAA exposure is also associated with low birthweight in humans, suppressed immune system response, dyslipidemia, impaired kidney function, and delayed onset of menstruation [FN31: Bălan SA, Mathrani VC, Guo DF, Algazi AM. Regulating PFAS as a Chemical Class under the California Safer Consumer Products Program. Environ. Health Perspectives 2021 Feb 17;129(2). https://doi.org/10.1289/EHP7431]. Approximately 85 percent of all PFAS compounds can degrade or metabolize into PFAAs in the environment or within living organisms [FN32: Id.]. Because most PFAS break down into PFAAs through degradation, metabolism, or combustion, regulation of the entire class of PFAS is

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necessary to prevent human and environmental exposure to PFAAs and the hazards they present [FN33: Id.].

PFAS contamination detected in the environment is generally made up of mixtures of PFAS [FN34: Id.]. This PFAS mixture results from multiple sources of PFAS present in an area, the use of PFAS as mixtures in a single product (e.g., fire-fighting foam), and the changes in the types of PFAS that have been commonly used over time. Mixtures of PFAS, which often contain PFOA or PFOS, may pose similar health risks to those associated with exposure to PFOA or PFOS alone [FN35: Id.].

Because longer-chain PFAS, such as PFOA and PFOS, are becoming regulated, manufacturers have employed new alternative PFAS as substitute chemicals, which are not yet regulated [FN36: Joseph Allen, Stop playing whack-a-mole with hazardous chemicals, WASH. POST, Dec. 15, 2018, https://www.washingtonpost.com/opinions/stop-playing-whack-a-mole-with-hazardous-chemicals/2016/12/15/9a357090-bb36-11e6-91ee-1adddfe36cbe_story.html]. The most common replacements for the long-chain PFAS are short-chain PFAS with similar structures or compounds with fluorinated segments joined by ether linkages [FN37: Id.]. While some of these shorter-chained PFAS alternatives may be less bioaccumlative, they are still as environmentally persistent as long-chain PFAS or have persistent degradation products. Thus, there is no evidence that introduction of shorter-chained alternatives reduces the amount of harmful PFAS in the environment. In fact, because some of the shorter-chained alternatives are less effective, larger quantities may be needed to provide the same performance as longchain PFAS [FN38: Long-chain PFAS are generally as toxic as much lower doses than shorter-chained PFAS. See N.J. Dept. of Envtl. Prot. Science Advisory Board, Approaches for Addressing Drinking Water and Wastewater Contaminants of Emerging Concern (CECs) in a Broader Context: Identification, Ranking]. While some of the shorter-chained PFAS are being widely used, new ones are being employed with little information about them publicly available, including their occurrence in drinking water.

In sum, the occurrence of any and all PFAS in the environment is a critical concern—due to their prevalence of use and release and harmful effects—yet, as stated above, there is insufficient data available on many PFAS [FN39: For these reasons, it makes sense to approach PFAS holistically, using broad statutory authorities. This includes requiring manufacturers of newer PFAS to conduct extensive toxicological testing, to report the chemical structures to EPA, to develop and provide to EPA analytical methods for detecting these chemicals, to develop nonfluorinated alternatives, and to develop safe disposal methods.].

REGULATE PFAS AS A CLASS
Although not directly relevant to the proposed UCMR 5, we urge EPA to consider regulation of PFAS as a class. Our comments below ask EPA to gather occurrence data for total PFAS or a subclass of PFAS, and we acknowledge that gathering such data is a prerequisite to setting drinking water standards for these groups of contaminants. A class-based approach is the most effective way to regulate PFAS as it provides greater protection to the public, decreases the burden on regulatory agencies, and provides
greater certainty to the operators of public water systems. Gathering occurrence data as a class or subclass will allow the agency to fully understand the threat this suite of chemicals poses and to devise appropriate regulatory measures to safeguard human health and the environment [FN40: Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Miller M, Ng CA, Scheringer M, Vierke L, Wang Z. Strategies for grouping per- and polyfluoroalkyl substances (PFAS) to protect human and
environmental health. Environ. Sci.: Processes Impacts, 2020 Jun 4;22:1444–1460, 1452. https://doi.org/10.1039/D0EM00147C].

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Regulating PFAS as a class is consistent with EPA's authority to regulate classes of contaminants [FN41: ELENA H. HUMPHREYS, CONG. RESEARCH SERV., R46652, REGULATING CONTAMINANTS UNDER THE SAFE DRINKING WATER ACT (SDWA) 21 (updated Mar. 3, 2021), available at https://fas.org/sgp/crs/misc/R46652.pdf]. EPA has regulated several classes of chemicals, including polychlorinated biphenyls and disinfection byproducts, under the SDWA [FN42: U.S. Envtl. Prot. Agency, National Primary Drinking Water Regulations, https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations (last updated Jan. 5, 2021)].

There is a growing body of evidence that many PFAS, in addition to PFOA and PFOS, have similar indicia of toxicity, environmental persistence, bioaccumulation, and ubiquity in the environment. One of the most consistent features of the PFAS class is that, despite the diversity of PFAS substances, all PFAS are extremely resistant to environmental and metabolic degradation [FN43: Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Ng CA, Scheringer M, Wang Z. The high persistence of PFAS is sufficient for their management as a chemical class. Environ Sci Process Impacts. 2020 Dec 16;22(12):2307-2312. https://pubmed.ncbi.nlm.nih.gov/33230514/; Kwiatkowski CF, Andrews DQ, Birnbaum LS, Bruton TA, DeWitt JC, Knappe D, Maffini MV, Miller MF, Pelch KE, Reade A, Soehl A, Trier X, Venier M, Wagner CC, Wang Z, Blum A. Scientific Basis for Managing PFAS as a Chemical Class. Environ. Sci. Technol. Lett. 2020 Jun 30;7, 8:532-543. https://doi.org/10.1021/acs.estlett.0c00255]. Due to their persistence, all PFAS bioaccumulate in water, air, sediment, soil, and plants [FN44: Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Ng CA, Scheringer M, Wang Z. The high persistence of PFAS is sufficient for their management as a chemical class. Environ Sci Process Impacts. 2020 Dec 16;22(12):2307-2312. https://pubmed.ncbi.nlm.nih.gov/33230514/; Kwiatkowski CF, Andrews DQ, Birnbaum LS, Bruton TA, DeWitt JC, Knappe D, Maffini MV, Miller MF, Pelch KE, Reade A, Soehl A, Trier X, Venier M, Wagner CC, Wang Z, Blum A. Scientific Basis for Managing PFAS as a Chemical Class. Environ. Sci. Technol. Lett. 2020 Jun 30;7, 8:532–543. https://doi.org/10.1021/acs.estlett.0c00255]. There is also a growing body of evidence that shorter-chained PFAS have similar toxicological effects to the well documented adverse effects of longer-chained PFAS such as PFOA and PFOS [FN45: Kwiatkowski CF, Andrews DQ, Birnbaum LS, Bruton TA, DeWitt JC, Knappe D, Maffini MV, Miller MF, Pelch KE, Reade A, Soehl A, Trier X, Venier M, Wagner CC, Wang Z, Blum A. Scientific Basis for Managing PFAS as a Chemical Class. Environ. Sci. Technol. Lett. 2020 Jun 30;7, 8:532–543. https://doi.org/10.1021/acs.estlett.0c00255]. Based on the characteristics shared by many PFAS and the number of individual chemicals, some researchers are calling for PFAS to be regulated as a class. For example, in a June 2020 article published in Environmental Science & Technology Letters, Carol F. Kwiatkowski and colleagues presented the scientific basis for managing PFAS as a class and recommended that they be regulated as a class [FN46: Id.]. Similarly, in a December 2020 article published in Environmental Science Process Impacts, Dr. Ian Cousins and colleagues also recommended that PFAS be managed as a chemical class and all nonessential uses be banned [FN47: Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Ng CA, Scheringer M, Wang Z. The high persistence of PFAS is sufficient for their management as a chemical class. Environ Sci Process Impacts. 2020 Dec 16;22(12):2307–2312. https://pubmed.ncbi.nlm.nih.gov/33230514/].

Further, it is not practical for EPA to regulate these chemicals on an individual basis. It is too resource intensive and will take decades to provide adequate protection to the public. Instead, EPA should take a holistic approach to protect public health and welfare from the dangers of PFAS contamination.

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A class-based approach also provides greater certainty to public water systems. Without such an approach, a public water system may invest in a treatment technology appropriate for individual PFAS only to later learn that the water supply is also contaminated by other PFAS that require a different treatment technology [FN48: One of the most studied treatment technologies, granular activated carbon (GAC), "works well on longer-chain PFAS like PFOA and PFOS, but shorter chain PFAS like Perfluorobutanesulfonic acid (PFBS) and Perfluorobutyrate (PFBA) do not adsorb as well." U.S. Envtl. Prot. Agency, Reducing PFAS in Drinking Water with Treatment Technologies (Aug. 23, 2018), https://www.epa.gov/sciencematters/reducing-pfas-drinking-water-treatment-technologies].

If EPA later concludes that it is not economically or technologically feasible to set an appropriate MCL for PFAS as a class or for PFAS subclasses, EPA can exercise its authority to specify a PFAS treatment technique to remove PFAS as a class to the extent practicable [FN49: 42 U.S.C. § 300g-1(b)(7)(A).]. This alternative route requires that the EPA instead adopt a treatment technique regulatory regime that will "prevent known or anticipated adverse effects on the health of persons to the extent feasible." [FN50: Id.] Thus, we urge EPA to consider this approach as yet another alternative.

Individual Response: Please see Discussion on Regulatory Development and PFAS Contaminants.

Comment Excerpt from Commenter 113

Public Employees for Environmental Responsibility (PEER) appreciates the steps the Biden Administration is taking to understand per-and polyfluoroalkyl substances (PFAS) contamination issues across the nation. However, PEER does not believe that the Proposed Unregulated Contaminant Monitoring Rule (UCMR5), 86 Fed. Reg. 13846 (March 11, 2021) is adequate. Our specific comments are set forth below.

Background. PFAS are toxic to humans in concentrations as small as parts per trillion ("ppt") [FN1 U.S. Department of Health & Human Services, Agency for Toxic Substances and Disease Registry, Toxicological Profile for Perfluoroalkyls (June 2018), at 5–6, https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf]. They are associated with a vast array of human diseases, including cancer, growth, learning, and behavioral problems in infants and children, fertility and pregnancy problems, endocrine disruption, increased cholesterol, immune system problems, and interference with liver, thyroid, and pancreatic function [FN2: Id.]. In fact, Dr. Linda Birnbaum, former Director of National Institute for Environmental Health Sciences, suggests that the safety threshold for just one PFAS, PFOA, should be 0.1 ppt. Currently, EPA's CompTox Master List of PFAS says there are 9,252 PFAS substances.

While EPA has a voluntary Lifetime Health Advisory (LHA) of 70 ppt for two PFAS, PFOA and PFOS, there are no regulations regarding PFAS in drinking water, soil, groundwater, food, or commercial products. Many states are now implementing Maximum Contaminant Levels (MCLs) for PFAS that are much lower than EPA's LHA. For example, Massachusetts regulates six PFAS at 20 ppt, cumulatively.

However, given the vast number of PFAS, and the fact that chemical companies are making "regrettable substitutions" whenever certain PFAS are phased out or regulated, it is incumbent on EPA to determine the scope of all PFAS contamination. While we do not have toxicity data on the vast majority of PFAS, we suspect that most, if not all, are dangerous, and should be regulated as a class.

Individual Response: Please see Discussion on Regulatory Development, New PFAS Methods, and PFAS Contaminants – Miscellaneous Comments.

Agency Discussion on Risk Communication

Agency Topic Discussion: EPA received many comments requesting that the Agency develop and provide risk communication materials to support interpretation and characterization of UCMR 5 results. EPA acknowledges that communicating the results of UCMR monitoring can be particularly challenging for PWSs. Often the information about health effects and treatment effectiveness for unregulated contaminants is still being developed even as the occurrence data gathering takes place.

EPA intends to publish (and routinely update, as new data becomes available) "reference concentrations" on the UCMR website with available EPA health values prior to UCMR 5 monitoring (during 2022). The reference concentrations are based on publicly-available health information from the following EPA sources: Drinking Water Standards and Health Advisories (USEPAa), the CCL Contaminant Information Sheets (USEPAb), the Integrated Risk Information System (IRIS) (USEPAc), or information from Regulatory Determinations to provide context around results above the MRL (USEPAd). As was done in UCMR 4, the MRLs are based on the capability of the analytical method and are typically lower than the current health values. This ensures that the occurrence data reported to EPA will support sound decision making, including those cases where new health effects information might lead to lower health values. Recognizing that additional health effects information may become available over time, EPA will update the reference concentrations, as needed, with the public posting of occurrence data to the NCOD approximately quarterly. A summary of the information on the health effects, the prioritization process, as well as other contaminant-specific information (source, use, production, release, persistence, mobility, and occurrence) that EPA gathered for the UCMR 5 analyte list, is contained in the "Information Compendium for Contaminants for the Final Unregulated Contaminant Monitoring Rule (UCMR 5)" (USEPA, 2021j). The Agency also intends to provide a template for PWSs to consider using in communicating with their customers about the detection of PFAS in drinking water, and provide other supporting material as risk-related information becomes available. PWSs should be aware that some states may have particular requirements for communicating the results of PFAS monitoring to consumers and/or reporting them to the state, particularly if the PFAS levels are elevated (e.g., well above a health-advisory level or a concentration associated with a toxicity assessment). EPA encourages PWSs to coordinate closely with their states to address elevated results.

The Agency currently has limited health effects information on UCMR 5 contaminants to support specific risk communication and recommended response actions. Developing such materials, as well as providing ongoing support to States and PWSs regarding public communication, requires substantial interagency effort and collaboration. Over the past few years, science has progressed rapidly around PFAS, and the Agency is moving forward with actions that are based on this new science and a better understanding of the complex challenges so many communities are facing. To address these challenges and meet the needs of our partners and communities, the EPA Council on PFAS has released the PFAS Strategic Roadmap (USEPA, 2021d) to:

- Develop "PFAS 2021-2025 – Safeguarding America's Waters, Air and Land," a multi-year strategy to deliver critical public health protections to the American public.
- Prioritize partnerships and collaboration within EPA and with our federal, State, Tribal, and local partners.
- Continue to engage with the public about the risk associated with these chemicals.

EPA continues to conduct research to increase our understanding of risks to human health and the environment and to increase our understanding of ways to address PFAS in the environment. This includes studying how harmful PFAS are, identifying how people are exposed to PFAS, and examining how different technologies can remove PFAS from drinking water. EPA currently has HAs for PFOA (USEPA, 2016b) and PFOS (USEPA, 2016c), finalized toxicity assessments for GenX (USEPA, 2021f) and PFBS (USEPA, 2021g), and in-

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process assessments for five additional PFAS: PFBA (USEPA, 2021h), PFNA, PFHxA, PFHxS, and PFDA (USEPA, 2021i).

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Comment Excerpt from Commenter 69

II. ACTIONS IF PFAS IS DETECTED ABOVE MINIMUM REPORTING LEVELS
In the UCMR 5 proposal, the Agency describes in detail its process for monitoring PFAS in PWS. The proposal outlines the purpose of the rule, methods of testing, and which contaminants it proposes and those it considered. However, the proposal fails to include action steps in the event PFAS levels are detected beyond minimum reporting levels. The purpose of monitoring for unregulated contaminants, as the Agency has stated, is to better inform its own decision-making process. To better support public health, however, the Agency should include in UCMR 5 what the Agency intends to do if and when PFAS is detected in PWS.

For example, MassDEP's Quick Reference Guide for PFAS succinctly states that if PFAS levels exceed 10 ppt at a certain location, that sampling location will be sampled monthly [FN9: https://www.mass.gov/doc/per-and-polyfluoroalkyl-substances-pfas-drinking-water-regulations-quick-reference-guide/download]. MassDEP also provides forms PWS are required to submit to update public education and public notice. These concrete instructions provide PWS and the general public with better access to updated information and consumer confidence.

If the Agency intends to increase its sampling frequency where PFAS levels are detected beyond minimum reporting levels, the Agency should disclose its plan to do so. Otherwise, it should articulate how it intends to give the public notice if data reports or collection methods change. The Agency's transparency will boost consumer confidence because it will be held accountable with these extended measures. The public will not only have confidence in the Agency's ability to detect public health issues, but it will also have confidence in the Agency's determination to act upon these issues.

III. TREATMENT PROCESSES AND TECHNOLOGIES
The Agency should also explain what steps individuals can take to keep their drinking water safe. The Agency provides detailed information about treatment processes on its PFAS webpage, but the Agency should also provide measures people can take to apply these treatment processes in their homes [FN10: https://tdb.epa.gov/tdb/contaminant?id=11020]. While the Agency details the effective methods for removing PFAS, such as granular activated carbon (GAC), membrane separation, and ion exchange, there is no indication of how people can attain these methods. There are several steps consumers can take at home, including purchasing commercial filtration systems or bottled water. Because PFAS is both unregulated and potentially harmful to public health, the public would benefit by knowing how to take drinking water safety into their own hands.

Individual Response: Please see Discussion on Risk Communication and Data Accessibility, CCR, and Public Notification.

Comment Excerpt from Commenter 77

I also believe that the EPA could be doing a public health campaign on the issue of PFAs, reaching out to Health Departments across this nation with consistent materials for use in public education.

Many communities do not have the resources or fortitude to fight against corporations and we should not have to waste our resources and energies on this. I really do appreciate that the EPA, by committing itself to

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issue a rule to REQUIRE water providers to test, will truly be serving the public they are mandated to protect and this will also go a long way to helping communities help themselves. The tracking of this information will help to understand and monitor outbreaks and sites of concern. I also do believe that there should be an amendment or addition to this Bill that REQUIRES water utility companies to pay for blood testing, especially for pregnant women and children, to assess levels in the community where there are problems, which depending on test results would REQUIRE these water utility companies to provide bottled water those women, children and or families affected. Our water utility company will only do the minimum and lately said they will not test for all PFAS. I hope this rule will change their attitude! **Individual Response:** Please see Discussion on Risk Communication, SDWA Authorities (1445(a)(2), 1445(a)(1)(A)), Data Accessibility, CCR, and Public Notification, and EO 13045: Protection of Children from Environmental Health Risks and Safety Risks.
Comment Excerpt from Commenter 81 AMWA has continually highlighted the difficulties that arise from being able to identify a substance within drinking water yet being unable to provide context for public health or the ability to remove it from the finished drinking water. As EPA works to finalize this rule, AMWA urges the agency to prioritize the development of risk communication tools before water systems commence testing. This will prepare utilities to respond immediately when and if they find PFAS in their drinking water. **Individual Response:** Please see Discussion on Risk Communication.
Comment Excerpt from Commenter 86 The Connecticut Department of Public Health (CT DPH) submits these comments in response to the United States Environmental Protection Agency's (EPA) proposed Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems. CT DPH is the primacy agency responsible for enforcing the federal Safe Drinking Water Act (SDWA) and National Primary Drinking Water Regulations (NPDWR) for the State of Connecticut. Proposed revisions include monitoring for 29 per and polyfluoroalkyl substances (PFAS) and lithium and expansion of monitoring to public water systems serving 3,300 to 9,999 customers dependent upon funding. CT DPH has reviewed the proposed UCMR5 and has the following comments to offer for consideration: 1. CT DPH welcomes the focus on PFAS, but the lack of peer reviewed toxicological studies for many of the PFAS to be monitored in UCMR5 presents a risk communication challenge, particularly once sampling begins, and detections are found. 2. CT DPH requests that EPA consider a pre-sample communication strategy through press releases, social media, or other appropriate methods to inform the public of the purpose of UCMR, how the result will be used, what contaminants will be sampled, what a detection means, and how long it takes to get sample result information out to the public. A proactive approach will help mitigate potential misunderstandings after UCMR 5 sampling begins and once results are reported. EPA should consider providing template press releases for states and water systems for pre-UCMR sampling media strategies. EPA, states, and utilities should also look to develop post-sampling communication strategies to inform the public what contaminants were found and next steps. More and more, UCMR data is being used by parties other than the regulatory and regulated communities. EPA needs to address this by providing context to UCMR sampling and assisting states and water systems to have unified messaging where applicable. 3. Specific to the proposed PFAS, the development of a consistent and pre-established response decision tree is important. PFAS found in drinking water is a sensitive subject matter, and water systems will

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rightfully be met with questions and concerns from their consumers. Communications around analytical results should be clear and precise, providing recommendations and describing any actions required based on levels of risk. In those cases where levels represent an elevated risk, follow-up actions will likely require the participation of local public health, local government, state agencies, and EPA. Development of risk communication resources should involve frequent and regular input from both states and water systems. **Individual Response:** Please see Discussion on Risk Communication and Data Accessibility, CCR, and Public Notification.
Comment Excerpt from Commenter 89 ECOS also urges EPA to prepare communications guidance for all PWSs to use to inform the public about potential health implications about the PFAS found. As is, UCMR (and the SDWA in general) is very risk-based, yet it is challenging to quantify and therefore communicate total PFAS risk. Given that there are many different state standards and no national standard, EPA should be prepared to help states understand and communicate with the public about what the monitoring results mean in terms of public health concerns. ECOS recommends EPA prepare risk communication guidance with answers to questions about why the data are meaningful, how they will be used, and what PWSs should do or say when they detect PFAS. States recommend that EPA make its data and decision-making strategy publicly available. EPA should consider publishing health advisories or health effects support documents with risk values (e.g., reference doses) being developed for certain PFAS (e.g., PFBS, PFHxA, PFHxS, GenX chemicals, etc.) to provide important information states need to communicate with the public about what UCMR5 results mean for their health. For more risk communication guidance, ECOS recommends EPA refer to the Interstate Technology and Regulatory Council's Risk Communication Toolkit. **Individual Response:** Please see Discussion on Risk Communication.
Comment Excerpt from Commenter 101 • Highlight that the frequency of occurrence or bioaccumulation does not necessarily equate to risks to human health. • Provide a clear statement of how results will be used to establish data quality objectives and outcomes. The difficulty for water systems arises (as it did for UCMR 3) when we have no clear understanding of (1) how important the specific compound is to society, (2) its economic impact, and (3) what the risk of each compound may be. **Individual Response:** Please see Discussion on Risk Communication.
Comment Excerpt from Commenter 103 [5. EPA's proposal appropriately includes 29 PFAS based on the NDAA 2020 requirements. AWWA offers the following recommendations for PFAS monitoring under UCMR 5:] b. EPA must prepare for risk communication challenges water systems will face in response to low-level detections of PFAS, including a basic introduction to toxicological principles for the working media and press. **Individual Response:** Please see Discussion on Risk Communication.
Comment Excerpt from Commenter 103 In addition to these comments regarding implementation, EPA faces two substantial challenges that require the drinking water program to obtain assistance from its sister offices at EPA: 1. As presently proposed, water systems would begin monitoring for 29 PFAS compounds and lithium in

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2023. Neither EPA nor states are adequately prepared to assist water systems communicate effectively with the public about the risk posed (or not) by low-level concentrations of the majority of these compounds. Health effect information on PFAS is presently limited to three of the 29 compounds. The existing provisional risk assessment for lithium is quite dated and simple extrapolation is at odds with the caveats included in that document, further confusing risk communication for that analyte [FN5: EPA, 2008, Provisional Peer Reviewed Toxicity Values for Lithium. EPA-HQ-OW-2020-0530-0021]. **Individual Response:** Please see Discussion on Risk Communication.
Comment Excerpt from Commenter 103 EPA must prepare for risk communication challenges associated with low-concentration PFAS observations where EPA and states lack health effects assessments. The proposal includes monitoring of 29 PFAS of which there is limited health effects assessments to- date. In November 2016 EPA finalized health advisories for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). Two years later, the EPA released draft toxicity assessments for two additional PFAS: hexafluoropropylene oxide dimer acid (GenX) and perfluorobutanesulfonic acid (PFBS). The PFBS toxicity assessment was finalized earlier this year, but it is unclear when the toxicity assessment for GenX will be finalized. Similarly, in 2019 the EPA published systematic review protocols for five PFAS including perfluorobutanoic acid (PFBA), perfluorononanoic acid (PFNA), perfluorohexanoic acid (PFHxA), perfluorohexanesulfonic acid (PFHxS), and perfluorodecanoic aid (PFDA). According to the most recent outlook (March 2021) for the Integrated Risk Information System (IRIS) program, these assessments will not be finalized prior to UCMR 5. At best, reliable health effects data will be available during UCMR 5 for four PFAS compounds. Water systems may anticipate low-concentration observations given these compounds' persistence and ubiquity in the environment. This is expected to create significant public risk communication challenges for public water systems and may create public panic without EPA guidance. EPA must prepare for these challenges and provide guidance to public water systems to facilitate responses to detections. **Individual Response:** Please see Discussion on Risk Communication.
Comment Excerpt from Commenter 103 Additional Requests for Input UCMR 5 and Children's Environmental Health AWWA appreciates EPA's consideration towards the potential for UCMR 5 to address health risks to children. Due to the suspected associated health risks to children from PFAS exposure, this is an important consideration as EPA considers future regulatory actions for managing PFAS risks. As EPA noted in the proposal the UCMR 5 data collection provides adequate information collection to consider children's health risks. This is because the data from UCMR 5 will support the understanding of PFAS exposure for children and infants through the application of exposure models (e.g., models that capture infant exposure through breastfeeding). However, EPA should consider children and infant health risks from PFAS may be communicated and mitigated through risk communication information. For example, observations of PFAS under the UCMR 5 program may be expected to cause concern for expectant mothers or mothers with infants. EPA should provide information for water systems specifically focused on children's health risks. **Individual Response:** Please see Discussion on Risk Communication and EO 13045: Protection of Children from Environmental Health Risks and Safety Risks.
Comment Excerpt from Commenter 107 Water utilities are more than ever experiencing public perception and communication challenges that result

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from our ability to detect substances in ever smaller concentrations without having the full context of what those concentrations mean with regard to public health, or the efficacies and costs of various treatment options. Louisville Water urges the agency to prioritize the development of risk communication tools in tandem with the new monitoring and reporting requirements. Such tools will assist utilities in responding effectively to public concerns if we detect the occurrence of PFAS in our water. **Individual Response:** Please see Discussion on Risk Communication.
Comment Excerpt from Commenter 109 Risk Communication USEPA will need to provide appropriate risk communication materials to help water systems as they share PFAS results with their customers. This includes issues related to low level detections (e.g., we are analyzing at the PPT level, other potential sources of exposure, etc.) and the differences between PFAS analytes and how it would not be appropriate to compare the results for one PFAS analyte against a Health Advisory established for another PFAS analyte (with supporting rationale). **Individual Response:** Please see Discussion on Risk Communication.
Comment Excerpt from Commenter 114 With the proposed UCMR5, there is a strong need for health effects research and risk communication resources associated with the proposed contaminants. In the development of resources to address these issues with the proposed UCMR5, input from both states and water systems is necessary. As the co-regulator with EPA, EPA should reach out to ASDWA to discuss how the Agency will address our comments without delaying the UCMR5 sampling that is scheduled to begin in January 2023. ASDWA recommends that EPA start the development of risk communication materials and recommended actions for water systems and primacy agencies for the 29 PFAS and lithium as soon as possible. These materials should be developed through a stakeholder engagement process, and the materials must be ready prior to the first release of UCMR5 monitoring data in mid to late-2023, which is only two years from now. The water systems and the primacy agencies cannot be left on their own to figure out risk communications and recommended actions. The drinking water community needs a consistent national approach for UCMR5, due the unprecedented publicity and ongoing actions in state legislatures to address PFAS. **Individual Response:** Please see Discussion on Risk Communication.
Comment Excerpt from Commenter 114 ASDWA's detailed comments that follow recommend several changes to the proposed rule to increase its effectiveness. ASDWA's comments are organized into three categories: 1. Needed Communication Resources; 2. Needed Contaminant Research; and 3. Analytical Methods/Lab Capacity/Quality Assurance Concerns and Recommendations The detailed comments that follow are intended to broadly address the proposed rulemaking, but these comments do not necessarily reflect the concerns of individual states. EPA should consider comments from individual states as part of its process for finalizing UCMR5. ASDWA appreciates the opportunity to provide this input on the proposed UCMR5 and hopes that the Agency takes this input into consideration when finalizing this regulation. Developing robust national occurrence data is a critical step in the regulatory development process, noting that health effects research is another critical step in this process that needs additional funding.

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1. Needed Communication Resources

This UCMR is unlike any of the past UCMRs and calls for a higher level of risk communication than previous UCMRs – the bar needs to be set higher. The inclusion of 29 PFAS, which is a widely known contaminant family with multiple sources and a contaminant for which there are several varying state-level, health-based numbers and MCLs in addition to federal health advisory levels and toxicological values. The inclusion of 29 PFAS in UCMR5 means that EPA, states, and water systems will need to have the appropriate risk communication materials for communication with the public. Water systems will also need an action plan for what to do when they detect a PFAS above an applicable health level, below an applicable health level, or what to do if there is no existing health effects information. EPA and states will need to be clear about expectations for water systems' actions following PFAS detections under UCMR5.

While ASDWA and its members support EPA including PFAS under UCMR5 and support following the requirements of Section 7311 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA), significant risk communication resources from EPA will be necessary for states to share with water systems. The lack of peer-reviewed toxicological studies for many of the PFAS in UCMR5 presents a risk communication challenge, particularly once sampling begins, and detections are found.

The Recommendations for Public Water Systems to Manage Cyanotoxins in Drinking Water developed by EPA in 2015 for cyanotoxins are the best example of a complete package of risk communications materials and recommended actions. These recommendations are complete, with a robust step-by-step approach to cyanotoxin management that sets clear expectations for all stakeholders. Additional risk communication materials have been developed by other organizations such as the American Water Works Association, the Water Research Foundation, and the Association of State and Territorial Health Officials (ASTHO), and these materials should be incorporated into what the Agency develops. EPA must prioritize development of equivalent materials for the 29 PFAS and lithium, develop the materials through a stakeholder engagement process, and have the materials ready prior to the first release of UCMR5 monitoring data in 2023, which is only two years from now. The water systems and the primacy agencies cannot be left on their own to figure out risk communications and recommended actions. The drinking water community needs a consistent national approach for UCMR5, due the unprecedented publicity and ongoing actions in state legislatures to address PFAS.

In early 2021, ASDWA conducted a PFAS Sampling and Detection Survey with its members to collect information about state PFAS sampling efforts and to better understand which PFAS compounds are (and are not) being found during state-initiated sampling efforts. Based on results from this Survey, ASDWA recommends that EPA prioritize risk communication materials and recommend actions for the seven following compounds: PFBS, PFHpA, PFHxS, PFHxA, PFDA, PFNA, and NMeFOSAA. These compounds were most frequently detected by the 14 states that provided data for the ASDWA PFAS survey.

The following general trends were observed by the 14 responding states to this Survey:

- For Method 537.1
    - Fourteen of the responding states used this method, though they did not all sample for the full number of compounds that can be detected using the method.
    - There were at least 2 of the 14 states surveyed that had detections of each PFAS.
    - PFOA and PFOS were detected by all 14 states surveyed.
    - Four other compounds (PFBS, PFHpA, PFHxS, and PFHxA) were detected by all but one of the 13

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states that sampled for PFHxS and PFHxA and all but one of the 14 states that sampled for PFBS and PFHpA.
    - PFDA, PFNA, and NMeFOSAA were also found by more than half of the states that sampled for them. This included:
    - PFDA: Detections for 7 out of 11 states o PFNA: Detections for 10 out of 14 states o NMEeFOSAA: Detections for 6 out of 11 states
- For Method 533
    - Of the six states that used Method 533, PFBA was detected by 3 states and PFPeA was detected by 2 states.
    - The other compounds (NFDHA, 8:2FTS, PFEESA, PFHpS, 4:2FTS, PFMPA, PFMBA, 6:2FTS, and PFPeS) were not detected.
- Many states observed the co-occurrence of contaminants in sample results. For example, Pennsylvania's Statewide Sampling Plan Second Round Results, at least ten of 40 sample sites with detections showed both PFOS and PFOA co-occurring with at least three of the following compounds - PFBS, PFHpA, PFHxS, PFHxA, and PFNA.
- Three states have used PFAS analytical methods other than 537.1 and 533 and detected as least one of four other PFAS (FOSA, PFOSA, PFTeDA, and PFUDA) for at least one water system source in their state.

It should be noted that these survey results cannot be extrapolated as nationally or statistically representative sample results for the state or the country because of the varying differences in where and how they were sampled. The survey summary can be found here.

ASDWA believes the experience of these 14 states can help inform EPA on where the Agency should focus its efforts in developing risk communication and other tools for water systems to use before, during, and after UCMR sampling. This data has clear trends that show some PFAS are more commonly found in drinking water than others. EPA should use this information to begin the development of helpful risk communication tools for water systems to use when communicating with their customers about UCMR sampling.

EPA should consider a pre-sample communication strategy through press releases, social media, or other appropriate methods to inform the public of the purpose of UCMR, how the result will be used, what contaminants will be sampled, what a detection means, and how long it takes to get sample result information out to the public. A proactive approach will help mitigate potential misunderstandings after UCMR5 sampling begins and once results are reported. EPA should develop template press releases for states and water systems for pre- UCMR sampling media strategies. EPA, primacy agencies, and water systems should develop post-sampling communication strategies to inform the public what contaminants were found and next steps. More and more, UCMR data is being used by parties other than the regulatory and regulated communities. EPA needs to address this by providing context to UCMR sampling and assisting states and water systems to have unified messaging where applicable.

Additionally, clarity is needed regarding actions to be taken based on detections for the proposed contaminants. Specific to the proposed PFAS, the development of a consistent and pre-established response decision tree is important. PFAS found in drinking water is a sensitive subject matter, and water systems will rightfully be met with questions and concerns from their consumers. Communications around analytical results should be clear and precise, providing recommendations and describing any actions required based on levels of risk. In those cases where levels represent an
elevated risk, follow-up actions will likely require the participation of local public health, local government,

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state agencies, and EPA. Development of risk communication resources should involve frequent and regular input from both states and water systems.

ASDWA recommends that EPA develop and share resources on one-time sampling, follow-up sampling, resampling, and bottled water distribution (if necessary) for both the proposed PFAS and lithium sampling standards. At a minimum, detailed sampling guidance must be developed and made readily available for all samplers. Consideration should also be given to the contracting and mobilization of trained teams to collect samples for PFAS analysis. For the proposed contaminants, central and consistent communication from EPA will be important. This should include when sampling must occur and why confirmation sampling may be necessary, how sampling will be done and precisely where samples must be collected, and how those samples must be handled to ensure proper analysis. For PFAS especially, any room left for interpretation and non-exact methodology can lead to questions around the analytical results.

Individual Response: Please see Discussion on Risk Communication and Sampling Design. EPA has prepared outreach materials including instructions for PWSs regarding PFAS sampling technique and reducing cross-contamination. The agency will provide this material using various outreach avenues (e.g., in the UCMR 5 Laboratory Manual, SDWARS 5 User Guide, and in future stakeholder meeting materials).

Sampling Design

Agency Discussion on Sampling Design

Agency Topic Discussion: EPA received many comments regarding the UCMR 5 sampling design, particularly related to the applicability of the rule to various PWSs (including the expanded scope of small-system participation per AWIA, wholesale and consecutive system monitoring, concurrent PFAS State monitoring programs, and existing State PFAS regulations). UCMR monitoring is not designed to address complex research questions. The primary purpose of the UCMR program is to determine national occurrence of contaminants in drinking water to support future regulatory decisions.

UCMR 5 applies to public water systems (PWSs), defined as systems that provide water for human consumption through pipes, or constructed conveyances, to at least 15 service connections or that regularly serve an average of at least 25 individuals daily at least 60 days out of the year. Under CFR 141.35(a), as revised by EPA for UCMR 5, a PWS' "population served" is defined as the retail population served directly by the PWS as reported to the Federal Safe Drinking Water Information System (SDWIS/Fed). EPA revised this definition clarifying that the retail populations of a wholesale or consecutive system relative to a PWS are not counted in the population served count for that PWS. This revision does not exempt wholesale or consecutive systems from UCMR 5 if they meet the definition of a PWS.

Section 2021 of AWIA (Public Law 115-270) amended SDWA to require more PWSs to participate in UCMR. Commenters generally expressed support for the increase in small-system monitoring, with no opposition to the inclusion of all PWSs serving 3,300 to 10,000 people, and a representative sample of PWSs serving fewer than 3,300 people, in UCMR 5. Clarification of small-system monitoring requirements in the event of inadequate EPA appropriations to fully support the envisioned monitoring, including a "monitor if notified" approach, is detailed in the Discussion on Regulatory Flexibility Act/Impact on Small Systems.

The monitoring tiers available for UCMR are described in EPA document, "Selection of Nationally Representative Public Water Systems for the Unregulated Contaminant Monitoring Rule: 2021 Update" (USEPA, 2021k); UCMR 5 exclusively requires Assessment Monitoring.

Agency Discussion on Sampling Design

The Representative Sample
The population-weighted representative sampling design for small systems (used in previous UCMR cycles to select 800 systems serving 10,000 or fewer people and used in UCMR 5 to select 800 systems serving fewer than 3,300 people) stratifies candidate PWSs by water source type (ground water (GW) or surface water (SW) (ground water under the direct influence of surface water (GWUDI) is treated as SW), service size category (i.e., less than or equal to 500 people, 501 to 3,300 people, etc.), and geographic location (a minimum of two PWSs are allocated to each State, Tribe, and Territory category). The purpose of the different strata is to achieve representativeness in the population-weighted sample while ensuring that PWSs have an equal likelihood of selection through random sampling within each stratum. The allowable margin of error for the nationally representative sample is ±1% at a 99% confidence level for an expected occurrence of 1%, meaning that the estimated national contaminant occurrence could be between 0% and 2%.

Notification to Monitor
EPA notifies PWSs of their UCMR requirements prior to the publication of the final rule. While the Agency cannot notify PWSs of the final rule requirements before that time, the notification process provides PWSs required to participate in the first cycle of UCMR 5 monitoring approximately 12 months (depending on final rule publication date) to plan. Those scheduled to monitor later in the UCMR monitoring cycle have even more time to plan.

State Monitoring Plans
EPA, in conjunction with the States, will initially determine schedules (year and months of monitoring) for large water systems. Thereafter, large PWSs will have an opportunity to modify this initial schedule for planning purposes or other reasons (e.g., to spread costs over multiple years, sampling location operating status, etc.). EPA will schedule and coordinate small-system monitoring by working closely with partnering States. State Monitoring Plans provide an opportunity for States to review and revise the initial sampling schedules developed by EPA.

PFAS Sampling Outreach Material
The Agency has prepared outreach material for PWSs on PFAS sampling for UCMR 5, including instructions to reduce cross-contamination and a video demonstrating UCMR 5 sample kit handling procedures. EPA plans to provide this material in the UCMR 5 Laboratory Manual, SDWARS 5 User Guide, and in future stakeholder meeting materials.

Sampling Frequency (See Appendix 2 for related UCMR data analysis)
EPA received two comments recommending that the Agency reduce the sampling frequency for both GW and SW systems. For UCMR 5, PWSs will be required to collect samples based on the typical UCMR sampling frequency and timeframe as follows: for SW, GWUDI, and mixed source (MX) systems, sampling will take place for four consecutive quarters over the course of 12 months (total of 4 sampling events). Sampling events will occur three months apart for SW, GWUDI and MX systems. For example, if the first sample is taken in January, the second will then occur anytime in April, the third will occur anytime in July, and the fourth will occur anytime in October. For GW systems, sampling will take place twice over the course of 12 months (total of 2 sampling events). Sampling events will occur five to seven months apart for GW systems. For example, if the first sample is taken in April, the second sample will then occur anytime in September, October, or November. On a per-system basis, the anticipated number of samples collected by each system is consistent

Agency Discussion on Sampling Design

with sample collection during prior UCMR cycles (although, as described elsewhere in this document, the number of water systems subject to UCMR is significantly greater under this final rule per AWIA).

EPA considered different sampling frequencies to meet its statutory requirements and overall objectives. This included considering commenters' suggestions that EPA reduce the sampling frequency for both GW and SW systems (potentially to as few as one sample per system). The Agency concluded that less frequent data collection would affect the ability of EPA to perform robust data analysis to fulfill the needs envisioned by the 1996 SDWA Amendments, particularly with regard to supporting the Administrator's regulatory determinations and drinking water regulation development. Maintaining the proposed sampling frequency allows the resulting contaminant data to be analyzed for temporal variability, in addition to between-system variability. These analyses are not possible with a single-sample structure. When making regulatory determinations, EPA evaluates the number of systems (and PWS-served populations) with means or single measured values above health levels of concern, as both values provide important information. For example, the percent of PWSs (and PWS-served populations) with at least one detection greater than one-half the health value was included as part of EPA's Regulatory Determination 4 deliberation process (i.e., for 1,4-dioxane). Additionally, EPA has provided an assessment of sampling frequency using the more recent (UCMR 3 and UCMR 4) data in Appendix 2 of this document to show that the counts or percentage of systems above a concentration of interest can vary between sample events, and that there are individual cases where the contaminant is not detected in one sample event but occurs at significant levels in a subsequent event.

Monitoring frequencies consider the following factors:

- Improved precision in occurrence estimates;
- Source of the supply (e.g., SW or GW);
- Likelihood of finding contaminants; and
- Potential temporal variability in occurrence.

It is also important to note that statistical means based on two or more measurements have considerably less error than one measurement per system, and provide a more robust dataset for future regulatory decisions. Having more than one sample event also greatly reduces the chance of underestimating the true proportion of occurrence of the contaminant in drinking water (i.e., exposure).

EPA acknowledges that based on UCMR 3 data (77 FR 26072; USEPA, 2012), the correlation between results from multiple sample events can be high; however, the single-sample approach suggested by commenters would yield less precise data for several reasons. One analysis referenced by a commenter (Eaton et al. 2018) reports that within-system variability is expected to be low for GW systems and that distributions of sample event one and sample event two at GW systems for UCMR 3 were not statistically significantly different. Additionally, although the provisions of the AWIA will include the addition of approximately 5,200 more PWSs to UCMR 5 relative to earlier cycles and thus capture more spatial variation in the resulting dataset, it is important to note that spatial variation is different than temporal or seasonal variation. While within-system variability for PFAS may be less than between-system variability, within-system variability is important. Preliminary EPA testing of PFAS occurrence model variants on log transformed data that included factors for within-system variability, specifically for GW systems, suggested higher variability at GW systems than expressed in Eaton et al (2018). Shifting to a single sample prevents reasonable assessments of within-system, or temporal, variability and limits the ability to observe between-system variability estimates. This would then drastically reduce the ability to characterize uncertainty. The effects of a single sample event cascade through all calculations that rely on system-level characterization, impacting estimates of economic analyses,

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exposure, and health impact assessments. Should contaminant reporting at or above an MRL be low, such as with PFAS in UCMR 3, the capabilities of probabilistic approaches are greatly reduced with fewer sampling events. Overall, a single sample does not provide sufficient information to fit occurrence distributions, which drastically reduces the ability to model contaminant occurrence. Given the critical role that occurrence modeling plays in regulatory development, a single sample event per PWS for the collection of nationally representative data for UCMR 5 is not appropriate.

Eaton et al. (2018) did not find a strong correlation with the disinfection byproduct, chlorate, due to the temporal variability in disinfection practices. This strongly suggests that having a single sample event may not be appropriate for other temporally-variable contaminants. As Eaton et al. (2018) only addressed a limited set of contaminants (i.e., those from UCMR 3), the commenter's analysis may not be relevant for future UCMR contaminant classes with different chemical properties. EPA has considered making exceptions for certain classes of contaminants, however, the UCMR design must address all types of contaminants on a national scale, often without advance knowledge about the degree to which the contaminant occurrence may vary over time.

Note that the Agency already allows large GW systems the opportunity to reduce monitoring burden by using approved representative entry points (40 CFR 141.35(c)(3)); many (>170) large GW systems have chosen this approach throughout the past four UCMR cycles. Representative monitoring plans results in fewer samples and thus time and cost savings to the PWS.

Also, note that the Agency developed a two-stage analytical approach for the evaluation of the national occurrence of contaminants (USEPA, 2008). EPA expects to use the same two-tier approach to analyze the data for UCMR 5. The analyses are not possible with a single sample structure, so without multiple sample results per PWS, the current model for determining occurrence in finished drinking water would also not be possible. The first stage of analysis, Stage 1, provides a straightforward evaluation of occurrence for simple and conservative assessments of contaminant occurrence. The Stage 1 analysis of the UCMR data consists of non-parametric, unweighted counts and simple descriptive statistics of analytical results for each of the contaminants. These occurrence analyses are conducted at the sample level, PWS level, and population-served level. For each contaminant, occurrence measures include the number and percent of samples with analytical detections and the minimum, median, maximum, and 99th percentile values of those detections. PWS-level occurrence measures include the number and percent of PWSs with one or more analytical detections, and the number and percent of PWSs with two or more analytical detections of a given contaminant. Population-served occurrence measures include: the number and percent of population served by PWSs with one or more analytical detections, and the number and percent of population served by PWSs with two or more analytical detections of a given contaminant. Similar measures may also be conducted for each EPTDS for each PWS. Since these contaminant and PWS-level occurrence measures are based on raw occurrence data (that have not been adjusted for population-weighting and sampling), they are less accurate representations of national occurrence than occurrence measures based on adjusted occurrence data. Based on the findings of the Stage 1 analysis, EPA can select contaminant(s) for which more detailed and sophisticated statistical evaluations (the Stage 2 analysis) may be warranted as a next step to generate national probability estimates of contaminant occurrence and exposure. Specifically, the modeling and estimation of PWS mean contaminant concentrations may be desired. The Stage 2 analysis uses a Bayesian-based hierarchical model to estimate the percent (and number) of PWSs with a mean contaminant concentration above any specified concentration threshold. The Bayesian-based model also provides quantified error of estimation, accounting for uncertainty, and allows both between and within system

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variability to be examined for estimates of occurrence distributions and population exposure. Additionally, the model enables estimates of mean contaminant concentrations below the MRL and simulations of how many PWSs would find a detect given a monitoring scheme. EPA's statistical model for analysis of UCMR data has undergone peer review.

Consecutive System Monitoring (See Appendix 3 for related UCMR data analysis)
Many commenters recommended that EPA not require monitoring by consecutive (i.e., purchasing) systems that purchase 100% of their water from wholesale systems already subject to UCMR 5 monitoring. They requested that EPA instead require wholesalers to identify the PWSIDs of consecutive systems receiving water from the wholesaler, and that EPA rely on wholesaler monitoring in lieu of monitoring by the consecutive systems. Consistent with UCMR 4, EPA has elected to maintain the proposed approach in which all eligible consecutive systems must monitor, irrespective of monitoring being conducted by the wholesale system from which they purchase drinking water. Since UCMR 3, such consecutive systems have been subject to UCMR monitoring requirements. Previous UCMR data demonstrate that wholesalers and purchasers can have different analytical results (see Appendix 3). For example, EPA paired the data from wholesaler to consecutive connection for 190 manganese results from UCMR 4 (81 FR 92666, December 20, 2016; USEPA, 2016a), one-third of the results are higher at the wholesaler, one-third of the results are higher at the consecutive connection, and the remaining third are similar in value [±0.4 µg/L]. Based on the experience of previous UCMRs, the Agency believes it is more appropriate to measure at each purchasing system to more accurately assess exposure, rather than relying on the results of monitoring by the wholesaler to represent all the systems that purchase water. This approach relies on each purchasing system to monitor, thus ensuring the monitoring results reflect any potential water quality changes between the wholesaler and each purchasing system. This approach also reflects the importance of the UCMR program objective to collect contaminant data that is reflective of exposure and, therefore, closer to the point where the water is consumed (e.g., the EPTDS) rather than the point where it is sold.

For UCMR 5, systems that purchase any of their water supply (i.e., 0-100%) and serve 3,300 people or more are required to monitor. Wholesalers and purchasers that have a retail population of fewer than 3,300 are only required to monitor if they are selected as part of the nationally representative sample. While EPA is aware that in some cases this will result in the same wholesale water being monitored by more than one PWS, EPA believes that the benefits justify the approach. EPA does not agree with the assumption that "there would be no discernible change in water originally tested at the wholesaler's treatment facility." Many purchasing PWSs add their own treatment or blend other water from different sources; thus, their finished water is not the same as the water from the wholesaler. Further, EPA allows for the possibility that the concentration of UCMR contaminants may change in the distribution system through physical or chemical processes. As specified in 40 CFR 141.40(a)(3) Table 1, footnote c, consecutive systems with multiple connections from a particular wholesaler are also permitted to choose one entry point as representative for sampling, thus reducing burden.

Finally, EPA does not have records of which PWSs purchase from which other PWS(s) and when, and thus does not have the information that would be necessary to perform population-level exposure analysis using wholesaler data alone. EPA expects water purchasing practices to vary seasonally and in other unpredictable ways (e.g., due to finances, operational interruptions, droughts). Such short-term changes make it ever more difficult to track the distribution of water from wholesalers to their PWS customers. If samples were only collected at the wholesaler, EPA would be required to make more assumptions to estimate exposure. Sampling at both consecutive and wholesale systems ensures that associated exposure estimates are based

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on the monitoring data collected from where the water enters the distribution system of retail customers rather than from where it is sold.

PWSs that purchase water with multiple connections from the same wholesaler may select one representative connection from that wholesaler, as specified in 40 CFR 141.40(a)(3) Table 1, footnote c. The use of representative entry points and intakes will result in fewer samples and thus time and cost savings to the PWS. The EPTDS representative sampling location must be representative of those that receive the highest annual volume. If the connection selected as the representative EPTDS is not available for sampling, the PWS must sample an alternate highest volume representative connection (40 CFR 141.40(a)(3) Table 1, footnote c). Water provided by multiple wholesalers would be considered different sources and PWSs need to identify a representative connection for each. PWSs may use approved UCMR 4 representative EPTDSs for UCMR 5 if there have been no changes to the system's configuration (40 CFR 141.35(c)(3)(i)). The Agency is available to advise PWSs regarding their choice of the most appropriate sampling site, based on their purchasing situation.

EPA evaluated the commenters' suggestions on additional data reporting elements for wholesaler PWSs pertaining to the consecutive systems they supply, including PWSIDs and respective percent of water supplied for each purchasing system. EPA determined that the inclusion of these data elements in UCMR 5 would introduce significant complexity to the data reporting and data collection.

Reporting State Data

Multiple commenters suggested that PWSs be permitted to submit occurrence data collected under State-based monitoring, in lieu of conducting UCMR 5 monitoring, to reduce the PWS's monitoring burden. In those cases where the monitoring required by a State is consistent with the UCMR requirements (i.e., relies on the use of a UCMR-approved laboratory for PFAS sample analysis using EPA Methods 533 and 537.1 (Version 2.0), the schedule and monitoring frequency for the two programs can be aligned, and the State-required MRLs are equal to or lower than the UCMR 5 MRLs), then the UCMR 5 monitoring may be able to satisfy both programs. Note, however, that sample results below the EPA UCMR MRLs would be reported as "less than MRL" in the UCMR data reporting system, SDWARS.

PWSs interested in pursuing such an approach should coordinate with their primacy agency. UCMR is a direct implementation rule (i.e., EPA has primary responsibility for its implementation) and State participation is voluntary. States, Territories, and Tribes with primary enforcement responsibility (primacy) to administer the regulatory program for PWSs under SDWA can participate in the implementation of UCMR 5 through voluntary Partnership Agreements. Through the use of Partnership Agreements, States can choose to be involved in various aspects of UCMR 5 monitoring for PWSs they oversee; however, the PWS remains responsible for compliance with the final rule.

Comments Received on Sampling Design

Comment Excerpt from Commenter 50

Please devise a system to screen out water systems that by their location and position of their sources are not at risk from PFAS or the other contaminants being considered for UCMR 5.

Individual Response: Please see Discussion on Sampling Design. Given the limited extent of existing data for the large number of PFAS in finished U.S. drinking water, as well as widespread contamination from legacy PFAS use in commercial products and industrial processes, EPA currently has no established mechanism of

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determining whether particular PWSs have PFAS contaminants in their drinking water.
Comment Excerpt from Commenter 58 7. Apply UCMR 5 to systems serving 3,300 to 10,000 people. The agency should request appropriations in its budget. If EPA were not to require testing of these smaller systems, millions of Americans would not be apprised of whether their water is contaminated, and often their water suppliers will not learn that their water needs to be treated, their source water protected, or other measures taken to protect their consumers. **Individual Response:** Please see Discussion on Sampling Design**.**
Comment Excerpt from Commenter 63 Ideally, we would want to decrease the health risks with unsafe drinking water, it is worth the money to have a broader range of water systems monitored. It is not fair that only bigger water systems are being monitored properly for dangerous contaminates that either have known health risks, or the health risks are unknown and there needs to be further research to investigate them. Expanding UCMR 5 would also benefit those who already receive the monitoring of their water system because it is expanding the number of PFAS being monitored while also expanding to include lithium that has been proven to be found in high levels within majority of drinking water. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 66 2) Many states already require reporting PFAS compounds to 2 ng/L for compliance monitoring which is required in multiple states. EPA can easily solicit this information from organizations such as ASDWA. Thus labs are already required to report lower than the proposed UCMR 5 MRLs and labs doing compliance monitoring already have to meet method requirements with a 2 ng/L limit. If those labs are doing both compliance monitoring and UCMR 5 monitoring with the current proposed MRLs there would be a duplication of effort at different levels. **Individual Response:** Please see Discussion on Sampling Design and Minimum Reporting Level Determination.
Comment Excerpt from Commenter 68 EPA's ICR correctly describes its statutory duties under the SDWA as amended in 1996 and subsequent statutory requirements. [FN1: EPA, 2020. Draft Information Collection Request for the Unregulated Contaminant Monitoring Rule (UCMR 5). EPA 815-D-20-002. EPA-HQ- OW-2020-0530-0046.] After reviewing the UCMR 5 proposal AWWA commends EPA on its work to date and asks that EPA and OMB consider the following in finalizing the UCMR 5: 1. The America's Water Infrastructure Act of 2018 (Public Law No: 115-270) (AWIA 2018) expands the scope of UCMR from 5,164 to 10,311 systems. This expansion in UCMR monitoring is appropriate and necessary. It is also a substantial increase in the number of systems for the EPA to incorporate and will require training a large cohort of systems for the first time in the implementation of UCMR. UCMR 5 should be structured with this Congressionally- directed change in mind. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 68

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UCMR Objectives Should be Weighed and Balanced with Challenges

Under SDWA, the purpose of the UCMR program is to develop occurrence data for unregulated contaminants that may be present in "drinking water supplied by public water systems. [FN2: U.S. Code 300 j-4(a)(2). "The regulations shall require monitoring of drinking water supplied by public water systems…"]; [FN3: 86 FR 13846. "Under the second step, EPA must require, every five years, monitoring of unregulated contaminants to determine their occurrence in drinking water systems; this is the UCMR program."] In the current cycle, EPA is appropriately proposing to expand the scope of assessment monitoring for PFAS and lithium to all systems serving more than 3,300 persons and adjusting its representative sample for small systems to reflect these analytes' occurrence in smalleyr systems. This change will increase the number of water systems collecting samples from 5,164 to 10,311 systems. This entire increase will be managed directly by EPA and EPA will be (1) educating and assuring this cohort of systems meets its data collection obligations and (2) paying for sample analysis, shipping, and quality assurance. Consequently, EPA has a direct interest in opportunities to make UCMR 5 as efficient as possible with respect to sample collection and data management.

Data Collection Burden Should be Reduced

The following are opportunities to reduce public water system and EPA burden while not impacting data quality resulting from the draft ICR. These opportunities reduce unnecessary monitoring that duplicates data that is already being collected.

EPA should reduce UCMR 5 PFAS and lithium monitoring for groundwater systems: Based on EPA's experience with UCMR 3 and data more recently accrued through state drinking water monitoring programs variability in PFAS is much more substantial between sites than it is with respect to occurrence at a particular water system. Historic data for lithium yields a similar experience. Eaton et al. demonstrated using data collected in UCMR 3 that, with limited within-site variability, a national occurrence distribution will not be substantially affected by taking fewer samples per sample site. EPA should evaluate whether a single sample per EPTDS is appropriate for systems which rely on a surface water supply(ies). While there is more evidence for PFAS level variation in surface water sources (particularly rivers), it is not clear that quarterly monitoring will improve the understanding of PFAS occurrence in drinking water given the number of other confounding variables for PFAS levels including industrial activity patterns and rainfall. Efficient use of sampling will (1) provide needed data, (2) reduce monitoring burden on water systems, and (3) reduce the organizational and fiscal burden on EPA.

EPA should eliminate monitoring requirements for consecutive systems at connections to water supplies: The proposal would require that both wholesalers and consecutive water systems conduct monitoring and submit ancillary data. This is unnecessary for contaminants like PFAS and lithium, which are not expected to form or degrade in the distribution system like microbials and disinfection byproducts (M/DBPs). Monitoring for these analytes could be limited to systems that rely on their own water supplies and those that wholesale water to others. With this revision, EPA would not require PFAS or lithium monitoring by consecutive systems that rely solely on purchased water. It would still be necessary for UCMR 5 to assure that systems with multiple sources of supply are adequately characterized. Specifically, the final rule should:

1. Require consecutive water systems with supplemental supplies (e.g., ground water wells, surface water treatment plant(s)) to conduct PFAS and lithium monitoring.
2. Require wholesale water systems (regardless of whether the system treats raw water, wheels finished water, or both) to submit the public water system identification numbers (PWSIDs) of consecutive water systems receiving water from the wholesaler.

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3. Require consecutive water systems to identify the PWSID for each of their suppliers and to indicate the approximate percent of water supply received from each supplier.

Individual Response: Please see Discussion on Sampling Design.

Comment Excerpt from Commenter 68

Statistical Objectives for UCMR 5

The purpose of UCMR 5 is to provide an understanding of the national distribution of the analytes monitored. The resulting distribution must be sufficiently accurate and precise to support sound, national benefit-cost analyses to inform development of primary drinking water standards. Historically, rule costs and benefits have been significantly influenced by the costs and benefits associated with large and very-large systems, hence prior UCMR statistical survey designs. This remains true in UCMR 5, though, with assessment monitoring for systems serving between 3,300 and 10,000 persons as described AWIA 2018, EPA will have information to inform its understanding of (1) regional differences in occurrence, (2) the probability of communities of limited means in this much larger pool of water systems facing treatment requirements for monitored contaminants, and (3) a more precise estimate of national central tendency estimate of population-weighted measures of analyte occurrence.

However, EPA's ICR should be revised to more accurately reflect the precision and accuracy of the UCMR 5 dataset. The ICR's statistical premise is not only important to the upcoming UCMR 5, but it is, in effect, a benchmark by which meta-analysis of unregulated contaminant occurrence is measured. For example, EPA is currently conducting such a meta-analysis to support proposal of primary drinking water standards for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). The ICR and supporting documentation describes EPA's data quality objective as:

1. Accurate - "… minimum quantitation level that, with 95% confidence, can be achieved by 75% of laboratories using a specified analytical method. MRLs are determined using data from multi-laboratory studies."
2. Complete - "acceptable data are obtained from at least 82.375% of selected PWSs (i.e., at least one result per PWS)"
3. Precise - "… a margin of error of ± 1% with 99% confidence, when the estimated exposure fraction is 1%."
4. Representative - "nationally representative" [FN4: EPA. 2020. Selection of Nationally Representative Public Water Systems for the Unregulated Contaminant Monitoring Rule: 2020 Update. EPA 815-B-20-008. EPA-HQ-OW-2020-0530-0039.]

EPA's analysis does not adequately address:

1. The implications of method performance on the accuracy or precision of the resulting national occurrence estimates.
2. Consider the diversity of systems reflected in the very small system (<3,300 persons served)

Looking at the analytical method performance of EPA Method 537 alone, it is not feasible for UCMR to meet its national estimate precision target of ± 1% with 99% confidence given the EPA Method expectation of + 30% for replicate measurements. It may not be possible for EPA to address all sources of variability in this analysis, but EPA should clearly describe the sources considered (e.g., variables impacting the occurrence of PFOA are different from those impacting DBPs).

The ICR proposes to employ 800 samples to represent the occurrence of 29 PFAS and lithium in a pool of more than 134,000 small systems. [FN5: EPA, 2021. GPRA Inventory Report (as of 2020 Q4) accessed at

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https://obipublic.epa.gov/analytics/saw.dll?PortalPages on May 5, 2021.] With an assumed occurrence of 1% and a stratified sample, EPA judges this sample to be sufficient to be both nationally representative and sufficient to support EPA's precision target for the UCMR survey as a whole. Without a clearer explanation of EPA's approach policy makers may mistake the level of accuracy and precision achieved with this limited sample.

EPA has limited resources and its commitment to expanding UCMR assessment monitoring to smaller system sizes is to be commended. EPA must be transparent about what it can, and cannot, achieve. When EPA reviews and revises its description of the UCMR 5 survey data quality objectives, it should address (1) accuracy and precision relative to central tendency estimates and tails of distribution, as well as, (2) accuracy and precision relative to system size. Accuracy should be explicitly described with respect to the survey's estimate of occurrence.

Individual Response: Please see Discussion on Sampling Design. EPA believes the commenter is confusing precision of the analytical methods with the precision and accuracy of the sampling design to determine national contaminant occurrence. Precision of the estimate of national occurrence is used to determine the sample size needed for the representative sample (see Section 4.2 of "Selection of Nationally Representative Public Water Systems for the Unregulated Contaminant Monitoring Rule: 2021 Update" (USEPA, 2021k)). This is completely independent of the precision of the analytical methods. The precision of an analytical method is considered in the determination of MRLs and is completely separate from the data quality objective (DQO) for precision of the national occurrence estimate.

AWWA also asked EPA to consider the diversity of the systems reflected in the UCMR 5 representative sample of 800 PWSs serving 3,300 people and fewer. It is not the objective of the representative sample to determine occurrence of contaminants at the State or regional level, or relative to system size or source water type. Analysis of the complete UCMR dataset can be performed to determine actual precision in the sub-populations of interest (i.e., GW, SW). The sampling design meets the DQO of representativeness by including PWSs from all States, PWS size, and source water categories for determining *national* contaminant occurrence. The commenter is mistaken in reporting that the representative sample will be selected from 134,000 small PWSs. EPA figures indicate that the actual number of PWSs (community water systems (CWSs) and non-transient non-community water systems (NTNCWSs)) serving 3,300 people and fewer is 57,000-58,000.

The DQOs for precision and representativeness are considered statistical controls and the DQO for accuracy is considered a direct or management control.

Precision – The allowable margin of error used for the nationally representative sample is ±1% at a 99% confidence level, meaning the estimated national contaminant occurrence could be between 0% and 2% (the confidence interval) for a contaminant with an expected occurrence of 1%.

Representativeness – The nationally representative sample is selected using a population-weighted stratified random sampling design to select PWSs that are representative of a broad geographic distribution, all source water types, and all size categories. See Section 4.3 of "Selection of Nationally Representative Public Water Systems for the Unregulated Contaminant Monitoring Rule: 2021 Update" (USEPA, 2021k) for a detailed discussion of the representative sampling design.

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Accuracy – To minimize bias in the sampling design, EPA reviews the status of representative PWSs conducting Assessment Monitoring for the duration of the UCMR sample collection period. If a PWS closes or merges with another PWS, or if its size category or source water type changes, then an alternate system is selected as a replacement. This is done to maintain the validity of the sampling design by minimizing strata migration.

UCMR Results – DQOs for Completeness and Accuracy
The DQOs for completeness and accuracy of the UCMR results are described below.

Completeness - The DQO for completeness of monitoring results reported to EPA has two components: 1) that at least 90% of data submitted are acceptable, (i.e., conform to method quality control criteria with all data elements present and accurate) and, 2) that acceptable data are obtained from at least 82.375% of selected PWSs (i.e., at least one result per PWS). Although, as designed, all selected PWSs are required to collect and report analytical results, in practice some samples may not be collected, and some results not reported. For example, samples may be lost or damaged during shipping, and re-sampling may not be possible or would occur too late for reporting, or some PWSs may close or otherwise become non-operational between sampling periods. The DQO for completeness provides adequate data quality for end-uses of the data while recognizing the reality that some data will not be generated and/or reported. A DQO of 82.375% of PWSs submitting acceptable monitoring results is the smallest number that still allows an estimate of national contaminant occurrence within the stated DQO for precision.

Accuracy - Accuracy refers to how close a measured parameter is to the true value. For chemical contaminants, EPA uses MRLs to ensure a high level of confidence in the accuracy of analytical results. An MRL is defined as the minimum quantitation level that, with 95% confidence, can be achieved by 75% of laboratories using a specified analytical method. MRLs are determined using data from multi-laboratory studies.

Comment Excerpt from Commenter 70
Please be advised that I represent Citizens Against Ruining the Environment (CARE) [FN1: https://www.willcountycare.org/]. CARE is an Illinois community organization committed to providing research, education, and assistance to residents facing detrimental environmental issues and impacts. CARE promotes the implementation of effective and comprehensive legal tools and financial instruments that will further the preservation, improvement, and revitalization of the environment. Although members of CARE may be submitting comments on this matter individually, the organization requested the assistance of Greater Chicago Legal Clinic, Inc. to comment on some aspects of Unregulated Contaminant Monitoring Rule 5 ("UCMR 5").

PFAS contamination and monitoring is a highly important and prevalent issue for CARE as their members primarily live in Will County, Illinois. Several municipalities in Will County, including Joliet and Lockport, are dependent on groundwater as the source of drinking water. According to Illinois EPA, as of April 20, 2021, PFAS chemicals at or greater than the minimum reporting level were detected at 42 Illinois locations and at or greater than the USEPA Guidance Level at 38 Illinois locations [FN2: https://illinois-epa.maps.arcgis.com/apps/webappviewer/index.html?id=f154845da68a4a3f837cd3b880b0233c]. Nine of the public water systems where detections were observed serve Will County [FN3: Id. The water systems are: College view subdivision, Criswell Court MHP, East Moreland Water Service Association, Ingalls Park, Lockport, Moline, Rockford, and Wilmington].

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CARE Comment One: UCMR 5 may conflict with ongoing state investigation and existing state rulemaking efforts.

Numerous states, including Illinois, have begun investigation and rulemaking regarding PFAS chemicals in drinking water to various degrees of completion. Despite many states consulting USEPA throughout rulemaking, USEPA failed to mention the impact of recent federal action on states' ongoing efforts within its two recent publications regarding PFAS regulation. USEPA's failure to provide clarity on this issue may lead to unnecessary confusion. Moreover, a continued disregard for these statewide actions will result in a waste of state money, resources, time, and effort.

In 2020, Illinois EPA began investigation of PFAS occurrence levels in drinking water to inform its promulgation of statewide maximum contaminant levels (MCLs) for 18 PFAS [FN4: 4 https://www2.illinois.gov/epa/topics/water-quality/pfas/Pages/pfas-statewide-investigation-network.aspx]. Importantly, all 18 PFAS of Illinois EPA's interest are included within UCMR 5 [FN5: The 18 PFAS are: PFTA; PFTrDA; PFUnA; PFDA; PFDoA; PFNA; PFOA; PFHpA; PFHxA; PFOS; PFHxS; PFBS; NEtFOSAA; NMEFOSAA; HFPO-DA; DONA; 11Cl-PF3OUdS; and 9Cl-PF3ONS.]. Illinois EPA planned to sample 1,455 active entry points in distribution systems to represent all 1,749 community water suppliers serving Illinois residents within a timeline of 12 to 15 months [FN6: https://www2.illinois.gov/epa/topics/water-quality/pfas/Documents/2020_06_24%20Approved%20DCN251%20QAPP011%20for%20PFAS%20Sampling%20in%20Community%20Water%20Supplies.pdf]. Significant work has already been completed in Illinois. As of April 25, 2021, 921 samples had been collected and analyzed for PFAS contamination [FN7: https://illinois-epa.maps.arcgis.com/apps/opsdashboard/index.html#/d304b513b53941c4bc1be2c2730e75cf].

Illinois EPA is conducting this work under USEPA's approval and guidance [FN8: https://www2.illinois.gov/epa/topics/water-quality/pfas/Documents/2020_06_24%20Approved%20DCN251%20QAPP011%20for%20PFAS%20Sampling%20in%20Community%20Water%20Supplies.pdf]. In conjunction with USEPA, Illinois EPA curated the Quality Assurance Project Plan: PFAS Sampling in Community Water Supplies in June 2020 [FN9: Id.]. The project was approved and signed by numerous USEPA employees, but Illinois EPA's efforts were not acknowledged in the UCMR 5 notice [FN10: Id. at 2.]. Further, Illinois EPA has been conducting investigation using the same monitoring methods as identified by UCMR 5. Considering USEPA's involvement and Illinois EPA's consistency with UCMR 5's methods and purpose, CARE is requesting clarification on whether USEPA can use any the information already collected by Illinois EPA to fulfil monitoring requirements under UCMR 5 or if Illinois monitoring data will be discarded and efforts restarted in accordance with UCMR 5's timeline? Clarification on UCMR 5's impact on individual state programs is necessary before UCMR 5 can be implemented.

Illinois is not the first or last state to take extensive action using state funding and manpower to regulate PFAS chemicals. For example, New York, New Hampshire, and Michigan have completed investigation and rulemaking resulting in finalized statewide MCLs for PFAS chemicals like PFOS and PFOA. However, as states have been left to take promulgation into their own hands, there are numerous inconsistencies in PFAS MCLs. For example, New York finalized MCLs at 10 ppt for both PFOA and PFOS [FN11: https://www.governor.ny.gov/news/governor-cuomo-announces-first-nation-drinking-water-standard-emerging-contaminant-14-dioxane], while New Hampshire's are 12 ppt for PFOA, 15 ppt for PFOS, 18 ppt for PFHxS [FN12: https://www.natlawreview.com/article/new-hampshire-adopts-aggressive-pfas-drinking-water-bill], and Michigan's are 6 ppt for PFNA, 8 ppt for PFOA, 16 ppt for PFOS, 51 ppt for PFHxS [FN13: https://www.michigan.gov/pfasresponse/0,9038,7-365-86513_96296-534663--,00.html]. Though the standards vary, most states have focused primarily on PFAS chemicals listed on UCMR 5.

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Implementing UCMR 5 without any acknowledgement of individual state efforts creates a difficult regulatory landscape. Failure to provide clarity to Illinois and other states could lead to a patchwork of regulations that would be difficult to navigate resulting in delays and setbacks for the roll out of this rule and implementation of any subsequent legislation. Without clarity from USEPA on how the federal regulation of PFAS would interact with existing state regulations, the implementation of UCMR 5 and any subsequent regulation will be met with unnecessary confusion and a risk of substantial waste of state resources.

PFAS contamination has the potential to cause dire human health and environmental impacts. Once the problem is detected in their drinking water, U.S. citizens cannot be asked to wait while the agency coordinates with states at a later stage in this rulemaking. CARE urges USEPA to provide clarity on UCMR 5's impact on ongoing state action and any previously promulgated statewide PFAS standards or regulations to foster the most efficient and seamless implementation of this important rule and subsequent regulations.

Individual Response: Please see Discussion on Sampling Design and PFAS Contaminants – Miscellaneous Comments.

Comment Excerpt from Commenter 81

AMWA also encourages EPA to reconsider the practice of requiring all utilities that purchase 100% of their water to monitor under the UCMR. If a consecutive system, one which purchases its water from a separate wholesaler, is using the same source and treatment as the utility from which they have purchased the water and not adding any additional treatment, there would be no discernible change from the water originally tested at the wholesaler's treatment facility. Requiring these consecutive systems to monitor under the UCMR is a waste of effort and money on the part of the utility and provides no substantial benefit or data to the UCMR. If information is needed by EPA regarding the population served by its consecutive systems or other system characteristics, EPA can easily work with the wholesale system to gather that information for its analyses.

Individual Response: Please see Discussion on Sampling Design.

Comment Excerpt from Commenter 83

The Minnesota Department of Health (MDH) appreciates the opportunity to provide comments on the proposed Unregulated Contaminants Monitoring Rule 5 (UCMR5). MDH is the primacy agency responsible for implementing the Safe Drinking Water Act rule requirements for drinking water in Minnesota and is also a member of the Association of State Drinking Water Administrators. We offer the following comments for consideration in the development of the final UCMR5 rule.

1. The proposed rule requires public water supplies (PWSs) to sample for 29 PFAS compounds. Many PWSs in the state of Minnesota, as well as nationally, already have treatment installed to remove PFAS from their drinking water. PWSs that currently treat to remove PFAS to below either federal or state guidance values should be exempt from the PFAS monitoring component of the UCMR5 rule. PFAS sampling results from these systems will likely result in a non-detect or extremely low detections for the PFAS compounds and will not provide EPA any useful occurrence data.

Individual Response: Please see Discussion on Sampling Design and Historical Information for Contaminant Detections and Treatment.

Comment Excerpt from Commenter 87

Advocacy Comments and Recommendations

1. Wholesale and consecutive systems should be exempted from UCMR 5 obligations if such system receives

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its water from a PWS already obligated to monitor under UCMR 5.

The purpose of the UCMR is to provide EPA and the public with data on the occurrence of unregulated contaminants in drinking water supplies so that EPA can make better informed regulatory and other risk management decisions [FN16: Environmental Protection Agency, Learn About the Unregulated Contaminant Monitoring Rule | Monitoring the Occurrence of Unregulated Drinking Water Contaminants, available at https://www.epa.gov/dwucmr/learn-about-unregulated-contaminant-monitoring-rule]. If an unregulated contaminant is detected in a PWS, it follows that all households that acquire their water from that PWS will be consuming or using water with that unregulated contaminant. Comparably, if an unregulated contaminant is detected in one PWS, it follows that the same unregulated contaminant will be detected in all water that is purchased or acquired through that PWS, including by other PWS.

In section 141.35(a) of the proposed rule EPA has revised the definition of "population served," which is used to identify what entities are regulated under UCMR 5 and are subject to UCMR 5 monitoring requirements. In the existing rule (UCMR 4), "population served" is defined as "the retail population served directly by the PWS as reported to the Federal Safe Drinking Water Information System (SDWIS/Fed); wholesale or consecutive populations are not included." In the proposed rule, the definition of "population served" would be defined as "the retail population served directly by the PWS as reported to the Federal Safe Drinking Water Information System (SDWIS/Fed)," thus eliminating the exemption for "wholesale or consecutive populations." A wholesale water system is defined as "a public water system that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another public water system." A consecutive water system is defined as "a public water system that receives some or all of its finished water from one or more wholesale systems."

In many cases, the wholesale water system and the consecutive water system have obtained its source water and/or its finished water from another PWS that is already subject to the UCMR obligations, and, therefore, whose water has already undergone the required sampling and analyses under the UCMR program. Requiring these water systems to repeat sample collection and analyses for the same water source is inherently duplicative in nature and does not provide any additional data to EPA or to the public. Requiring duplicative sample collection and analysis creates an unnecessary economic burden on PWS by imposing quarterly and/or bi-annual sampling and analysis requirements.

Advocacy recommends that either (1) EPA not revise the definition of "population served" in section 141.35(a), or (2) EPA clarify that any PWS that receives water from another PWS that has already complied with the UCMR obligations is exempt from all monitoring and reporting obligations under UCMR 5. If a PWS obtains water from both a UCMR-regulated water system as well as a non-UCMR-regulated water system or source, the PWS should be exempt from all UCMR monitoring and reporting obligations for the water obtained from the UCMR-regulated water system to the extent that the water does not co-mingle with the obtained water from the non-UCMR- regulated water system or source.

2. EPA should exempt all PWS from UCMR 5 monitoring and reporting obligations where such PWS are already required by other federal, state, or local law to collect and report data on the unregulated contaminants identified in UCMR 5.

Certain PWS are already obligated pursuant to other Federal, State, or local law to monitor for and collect data on the 29 PFAS and lithium identified in UCMR 5. These obligations arise from other federal law and regulations such as the NPDES permit program under the Clean Water Act as well as comparable requirements under state and local law. As this data is already made available to EPA, EPA should prioritize

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making this data readily transferrable to the UCMR 5 database for UCMR 5 purposes to eliminate any duplicative cost burden that rests on PWS. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 89 III. On the impact to states and risk communication. ECOS urges EPA to be thoughtful in its requirements of drinking water systems in terms of expenses related to monitoring (e.g., large PWSs [serving more than 10,000 people]) and assistance potentially required from state environmental and health agencies to help (especially small and medium) PWSs with analysis, regulations, and/or risk communication. ECOS encourages additional funding assistance to PWSs of all sizes to help with completing monitoring requirements. **Individual Response:** Please see Discussion on Sampling Design and Risk Communication.
Comment Excerpt from Commenter 90 3. The Agency should include an exemption for purchaser-consecutive PWSs that are required to conduct redundant and expensive monitoring for tests that their wholesaler PWS has already conducted under UCMR and when there is no reasonable chance the tested substances could be present in the purchaser-consecutive PWS's water as opposed to the wholesaler's water. Under UCMR4, one small PWS was required to spend over $20,000 to retest their purchased water from numerous PWSs that had already conducted the UCMR monitoring. Many of the tests were for substances that had no reasonable chance of being found in the purchasing PWS as opposed to the wholesaler PWS. This was a very significant cost to this community and there are thousands of communities that only serve populations from 10,000 - 25,000 that are required to conduct UCMR sampling. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 98 The Massachusetts Water Resources Authority (MWRA) appreciates the opportunity to comment on the U.S. Environmental Protection Agency (EPA)'s Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) proposal. MWRA would like to propose the following changes or recommendations for incorporation into the final rule. The Massachusetts Water Resources Authority is a large community water system providing wholesale water to more than two million people within 53 communities located in the greater Metropolitan Boston and MetroWest Boston area and Western Massachusetts. The Quabbin Reservoir, with a capacity of 412 billion gallons, is one of the largest reservoirs in the nation and the primary source for drinking water for MWRA's customers. Wachusett Reservoir, with a capacity of 65 billion gallons, is also a primary drinking water source for all but three communities. MWRA conducts extensive water testing in the watersheds, source reservoirs, treatment plants, and throughout the drinking water system. Member communities supplement testing with routine microbiological sampling throughout their individual distribution systems. MWRA Urges EPA to allow Wholesale System Monitoring at the Supplier's Entry Point and Exempt Consecutive System Monitoring for UCMR5 MWRA fully-served consecutive system communities receive drinking water from a single source, fully treated, without the need for any further adjustments to treatment. Currently there are 34 public water systems fully-served by the MWRA. Considering that EPA's UCMR5 proposal focuses on entry point monitoring, MWRA believes, based on both system configuration and data, that our wholesale system-

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sampling tap fully represents the water going to each community. This is similar to many wholesale/consecutive systems.

MWRA recommends providing the flexibility to exempt consecutive systems from UCMR5 monitoring because lithium and PFAS concentrations are not expected to form or change within the distribution system like disinfection byproducts or microbiological components. Rather, public water systems can trace PFAS or lithium detections back to their source water. For example, within MWRA's system, those consecutive communities that have monitored for PFAS at their entry points have seen results comparable to MWRA's entry point.

The intent of the proposed UCMR monitoring scheme is to allow EPA to relate UCMR data to population served in order to assess contaminant exposure rates. This could easily be accomplished by having wholesaler organizations like MWRA provide EPA with zip code and population data for each consecutive public water system directly. The wholesale entry point results would then be applied to each supplied community and still be complete and fully accessible through EPA's drinking water national occurrence database.

This recommendation would provide additional benefits and cost savings when it comes to logistics, sampling, shipment and analysis of these parameters from the wholesaler entry point tap by eliminating unnecessary duplication in sampling and analysis. In prior UCMR monitoring periods when entry-point monitoring was required, parameter data from each consecutive system reflected data similar to that of MWRA's wholesale system entry point.

Concurrent State-Based PFAS Monitoring
MWRA urges EPA to learn from current state-based monitoring approaches, similar to that of Massachusetts and New Jersey, as it finalizes UCMR5. Specifically, newly adopted regulations within these states have exempted consecutive system PFAS monitoring when the PWS from which the water is obtained monitors instead. MWRA, as the wholesale system supplier, currently takes full responsibility for quarterly state- based PFAS monitoring at its entry point, and the data suffices for all fully served consecutive communities. Test results are publically available on our web page and staff update consecutive system drinking water staff routinely.

Lastly, understanding that state PFAS monitoring programs will run concurrently with UCMR5, MWRA supports substitution of state-based compliance data in lieu of additional UCMR5 monitoring in cases where EPA methods 533 or 537.1 are utilized by an approved lab with similar method reporting limits. Additional PFAS components, not monitored through state based compliance, would still require sampling under UCMR5.

Sampling Taps Vary at Consecutive System Entry Points
MWRA's recommendation on consecutive system monitoring is informed by our understanding of the vulnerability associated with using sampling taps that may not be appropriate for this type of low-level detection sampling. MWRA is concerned with potential tap contamination at individual consecutive system sites and believes that significant labor would be required to vet and approve each consecutive system tap for UCMR5. For example, prior to recent state required PFAS monitoring, MWRA performed a full plumbing system and faucet inspection at our wholesale system regulatory compliance sampling taps to ensure there were no PFAS based plumbing components. Since PFAS contamination can occur via Teflon tape, tubing or other plastic components, MWRA would need to inspect all taps and related plumbing to ensure no

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erroneous detections. MWRA's recommendation is also informed by our recognition that both the wholesale and consecutive systems have very little control over the building maintenance, sampling plumbing and faucets used for sampling at the sites designated as entry points in many consecutive systems. Such taps are often not traditional sample sites located at municipal pump stations or water department facilities. Rather, community-based entry point sampling within consecutive systems often occurs at retail, industrial, or commercial sites where plumbing modifications can be made at the direction of building owners or maintenance contractors; building owners or managers do not notify MWRA or the consecutive water system about plumbing or faucet changes or maintenance. Therefore, MWRA is concerned that even if sample taps are initially evaluated and found to be satisfactory, subsequent premise plumbing maintenance could result in erroneous PFAS detections. UCMR5 Requires Experienced Sampling Staff MWRA endorses using data from wholesale system supplier taps because traditionally their samplers are well trained and experienced with low-level detection sampling. Secondly, they routinely adhere to standard operating procedures similar to those already used for state based low-level detection PFAS sampling. Precautions include wearing certain clothing and refraining from particular personal care products. This minimizes the likelihood for non-representative detections. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 98 In conclusion, MWRA recommends that UCMR5 provide the flexibility for a wholesale system to take responsibility for sampling, where key, trained staff can implement representative monitoring at approved and maintained sample taps, while efficiently providing accurate occurrence data. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 100 Additionally, not just large water systems should be monitored for dangerous chemicals. Even though large water systems affect the most people, small populations are just as important and should be monitored for PFAS and lithium as well. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 101 • Offer training to the expanded number of water system and technical staff operators that are required to meet the UCMR requirements as stated in the America's Water Infrastructure Act of 2018. • Follow through on funding and technical assistance for water systems, laboratories, and communities to fulfill these monitoring requirements. **Individual Response:** Please see Discussion on Sampling Design.

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Comment Excerpt from Commenter 103 2. EPA has a responsibility to finalize UCMR 5 in response to two recent laws: a. The America's Water Infrastructure Act of 2018 (Public Law No: 115-270) (AWIA 2018) expands the scope of UCMR from 5,164 to 10,311 systems. AWWA supports this expansion in UCMR monitoring. This a substantial increase in systems for the EPA UCMR program to incorporate and will require training a large cohort of systems for the first time in the implementation of UCMR but will improve the data. UCMR 5 should be structured with this Congressionally directed change in mind. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 103 4. The requirements for monitoring locations and frequency can be streamlined to maintain data quality while minimizing monitoring burden on water systems and the organizational and fiscal burden on EPA. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 103 UCMR Objectives Should be Weighed and Balanced with Challenges Under the Safe Drinking Water Act (SDWA), the purpose of the UCMR program is to develop occurrence data for unregulated contaminants that may be present in "drinking water supplied by public water systems." [FN6: U.S. Code 300 j-4(a)(2). "The regulations shall require monitoring of drinking water supplied by public water systems…"] [FN7: 86 FR 13846. "Under the second step, EPA must require, every five years, monitoring of unregulated contaminants to determine their occurrence in drinking water systems; this is the UCMR program."] In the current cycle, EPA is appropriately proposing to expand the scope of assessment monitoring for PFAS and lithium to all systems serving more than 3,300 persons and adjusting its representative sample for small systems to reflect these analytes' occurrence in smaller systems. This change will increase the number of water systems collecting samples from 5,164 to 10,311 systems. This change will increase the number of systems that EPA must manage from 800 to 5,947. AWWA supports this additional system monitoring to provide greater coverage and improved clarity of national occurrence. Monitoring of the additional systems will increase the statistical confidence of occurrence and help to identify a greater number of impaired water sources. These additional systems will be managed directly by EPA and EPA will be (1) educating and assuring this cohort of systems meets its data collection obligations and (2) paying for sample analysis, shipping, and quality assurance. Consequently, EPA has a direct interest in opportunities to make UCMR 5 as efficient as possible with respect to sample collection and data management. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 103 Monitoring Location and Frequency UCMR 5 sampling should occur at EPTDS. With the goal of establishing the occurrence of the sampled analytes in drinking water, EPA should take both that question and the nature of the analytes into account when establishing the frequency and location of monitoring. The analytes proposed for UCMR 5 are all persistent substances (e.g., PFAS, lithium) with respect to drinking water treatment. None are expected to increase as a function of travel time in distribution systems. Consequently, AWWA agrees with EPA that the UCMR 5 analytes should be monitored for at the EPTDS only. EPA should reduce UCMR 5 PFAS and lithium monitoring to a single observation per EPTDS per system for ground-water systems. Based on EPA's experience with UCMR 3, and data more recently accrued through state drinking water monitoring programs, variability of PFAS levels is much more substantial between sites

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than it is with respect to occurrence at a particular water system. As a naturally occurring alkali metal like sodium, lithium is expected to yield a similar experience. Using data collected under UCMR 3, Eaton et al. demonstrated that, with limited within-site variability, the characterization of the national occurrence distribution will not be substantially affected by taking fewer samples per sample site [FN8: Eaton et. al. 2018. Detailed Analysis of the UCMR 3 Database: Implications for Future Groundwater Monitoring, Journal AWWA, https://doi.org/10.5942/jawwa.2018.110.0029]. EPA should evaluate whether a single sample per EPTDS is appropriate for systems which rely on a surface water supply(ies). While there is more evidence for PFAS level variation in surface water sources (particularly rivers), it is not clear that quarterly monitoring will improve the understanding of PFAS occurrence in drinking water given the number of other confounding variables for PFAS levels including industrial activity patterns and rainfall. Efficient use of sampling will (1) provide needed data, (2) reduce monitoring burden on water systems, and (3) reduce the organizational and fiscal burden on EPA. **Individual Response:** Please see Discussion on Sampling Design.
Comment Excerpt from Commenter 103 As EPA finalizes UCMR 5, the EPA should eliminate the monitoring requirements for consecutive system to avoid duplicative monitoring of a water supply. The proposal would also require that both wholesalers and consecutive water systems conduct monitoring and submit ancillary data. This is unnecessary for contaminants like PFAS and lithium, which are not expected to form or degrade in the distribution system like microbials and disinfection byproducts (M/DBPs). Some individual states have recognized this opportunity to reduce monitoring burden, and their regulations for monitoring PFAS in drinking water have excluded consecutive systems from monitoring requirements (e.g., Massachusetts and New Jersey). [FN10: 310 CMR 22.12), Massachusetts Department of Environmental Protection, October 2020. https://www.mass.gov/doc/310-cmr-2200-the-massachusetts-drinking-water-regulations/download] [FN11: 7:10 NJAC 5.2(a)(12) Safe Drinking Water Act Rules. https://www.nj.gov/dep/standards/njac7_10.pdf] If UCMR 5 does not require PFAS or lithium monitoring by consecutive systems that rely solely on purchased water, it would still be necessary to assure that systems with multiple supply sources are adequately characterized. Specifically, the final rule would need to require monitoring by systems that relied on their own water sources and did not sell water to other systems, wholesale systems, and: 1. Require consecutive systems with supplemental supplies (e.g., ground water wells, surface water treatment plant(s)) to conduct PFAS and lithium monitoring. 2. Require wholesale water systems (regardless of whether the system treats raw water, wheels finished water, or both) to submit the public water system identification numbers (PWSIDs) of consecutive water systems receiving water from the wholesaler. 3. Require consecutive systems to identify the PWSID for each of its suppliers and to indicate the approximate percent of water supply received from each supplier. **Individual Response:** Please see Discussion on Sampling Design.

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Comment Excerpt from Commenter 103

EPA should consider how previous or concurrent monitoring programs for PFAS may be imported to offset monitoring requirements. The monitoring of PFAS under UCMR 5 will be conducted following and concurrently with various state investigatory and regulatory compliance monitoring programs. While logistically complex, EPA should consider the data quality of these programs and the suitability for this data to be substituted in lieu of UCMR 5 monitoring. In particular, the submission of the data collected by water systems to meet state drinking water regulations to SDWARS or the National Contaminant Occurrence Database (NCOD) in lieu of UCMR 5 monitoring may facilitate this effort. There are significant challenges with such an amendment to the proposed UCMR 5, but implementation could facilitate the timely compilation of data that meets EPA's data quality needs while freeing resources at EPA and water systems for the proposed UCMR 5 activities. EPA's consideration of this opportunity should not compromise data quality.

Individual Response: Please see Discussion on Sampling Design.

Comment Excerpt from Commenter 104

- If sufficient laboratory capacity exists, PA DEP generally supports the inclusion of monitoring at all systems with population ≥ 3,300. This data would significantly supplement the information PA DEP has obtained from our own public water system PFAS study. In addition, this would expand monitoring to more ground water systems, since most systems with population > 10,000 in Pennsylvania are surface water systems.

Individual Response: Please see Discussion on Sampling Design.

Comment Excerpt from Commenter 104

At 86 FR 13859, the supplementary information for the proposed rule states that EPA will "include sample collection procedures that are specific to the methods in the UCMR 5 Laboratory Manual" and will address this point in our outreach to the public water systems that will be collecting samples." PA DEP strenuously emphasizes the importance of training for sample collectors for PFAS sample collection. Preventing inadvertent cross contamination of a sample through proper preparation and collection procedures will be critical for obtaining meaningful sample results. This can only be achieved through extensive outreach and training efforts. This will be particularly critical for any public water systems that will be doing their own sample collection and that do not have previous experience with sampling procedures for PFAS.

Individual Response: Please see Discussion on Sampling Design.

Comment Excerpt from Commenter 104

In order to include more systems in UCMR 5 monitoring without overwhelming laboratory capacity, PA DEP would like to suggest that EPA consider alternative monitoring scenarios. EPA could consider an alternate population threshold for requiring monitoring, somewhere between 3,300 and 10,000, with representative sampling below that threshold. EPA could also consider maintaining the threshold of > 10,000 but including a larger representative sample set of systems with populations ≤ 10,000. There are many possible scenarios that would result in more systems conducting monitoring without potentially overwhelming aboratory capacity.

Individual Response: Please see Discussion on Sampling Design and Regulatory Flexibility Act/Impact on Small Systems.

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Comment Excerpt from Commenter 109

Monitoring Requirements

American Water believes that USEPA's proposed sampling frequency of four samples three months apart for surface water systems and two samples 5-7 months apart for ground water systems presents a viable starting point for developing sampling requirements. USEPA should look for opportunities to reduce these monitoring requirements if it determines that the Agency would be able to obtain a meaningful data set using a less frequent monitoring scheme.

Given the anticipated lack of change in PFAS and lithium levels as water ages in the distribution system, American Water encourages USEPA to develop alternatives that would allow consecutive systems with simple purchasing configurations to provide information about their wholesale system in lieu of performing sampling. These systems should be able to indicate the PWSID of the wholesale system, which would allow USEPA to associate the appropriate consecutive system population with the respective sample results. This concept should be expanded to allow for systems that purchase a portion of their water or purchase from multiple wholesalers (providing the wholesaler PWSIDs and percentages, accordingly). Sampling would be reserved for those consecutive systems with more complex purchasing configurations that are not able to provide this information.

American Water supports the proposed rule provisions that allow large ground water systems (or large surface water systems with ground water sources) that have multiple ground water entry points to the distribution system (EPTDSs) to request approval to sample at representative monitoring locations rather than at each ground water EPTDS. This includes plans approved under prior UCMRs being used for UCMR5, presuming no significant changes in the configuration of the ground water EPTDSs since the prior approval.

Individual Response: Please see Discussion on Sampling Design.

Comment Excerpt from Commenter 114

This is the first UCMR that will include contaminants with existing state-level maximum contaminant levels, which poses new challenges associated with duplicative sample collection. Many water systems already have PFAS treatment in place to meet state standards, and sampling results from these systems will likely result in non-detects, and therefore would not be providing EPA with useful occurrence data. To address this issue and reduce duplicative sample collection, EPA should exempt water systems that already have PFAS treatment in place.

Individual Response: Please see Discussion on Sampling Design and Historical Information for Contaminant Detections and Treatment. PWSs with PFAS treatment in place will still be required to monitor under UCMR 5.

Comment Excerpt from Commenter 114

States that are conducting PFAS sampling are concerned about the cost and burden associated with having to take and analyze samples twice, once for UCMR5 and once for state requirements and associated response actions because UCMR5 data will not capture the necessary sample results for states that have lower PFAS minimum reporting levels (MRLs). ASDWA recommends that in the final UCMR5, EPA provide flexibility for the states with lower detections to use labs meeting their state requirements if they are intending for the sample results to be used for compliance purposes in their state.

For example, Massachusetts, Illinois, Vermont, and New Hampshire have MRLs of 2 ppt for their PFAS MCL sampling requirements and have had their labs reliably report sample results at these MRLs for the following PFAS.

- Six PFAS in Massachusetts (PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA)

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- Six PFAS in Illinois (PFOA, PFOS, PFBS, PFHxS, PFNA, PFHxA, HFPO-DA)
- Five PFAS in Vermont (PFOA, PFOS, PFHpA, PFHxS, PFNA)
- Four PFAS in New Hampshire (PFOS, PFOA, PFHxs, PFNA)

For a comparison, below is the listing EPA's UCMR5 MRLs for the above compounds for which these states will have to conduct duplicative sampling to use the lower MRLs.

- PFOA - 4 ppt
- PFOS - 4 ppt
- PFHpA - 3 ppt
- PFHxS - 3 ppt
- PFNA - 4 ppt
- PFHxA – 3 ppt
- PFDA - 3 ppt
- HFPO-DA – 5 ppt

It should be noted that this is just an example of four states, out of at least 25 states, that are conducting some type of PFAS sampling. Many of these states will need their water systems to either re-sample or analyze the samples two times for these and other compounds for water systems to meet their state PFAS sampling and MCL or guidance level requirements.

Individual Response: Please see Discussion on Sampling Design.

Comment Excerpt from Commenter 116

We write on behalf of Little Hocking Water Association ("LHWA" or "Little Hocking") to comment on the Proposed Unregulated Contaminant Monitoring Rule (UCMR 5), 86 Fed. Reg. 13846 (March 11, 2021). Little Hocking serves more than 12,000 users in southwest Ohio and its wellfield is located directly across the Ohio River from the former DuPont Washington Works facility. LHWA's aquifer contains such high levels of PFOA and such substantial levels of GenX that it is necessary to rely on a Granular Activated Carbon plant to remove these contaminants from the members' drinking water. In light of this background and twenty years of concern about PFOA/PFAS, we urge that EPA make the following changes to the proposed rule.

1. Revise the rule to require that each round of sampling be collected from the pre- treated source water, i.e., before any treatment or filtration. For example, at Little Hocking (which has parallel trains of lead and lag carbon beds) and similarly situated providers of water, water samples should be collected at the inlet of the plant. Collecting pre-treatment samples of the source water will allow a determination of which if any of the parameters are found in the source water and allow for a determination of any increases and decreases in trends in the source water that any treatment system or plant is confronting.

Individual Response: Please see Discussion on Sampling Design and SDWA Authorities (1445(a)(2), 1445(a)(1)(A)). UCMR monitoring is for finished drinking water only, not untreated source water. While source water analyses can support drinking water protection efforts, particularly at the local and regional levels, UCMR results must reflect any possible interactions between unregulated contaminant concentrations and the existing treatment technologies and disinfectant types implemented by PWSs (i.e., all existing NPDWRS have been met) in order to accurately support assessments of national occurrence in drinking water.

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Comment Excerpt from Commenter 119

7. Apply UCMR 5 to systems serving 3,300 to 10,000 people. The agency should request appropriations in its budget, since otherwise these water systems will not be required to be monitored under the UCMR 5 under the provisions of the SDWA. If EPA were not to require testing of these smaller systems, millions of Americans would not be apprised of whether their water is contaminated, and often their water suppliers will not learn that their water needs to be treated, their source water protected, or other measures taken to protect their consumers.

Individual Response: Please see Discussion on Sampling Design.

Comment Excerpt from Commenter 120

7. Apply UCMR 5 to systems serving 3,300 to 10,000 people. The agency should request appropriations in its budget. If EPA were not to require testing of these smaller systems, millions of Americans would not be apprised of whether their water is contaminated, and often their water suppliers will not learn that their water needs to be treated, their source water protected, or other measures taken to protect their consumers.

Individual Response: Please see Discussion on Sampling Design and Regulatory Flexibility Act/Impact on Small Systems.

Agency Discussion on Ground Water Representative Monitoring Plans/Locations

Agency Topic Discussion: EPA received two comments regarding the use of Ground Water Representative Monitoring Plans (GWRMPs). The Agency affirms that it will continue to accept new, revised, and previously approved GWRMPs for UCMR 5 monitoring, so long as they satisfy plan requirements pursuant to 40 CFR 141.35(c)(3), and as outlined in, "Instructions for Preparing a Ground Water Representative Monitoring Plan for the Unregulated Contaminant Monitoring Rule" (USEPA, 2021l), available in the UCMR 5 public docket.

As with past UCMRs and as described in 40 CFR 141.35(c)(3), UCMR 5 will allow large GW systems (or large SW systems with GW sources) that have multiple GW EPTDSs to request approval to sample at representative EPTDSs rather than at each GW EPTDS. The use of representative entry points in UCMR 5 will result in fewer samples and thus time and cost savings to the PWS. Relative to the rules for prior UCMR cycles, UCMR 5 provides greater flexibility to PWSs in submitting GWRMPs to EPA. Plans must be submitted to EPA six months prior to the PWS's scheduled sample collection, instead of by a specified date; those PWSs scheduled to collect samples in 2024 or 2025 will have significant additional time to develop and propose representative plans. PWSs, particularly those scheduled for sample collection in 2023, are encouraged to submit proposals for a new GWRMP, or revisions/updates to a previously approved plan, by December 31, 2022, to allow time for review by EPA and, as appropriate, the State. GWRMPs approved under prior UCMRs may be used for UCMR 5 if there has been no significant change in the configuration of the GW EPTDSs since prior approval. PWSs that intend to use a previously approved representative monitoring plan, without changes or updates, must notify EPA that they intend to use the plan for UCMR 5 and send a copy of the approval documents received under prior UCMRs from their State (if reviewed by the State) or EPA, to UCMR_Sampling_Coordinator@epa.gov.

EPA will work closely with the States to coordinate the review of GWRMPs in those cases where such review is part of the State's Partnership Agreement. Changes to inventory data in SDWARS that impact a PWS's representative plan before or during the UCMR sampling period must be reported within 30 days of the change. EPA will collaborate with small systems (particularly those with many GW locations) to develop a GWRMP when warranted, recognizing that EPA pays for the analysis of samples from small systems.

Agency Discussion on Ground Water Representative Monitoring Plans/Locations

Generally, commenters supported the continued use of GWRMPS and the use of previously approved monitoring plans.

Comments Received on Ground Water Representative Monitoring Plans/Locations

Comment Excerpt from Commenter 103

EPA should continue to allow representative groundwater source monitoring. Previous UCMRs have included a provision for the use of representative wells through submission of a ground water representative monitoring plan. This is an important element of the UCMR sampling program design. While it requires prior coordination, which may be challenging given the current UCMR development cycle, it affords EPA an appropriate occurrence characterization while reducing burden on water systems. As EPA's Community Water System Survey demonstrates the number of wells per water system is highly variable for both small and large water systems [FN9: EPA, 2006. 2006 Community Water System Survey Volume II: Detailed Tables and Survey Methodology (Tables 16 – 18). https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1009USA.txt]. Representative sampling is an important opportunity to improve the cost-effectiveness of both the system and EPA-funded portions of the UCMR 5 program.

The logistics of representative sample site selection will require delivering actionable information to water systems subject to UCMR 5 as quickly as possible, so that the required submissions occur prior to the start of monitoring. Past practice from previous UCMR cycles would be sufficient for the proposed analytes in UCMR 5. AWWA appreciates that EPA has already updated its UCMR website to draw attention to the need for this prior planning.

EPA guidance should be clear with respect to all EPTDSs that monitoring should be conducted for wells that are currently in service. This is especially important for systems with untreated groundwater wells. There is an opportunity in review and approval of representative monitoring plan development to reenforce the scheduling of wells for sampling when they are in production.

Individual Response: Please see Discussion on Ground Water Representative Monitoring Plans/Locations. EPA has further clarified in the GWRMP instruction document (USEPA, 2021l) that representative sampling locations must be in use at the scheduled sampling time. If the chosen representative well is not in service, an approved alternative in-operation representative well (i.e., from the same aquifer and subject to the same treatment as the represented well, consistent with 40 CFR 141.35(c)(3)) must be selected and sampled for UCMR monitoring.

Comment Excerpt from Commenter 104

- At 86 FR 13858, the supplementary information for the proposed rule states that large ground water systems, or large surface water systems with ground water sources, that have multiple ground water entry points may be permitted to sample at representative monitoring locations rather than each individual ground water entry point. Many large systems have been conducting monitoring for PFAS on their own. Allowing these systems to sample only a subset of entry points may potentially result in site selection bias. If these systems will be permitted to only conduct representative monitoring, it is recommended to require verification that previous knowledge of elevated sample results or site contamination is not a factor in site selection prior to approval of a ground water representative monitoring plan (GWRMP).
- At 86 FR13858, the supplementary information for the proposed rule states that "EPA will collaborate with small systems (particularly those with many ground water locations) to develop a GWRMP when warranted." PA DEP requests that EPA clarify exactly what is meant by this statement.

Comments Received on Ground Water Representative Monitoring Plans/Locations

Individual Response: Please see Discussion on Ground Water Representative Monitoring Plans/Locations. EPA has further clarified in the GWRMP guidance document (USEPA, 2021l) that any existing historical data for wells on contaminants selected for upcoming UCMR monitoring (e.g., PFAS results) should be included in the PWS GWRMP proposal. These data should complement other water quality data indicating all represented wells produce water of a similar quality to that of the associated representative well.

Potential UCMR 5 Contaminants

Agency Discussion on 29 PFAS Using EPA Methods 533 and 537.1

Agency Topic Discussion: The Agency received many comments on the monitoring for 29 PFAS under UCMR 5 using the two methods validated by EPA. UCMR 5 requires the use of both EPA Methods 533 (USEPA, 2019a) and 537.1 (Version 2.0; USEPA, 2020a), consistent with NDAA provisions. Laboratories must develop proficiency and be approved in the use of both Methods 533 and 537.1 to analyze for all 29 PFAS included in UCMR 5 monitoring. Method 533 must be used to analyze for 25 PFAS: PFBS, PFHxA, HFPO-DA, PFHpA, PFHxS, ADONA, PFOA, PFOS, PFNA, 9Cl-PF3ONS, PFDA, PFUnA, 11Cl-PF3OUdS, and PFDoA, NFDHA, PFPeA, PFEESA, PFMPA, PFBA, PFMBA, PFPeS, PFHpS, 4:2 FTS, 6:2 FTS, and 8:2 FTS. Method 537.1 must be used to analyze for four PFAS: NMeFOSAA, NEtFOSAA, PFTrDA, and PFTA.

Commenters highlighted the possibility of revising and expanding EPA Method 533 to accommodate the analysis of more PFAS analytes, and requested flexibility for laboratories in using Method 537.1 in place of Method 533 for the 14 PFAS analytes included in both methods. Although some commercial laboratories can determine more than 25 PFAS using a modified Method 533, such methods have not been validated by EPA and EPA is not confident that there would be sufficient national laboratory capacity. It is important to note that QC requirements between Methods 533 and 537.1 are different. Unlike Method 537.1, Method 533 is an isotope dilution method, which will inherently lead to higher recovery and better precision among replicates, thereby lowering the quantitation limits. The single laboratory reporting limits reported in the methods are different from the multi-laboratory MRLs calculated for UCMR 5.

Comments Received on 29 PFAS Using EPA Methods 533 and 537.1

Comment Excerpt from Commenter 68

2. The National Defense Authorization Act for Fiscal Year 2020 (Public Law 116-92) (NDAA 2020) requires that the EPA include per and polyfluoroalkyl substances (PFAS) detectable with an EPA validated method for drinking water in UCMR 5. The only methods for PFAS that are appropriately validated and meet these requirements are EPA Methods 537.1 and 533. OMB should approve the collection of PFAS observations in finished drinking water using these two EPA methods.

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1.

Comment Excerpt from Commenter 80

Please issue a rule requiring water systems to test for all 29 PFAS chemicals for which there are EPA approved tests.

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1 and Interrelationships of CCL, UCMR, and Regulatory Determinations.

Comments Received on 29 PFAS Using EPA Methods 533 and 537.1
Comment Excerpt from Commenter 81 The Association of Metropolitan Water Agencies (AMWA) is an organization representing the largest publicly owned drinking water utilities in the United States. AMWA thanks the agency for the opportunity to comment on the agency's proposed revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5). AMWA supports EPA's inclusion of the 29 per and polyfluoroalkyl substances (PFAS) which have validated testing methods. PFAS are of increasing concern to AMWA's members and the association has consistently urged EPA to prioritize PFAS research in both occurrence and health effects data. AMWA encourages EPA to continue the agency's PFAS research goals, particularly obtaining reliable health effects data and developing new, cost-effective treatment options so that drinking water utilities can more efficiently address these contaminants. **Individual Response:** Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1.
Comment Excerpt from Commenter 81 Additionally, AMWA believes that EPA's proposed requirement to use EPA Method 533 for 25 of the required PFAS targets and EPA Method 537.1 for only four targets, despite the overlap of 14 common PFAS across the two methods, is an unnecessary restriction and can cause significant increases to labor and supply costs for utilities. Utilities using EPA Method 537.1 can still meet UCMR5's minimum reporting limits but would avoid the additional analytical costs incurred from the added complexity of EPA Method 533 and the lack of experience among laboratories with the new EPA method. An AMWA member has reported an estimated cost savings of up to 10% per sample if allotted the flexibility to use EPA Method 537.1 for those target compounds which overlap. Therefore, AMWA suggests that EPA allow utilities and laboratories the flexibility to report up to 18 of the required target compounds using EPA Method 537.1. **Individual Response:** Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1.
Comment Excerpt from Commenter 84 Chemours appreciates the opportunity to comment on the proposal to collect national occurrence data for 29 per and polyfluoroalkyl substances (PFAS) as part of the fifth Unregulated Contaminant Monitoring Rule (UCMR-5). We support the gathering of additional scientifically valid data on the national occurrence of PFAS in drinking water. The use of validated test methods is critically important to the integrity of the UCMR program and we support EPA's conclusions regarding the test methods specified in the rule. **Individual Response:** Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1.
Comment Excerpt from Commenter 97 Following are ACWA's comments. a. Provide More Flexibility Regarding Allowable Testing Methods The proposed UCMR 5 provides certain analytical methods to measure certain PFAS within the 29 PFAS listed. EPA proposes that Method 533 would be used to test 25 PFAS and Method 537.1 could only be used to test four PFAS. Method 533 is a newer testing method that many water labs are not qualified to conduct. The labs will need to take time and resources to develop Method 533 and obtain EPA certification to use this method. Both Method 533 and Method 537.1 have detection limits that are down to two nanograms per liter. As a result, ACWA asks that EPA provide flexibility in the allowed testing methods and permit labs to use Method 537.1 where applicable. By providing this flexibility, EPA would allow more labs to qualify for certification to conduct the necessary testing.

Comments Received on 29 PFAS Using EPA Methods 533 and 537.1

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1 and Laboratory Capacity. EPA certification and subsequent UCMR approval are requirements for laboratories regardless of which methods are being used for UCMR sample analysis.

Comment Excerpt from Commenter 102

Expansion of the national survey to include additional PFAS and all public water systems serving more than 3,330 individuals will provide important information to the Agency and the public on the nature and extent of PFAS levels in the nation's drinking water. The value of these data will be further enhanced by improvements to the analytical methods that allow for lower minimum reporting levels (MRLs) for the substances. These improvements will serve to further refine understanding of PFAS in drinking water made by EPA's previous effort in UCMR 3 in which the MRLs were already low. While the UCMR 3 data indicated that one or more of six common PFAS [FN2: These substances included PFBS, PFHxA, PFHpA, PFOA, PFOS, and PFNA with MRLs ranging from 10 parts per trillion (ppt) for PFHpA to 90 ppt for PFBS] were detected in less than 2 percent of the samples analyzed, the analytical techniques available at the time were not as sensitive as are currently available.

Despite the limitations of the analytical techniques used for UCMR 3, more recent sampling confirms that levels of PFAS in public drinking water are quite low even when deploying more sensitive analytical techniques. Several states have conducted sampling of public water systems since the UCMR3 analysis. Most have been limited sampling programs targeted at systems near potential sources of PFOA and PFOS.

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1, Sampling Design, and Minimum Reporting Level Determination.

Comment Excerpt from Commenter 102

Michigan's Department of Environment, Great Lakes, and Energy (EGLE), however, conducted a state-wide survey of all public water systems in the state in 2018. Using EPA Method 537 Rev. 1.1, with reporting limits ranging from 2 to 4 ppt, EGLE reported that 90 percent of the systems had non-detectable levels of 14 PFAS [FN3: EGLE's analysis used the EPA method available at the time – EPA Method 537 Version 1.1 – which allowed for determination of 14 PFAS [FN3: https://www.michigan.gov/documents/pfasresponse/2018_PFAS_Sampling_of_Drinking_Water_Supplies_in_Michigan_663543_7.pdf]. An additional 7 percent of the sampled wells had total PFAS level of less than 10 ppt. Similarly, sampling conducted by the Ohio Environmental Protection Agency in 2020 found that more than 95 percent of the public water systems in the state had no detectable levels of six PFAS, including the most commonly found substances [FN4: The PFAS included in Ohio EPA analysis were PFBS, PFHxS, PFOA, PFOS, PFNA, and HFPO-DA. https://oepa.maps.arcgis.com/apps/MapSeries/index.html?appid=893553c5007f410d9bc55d9cf985342e].

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1.

Comment Excerpt from Commenter 103

Per and Polyfluoroalkyl Substances

AWWA concurs with Agency that EPA Methods 533 and 537.1 are the two PFAS analytical methods that are appropriately validated for use in UCMR per NDAA 2020. NDAA 2020 requires that the EPA include all PFAS compounds detectable with an EPA validated method for drinking water under UCMR 5. To date, two analytical methods are applicable to this provision: EPA Method 533 and 537.1. Combined, these methods can analyze for 29 individual PFAS compounds in drinking water. EPA's proposed UCMR 5 includes the monitoring of these 29 PFAS. EPA correctly summarizes the state of PFAS analytical method development.

Comments Received on 29 PFAS Using EPA Methods 533 and 537.1

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1.

Comment Excerpt from Commenter 104

- At 86 FR 13853, the supplementary information for the proposed rule lists 25 PFAS to be analyzed by EPA Method 533 and 4 PFAS to be analyzed by EPA Method 537.1. Of the 25 analytes in Method 533, fourteen are also included in Method 537.1. PA DEP requests that EPA provide more explanation and rationale for requiring EPA Method 533 analysis for those fourteen analytes, instead of EPA Method 537.1. PA DEP also requests that EPA address several questions related to comparing data obtained by the two methods. For example:
  - How do results produced by the two methods compare?
  - Are minimum reporting limits generally lower for one method or the other?
  - What considerations are necessary when comparing existing data sets produced by Method 537.1 to UCMR 5 data produced by Method 533?

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1.

Comment Excerpt from Commenter 108

B. The Coalition Supports EPA's Use of Validated Drinking Water Test Methods and Urges EPA to Select One of the Two Available Methods for Purposes of UCMR5.

The Coalition appreciates that EPA prioritized PFAS contaminants, in part, by identifying whether the PFAS compound will have a completed, validated drinking water testing method, as the availability of approved, validated test methods is critical to obtaining reliable data. Initially, EPA's main validated test methods for PFAS, Methods 537 and 537.1, applied only to 18 PFAS compounds in samples derived from drinking water. Recently, EPA issued Method 533, which can be used to measure an additional 11 "short-chain" PFAS compounds. There is overlap in the PFAS compounds that each method can measure. For example, Method 533 can measure 14 of the 18 PFAS compounds covered by Method 537.1. Therefore, the entirety of EPA's approved test methods can measure no more than 29 different PFAS compounds, and multiple methods would have to be used to obtain results from all 29 compounds.

Due to the overlap between Methods 533 and 537.1, the Coalition recommends that EPA select a single method. Requiring PWS to run both methods is unnecessarily burdensome, duplicative, costly, and could result in conflicting results. Method 537.1 has been a validated and approved drinking water test method for longer, and, therefore, laboratories may have greater proficiency with Method 537.1 than Method 533. Additionally, some states have already been requiring use of Method 537.1 to conduct sampling of PFAS. For these reasons, the Coalition recommends that EPA select Method 537.1 as the sole method for monitoring conducted pursuant to this rulemaking. However, the Coalition recognizes that EPA developed Method 533 specifically for this rulemaking and that Method 533 measures a greater number of PFAS compounds pollutants. In any event, the Coalition urges EPA to select only one method, since running two tests imposes additional burdens that are not justified by the limited returns provided by the additional data gathered.

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1. While there is some overlap in target analytes between the two EPA methods, the remaining analytes (11 in Method 533 and four in Method 537.1) are specific to each method's detection capability. Removal of one method would lead to a less robust UCMR 5 dataset.

Comment Excerpt from Commenter 111

1. Current EPA-Validated Methods are Targeted and Insufficient.

Currently, EPA proposes using two validated and targeted PFAS analytical methods to support the analysis of the 29 PFAS in the proposed UCMR 5: Method 533 and 537.1 [FN64: See U.S. Envtl. Prot. Agency, PFAS

Comments Received on 29 PFAS Using EPA Methods 533 and 537.1
Analytical Methods Development and Sampling Research, https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research]. EPA lists methods approved by DOD and other agencies as well.]. The targeted analytical methods validated to date quantify PFAS concentrations using liquid chromatography with tandem mass spectrometric detection. Method 537, was first published in 2009 and updated in 2020; and EPA validated Method 537.1 analyzes samples for 18 of the 29 PFAS in the UCMR 5 [FN65: U.S. Envtl. Prot. Agency, PFAS Analytical Methods Development and Sampling Research, https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research]. Method 533 was developed in 2019 to support the UCMR 5 and is validated for an additional 11 PFAS. Method 533 complements Method 537.1 by targeting short-chain PFAS (none greater than C12) and measures a total of 25 PFAS [FN66: Id.]. These validated methods—referred to as "targeted analyses"—differ in scope, limits of detection and quantification and method analyte lists. Each is aimed at specifically identified chemicals [FN67: See Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems and Announcement of Public Meeting, 86 Fed. Reg. 13,846, 13,870 (proposed Mar. 11, 2021) (to be codified at 40 C.F.R. pt. 141). See also U.S. Envtl. Prot. Agency, PFAS Analytical Methods Development and Sampling Research, https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research]. The targeted analytical methods screen for known, specific species of PFAS and thus are one step behind the many thousands of ever-changing PFAS. Using the targeted approach, EPA decides what it wants to know, sets up the method for detecting that known chemical and performs the analysis. But that approach is ill suited to protect the public from the thousands of PFAS present in unknown quantities around the country. **Individual Response:** Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1, Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP), and Alternate PFAS Methods (ASTM/SM/Other Suggested Methods). Targeted analytical methods are used in UCMR to provide the most accurate quantifiable results.
Comment Excerpt from Commenter 116 2. In light of LHWA's experience with an array of PFASs in its wellfield and the growing knowledge of many sources of these highly persistent contaminants, LHWA agrees with the NRDC and others that it makes sense to "[a]dd a requirement that public water systems test for a broader array of PFAS in addition to the 29 PFAS that are found using EPA Methods 533 and 537.1. UCMR5 presents an opportunity to better understand the extent of PFAS contamination in our public drinking water systems. The current proposal for PFAS proposed to use two EPA validated methods, Method 537.1 and Method 533, to test for a total of 29 PFAS compounds." We understand from commenters that several commercial laboratories claim to have the capability to test for a number of PFAS compounds, using a modified version of Method 533. As NRDC and others point out, method 533 is "more accurate and robust than Method 537.1." That is why Little Hocking supports the recommendation for US EPA to validate a revised Method 533 that expands the number of PFAS covered to include at minimum the 40 PFAS commonly covered by commercial laboratories in time to be used for UCMR 5. **Individual Response:** Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1 and Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 118 Consistent Data Depends on Rigorous Compliance with Validated Methodology An EPA validated testing methodology, such as Methods 533 and 537.1, is critical to ensure consistent and reliable results that can be compared from laboratory to laboratory. 3M recommends that entities performing

Comments Received on 29 PFAS Using EPA Methods 533 and 537.1

UCMR 5 testing be required to use Method 533 or 537.1, as appropriate, without modification. At minimum, laboratories should be required to disclose any modification to assist EPA in collecting a reliable data set. This is important, as laboratories may make different modifications to the method based on lab-specific circumstances. In addition, EPA should require consistency in how entities testing pursuant to UCMR 5 report results. For example, EPA should provide guidance to labs on whether they should report linear, branched, or combined isomers to promote consistency. Such guidance will help ensure data harmonization and consistency.

Finally, proper quality control is always crucial, but particularly so for PFAS sampling. Methods may be prone to error when attempting to measure certain PFAS near their reporting limit, unless rigorous procedures are followed, such as using trip, field, and lab blanks to evaluate the potential for contamination of samples during sampling, transport, lab preparation, and analysis, as well as analyte carryover. This is especially important for laboratories that analyze samples from a variety of locations having a wide range of PFAS concentrations. Laboratories should not be permitted to use only batch quality control. Rather, trip, field, and lab blanks should be associated and run in the same analytical run sequence as samples submitted for the UCMR 5 program. It is further recommended that sufficient sample containers are collected for the preparation of at least one lab matrix spike and matrix spike duplicate sample for each batch of UCMR 5 program samples.

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1 and Sampling Design (specifically PFAS Sampling Outreach Material). Trip and field blanks are not required, per se, but field reagent blanks (FRBs) will be used as a composite of both types for Methods 533 and 537.1 (Version 2.0). Method QC and reporting requirements for UCMR 5 are addressed in the Discussion on Laboratory Approval Program and detailed in the "UCMR 5 Laboratory Approval Manual" (USEPA, 2021m), available in the UCMR 5 public docket.

Comment Excerpt from Commenter 119

I. OVERVIEW OF COMMENTS

In summary, we urge that EPA:

1. Add requirements that public water systems test for a broader array of PFAS in addition to the 29 PFAS that are found using EPA Methods 533 and 537.1. UCMR 5 presents an opportunity to better understand the extent of PFAS contamination in our public drinking water systems. The current proposal for PFAS proposes to use two EPA validated methods, Method 537.1 and Method 533, to test for a total of 29 PFAS compounds. Several commercial laboratories, however, advertise the capability to test for a larger number of PFAS compounds, between 40 and 70, using only a comparable version of Method 533. If EPA were to expand Method 533, only one test instead of the two tests would be needed, reducing the cost of testing required by UCMR 5 significantly. In fact, there are only 4 PFAS that are missing from Method 533, that require the use of Method 537.1 to cover the 29 PFAS listed for UCMR 5. Furthermore, Method 533 is more accurate and robust than Method 537.1. We recommend that EPA validate a revised Method 533 that expands the number of PFAS covered to include at minimum the 40 PFAS commonly covered by commercial laboratories in time to be used for UCMR 5. Alternatively, EPA could validate the CWA 1600 series method covering 40 PFAS for drinking water, in addition to non-potable water, in time for use in UCMR 5 as the validation process for this method is already in process.

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1 and Alternate PFAS Methods (ASTM/SM/Other Suggested Methods).

Comments Received on 29 PFAS Using EPA Methods 533 and 537.1

Comment Excerpt from Commenter 119

Thus, regarding the expansion of PFAS monitored, we recommend that in UCMR 5 EPA:
a. Expedite the validation of a revised Method 533 to include at least 40, and up to 70, PFAS compounds and use that method in lieu of the current proposal which would use existing EPA validated methods, Method 537.1 and Method 533; and/or as a next best choice,

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1.

Comment Excerpt from Commenter 119

1. Revised EPA Method 533

Several commercial laboratories in the United States use a comparable version of EPA Method 533 to target a larger number of PFAS than the 25 PFAS covered in Method 533 currently. For example, Eurofins can test for up to 70 PFAS compounds, Vista can test up to 45 PFAS compounds, and Pace Analytical laboratory can test up to 40 PFAS compounds. These companies are able to test for the compounds in both EPA Method 537.1 and EPA Method 533, therefore the use of a revised Method 533, instead of the two tests, could reduce the cost of testing proposed by UCMR 5 significantly. In fact, there are only 4 PFAS that are missing from Method 533, that require the use of Method 537.1 to cover the 29 PFAS listed for UCMR 5. We are unaware of any technical barriers to utilizing Method 533 to detect these 4 PFAS, let alone the additional PFAS commonly tested for by commercial labs with their 533 comparable methods. Furthermore, Method 533 is more accurate and robust than Method 537.1. The isotope dilution quantitation used in Method 533 reduces bias compared to the internal standard quantitation used in Method 537.1.

NRDC recommends that EPA validate a revised Method 533 that expands the number of PFAS covered to include those commonly covered by commercial laboratories – at least 40, and preferably 70 compounds - and negate the need for Method 537.1. This could be done with Method 533 as written today but validated for additional compounds. Either EPA could conduct a new third party lab validation study or it could have individual labs validate the expanded list by Method 533 themselves. Either approach generates the same data, with the latter not requiring EPA's coordination. Discussions with established labs suggest that they could complete their part of the validation effort in a 3-6 month timeframe. If EPA expedited its review of the results and the process for updating the method it could validate an expanded Method 533 by the end of 2021.

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1. EPA will continue to develop and validate methods for PFAS analyses. Such methods may be available to support a future round of UCMR monitoring.

Comment Excerpt from Commenter 120

We write on behalf of our millions of members and supporters to comment on key provisions in the Proposed Unregulated Contaminant Monitoring Rule 5 (UCMR 5), 86 Fed. Reg. 13846 (March 11, 2021). Specifically, we urge that EPA:

1. Add a requirement that public water systems test for a broader array of PFAS in addition to the 29 PFAS that are found using EPA Methods 533 and 537.1. UCMR5 presents an opportunity to better understand the extent of PFAS contamination in our public drinking water systems. The current proposal for PFAS proposes to use two EPA validated methods, Method 537.1 and Method 533, to test for a total of 29 PFAS compounds. Several commercial laboratories, however, advertise the capability to test for a larger number of PFAS compounds, from 40 to 70, using only a comparable version of Method 533. If EPA were to expand Method 533, only one test instead of the two tests would be needed, reducing the cost of testing required by UCMR5 significantly. In fact, there are only 4 PFAS that are missing from Method 533,

Comments Received on 29 PFAS Using EPA Methods 533 and 537.1

that require the use of Method 537.1 to cover the 29 PFAS listed for UCMR5. Furthermore, Method 533 is more accurate and robust than Method 537.1. We recommend EPA validate a revised Method 533 that expands the number of PFAS covered to include at minimum the 40 PFAS commonly covered by commercial laboratories in time to be used for UCMR5. Alternatively, EPA could validate the CWA 1600 series method covering 40 PFAS for drinking water, in addition to non-potable water, in time for use in UCMR5 as the validation process for this method is already in process.

Individual Response: Please see Discussion on 29 PFAS Using EPA Methods 533 and 537.1 and Alternate PFAS Methods (ASTM/SM/Other Suggested Methods).

Agency Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)

Agency Topic Discussion: EPA received many comments encouraging the Agency to validate and include a total organic fluorine (TOF) and/or total oxidizable precursors (TOP) technique in UCMR 5 as a screening tool to determine "total PFAS." EPA also received comments expressing concern for the limitations of the analytical methodologies, including a lack of sensitivity and specificity for PFAS using TOF. EPA has not identified a complete, validated, peer-reviewed aggregate PFAS method with the appropriate specificity and sensitivity to support UCMR 5 monitoring. EPA's Office of Water and Office of Research and Development are currently developing and evaluating methodologies for broader PFAS analysis in drinking water, however, the measurement approaches are subject to significant technical challenges.

EPA proposed to test for all PFAS for which the Agency has validated drinking water methods, consistent with the requirements of the NDAA. Conceptually, EPA agrees that it would be desirable to "test for a broader array of PFAS" and the Agency considered both TOF and TOP as candidate approaches for measuring "total PFAS" in UCMR 5. The purpose of UCMR is to establish the frequency and levels of occurrence of contaminants of interest in drinking water. As described in the preamble to the final rule, EPA concluded that neither TOF nor TOP would be appropriate for UCMR 5 monitoring.

The Agency is in the early stages of developing methodology for broader PFAS analysis in wastewater and drinking water, such that validated, peer-reviewed, and published methods will not be available in time to support UCMR 5. Among the Agency concerns with TOF is the lack of specificity for PFAS; other, non-PFAS compounds would also be subject to extraction and contribute to organic fluorine results, biasing any attempts to measure "total PFAS." To avoid interference by fluoride in drinking water, inorganic fluorine must be removed before the determinative step of the analysis. Results from TOF analysis do not represent a total PFAS concentration and there is no conversion to a total PFAS concentration. TOF is a laboratory method defined quantitation which can be subject to high variability across multiple laboratories, which may only be understood after conducting a multi-laboratory validation study. TOF has been used for a variety of matrices (e.g., blood, tissue, consumer products, and environmental media) and when used in conjunction with an analyte-specific PFAS method, such as LC-MS/MS, can indicate if there are organic fluorine compounds present, not detected by the analyte-specific PFAS method. However, the sensitivity of TOF is currently in the low µg/L range, as opposed to the low ng/L range (1000-fold more sensitive) of interest for PFAS analysis in drinking water.

TOP, while focusing on PFAS, is limited to measuring compounds that can be detected by LC/MS/MS and the technique requires two LC/MS/MS analyses; one before oxidation and one after oxidation. Not all precursors, however, oxidize to detectable acids, and controlling oxidation has been reported as a technical challenge for

Agency Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)

TOP analyses. EPA is evaluating the TOP approach to understand the degree to which certain precursors are oxidized, and subsequently measurable by LC/MS/MS, as well as the degree to which PFAS that were measured in the pre-oxidation sample are still measured post-oxidation. Additionally, the Agency examined the 2019 study provided by the commenter that demonstrated EPA experience with the TOP Assay (https://pubs.acs.org/doi/10.1021/acs.estlett.9b00525) and determined that the research reveals some of the inherent limitations of the methodology. Results indicate that some perfluoroalkyl mono- and poly- ethers did not oxidize in the TOP assay and that some polyfluoroalkyl ethers oxidized while others did not, or were instead oxidized to compounds not measured by LC-MS/MS. Hence, the authors directly state, "the results demonstrate an important weakness of the TOP assay; i.e., some compounds are oxidized to products that are not usually identified." The authors conclude that a suite of complementary analytical approaches, including mass spectrometry methods supplemented by TOP, extractable organic fluorine (EOF), and/or AOF, are needed to characterize the occurrence of a wider array of PFAS. However, neither TOP, TOF, or any single mass spectrometry method will alone be able to truly capture "total PFAS."

Although the TOP methodology may have a greater specificity for PFAS and more commercial availability compared to TOF, it is often used as an exploratory tool to estimate precursors and is still not widely used in the drinking water laboratory community. Commercial use of TOP methodology has been more for sites known to be contaminated with PFAS, so TOP may be a useful screening method for PFAS-contaminated sites or to assess efficacy of remediation. However, sensitivity of the methodology for "uncontaminated" drinking water is still unknown. In addition, risk assessment (e.g., translating a TOF or TOP result into a human health impact) and risk communication would be a significant challenge since health effects thresholds have been shown and continue to be anticipated to widely range across the spectrum of PFAS. In summary, there are still analytical challenges leading to uncertainties in the results using the TOF and TOP techniques in drinking water analyses.

Early EPA method-development research on AOF has encountered a significant fluorine background contamination issue in the carbon used for sample extraction that can yield a false positive measurement in the low ug/L (ppb) level. The potential for false positives when using AOF is a significant data quality concern, especially when the measurement threshold for the individual PFAS within EPA Methods 533 and 537.1 is significantly lower (low ng/L (ppt) levels). Preliminary AOF work by EPA also showed that some test PFAS compounds are very poorly retained on the sorbent, resulting in an underestimation of "total PFAS." Thus, AOF is not truly a "total" organic fluorine methodology, as it only captures what is retained on the sorbent.

EPA is also monitoring progress by commercial laboratories and academia. In 2020 and 2021, EPA contacted commercial laboratories to obtain analytical cost data from those that advertised TOF capability, including some of those listed by a commenter. These laboratories indicated that they had not yet commercialized the TOF method (see Appendix 4 for an EPA correspondence memo regarding the laboratory TOF commercialization status). Therefore, EPA could not reliably estimate the cost to measure TOF under UCMR 5. Thus, there are no good indications that laboratory capacity necessary to include TOP and TOF methodologies in UCMR 5 exists or would be available by 2023. One commercial laboratory notes that it has developed a Total Organofluorine Analysis (TOF-CIC) method for PFAS investigations (https://cdnmedia.eurofins.com/apac/media/601777/environote-1080-tof.pdf). However, EPA learned that the cited standard operating procedure (SOP) has not been commercialized for use by its laboratory in the United States.

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)

Comment Excerpt from Commenter 49

We write to urge that EPA reconsider a key provision in the Proposed Unregulated Contaminant Monitoring Rule (UCMR) 5), 86 Fed. Reg. 13846 (March 11, 2021). Specifically, we urge that in addition to requiring that public water systems test for the 29 PFAS that are found using EPA Methods 533 and 537.1, that the agency also include a requirement that public water systems covered by the rule test for a broader array of PFAS. This could be achieved by the addition of a method, such as the Total Oxidizable Precursors (TOP) Assay or a Total Organic Fluorine (TOF) assay, that provides a more comprehensive picture of the total PFAS present in a sample.

To do this, we urge that EPA expeditiously validate one or more of these methods to allow them to be widely used, including under the UCMR 5. As you know, the TOP Assay already is in widespread use by commercial laboratories in the U.S. and globally, such as by Eurofins, Ventia, Vista, ALS Global, and York (Eurofins, for example, has extensive experience working with EPA and water systems on PFAS analysis, having completed about 40 percent of all PFAS testing done under UCMR 3 using EPA Method 537.) TOF methods are now also commercially available in the U.S. and globally, although research is needed to improve its sensitivity. These methods have been used and studied by EPA scientists, and are relied upon for contamination characterization and remediation; Australian authorities require the use of the TOP Assay in their firefighting foam testing policies.

As you know Section 7311 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) (Public Law 116-92), requires that EPA must include all PFAS in UCMR 5 for which a drinking water method has been validated by EPA and that the agency doesn't regulate in drinking water. The NDAA provides that unregulated PFAS included in UCMR 5 don't count towards the SDWA limit of not more than 30 unregulated contaminants being included in the UCMR (see SDWA §1445(a)(2)(B)(i)).

It is important to include a sensitive broad-spectrum PFAS test in the UCMR because, as you are aware, there are hundreds of PFAS in use, and by the latest accounting as many as 9,000 individual known PFAS. Recently, EPA and New Jersey state scientists identified several new PFAS in groundwater that are not detected by the current EPA methods, and we expect that this will increasingly be the case in many communities across the country. Testing for only 29 PFAS will not give us a clear picture of the problem we are facing.

Unless EPA requires a broader spectrum test for PFAS, it is likely that many water systems that are contaminated with PFAS other than the 29 detected by current approved EPA Methods 533 and 537.1 will have PFAS contamination that will go undetected, and/or the scope of their contamination will remain unknown. In such cases, the water systems, state and federal authorities, and the public served by those water systems will not understand the full extent of their PFAS contamination.

In addition, EPA's validation of a total PFAS method will help water systems design more comprehensive solutions for treating drinking water or remediating contamination. Without the validated method, water systems, their consultants, and states are likely to be more hesitant to begin looking at PFAS other than the 29 covered by the current EPA methods. In some cases, water systems will likely fail to take sufficient precautionary measures to protect public health and address the contamination. Moreover, water systems and regulators also may fail to identify and remediate PFAS pollution sources. This could be expected contribute to delays and the continuing spread of contamination. This may have a direct impact on public health and may result in some water systems not investing in water treatment technologies best suited for their situation. For example, large commercial testing labs report that some water providers are using the

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)
TOP Assay and/or TOF to better understand the kinetics of how a proposed treatment technique to remediate PFAS-contaminated water will operate. Better knowledge about the total amount of PFAS in a water system allows water providers to estimate how long treatment media will last before breakthrough occurs, thereby giving water providers more accurate data for budgeting and planning. Therefore, we urge that EPA validate and include in the UCMR 5 requirements a sensitive broader spectrum PFAS method. We stand ready to work with you on this effort. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 56 We write to urge the EPA to strengthen key provisions in the Proposed Unregulated Contaminant Monitoring Rule (UCMR) 5), 86 Fed. Reg.13846 (March 11, 2021). Specifically we urge that in addition to requiring that public water systems test for the 29 PFAS that are found using EPA Methods 533 and 537.1, that the agency also require a testing which has the potential to find the presence of the 10,000+ known PFAS. One way to achieve this is by validating the Total Oxidizable Precursors (TOP) Assay or a Total Organic Fluorine (TOF) assay. Their presence isn't all that should be tested for, but also the amounts of exposure, and the EPA should attempt to find the sources of these contaminants wherever amounts are significant. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)**.**
Comment Excerpt from Commenter 58 We write on behalf of our millions of members and supporters to provide a preliminary comment on key provisions in the Proposed Unregulated Contaminant Monitoring Rule 5 (UCMR 5), 86 Fed. Reg. 13846 (March 11, 2021). Specifically, we urge that EPA: 1. Add a requirement that public water systems test for a broader array of PFAS in addition to the 29 PFAS that are found using EPA Methods 533 and 537.1. This could be achieved by the addition of a method, such as the Total Oxidizable Precursors (TOP) Assay or a Total Organic Fluorine (TOF) assay, that provides a more comprehensive picture of the total PFAS present in a sample. If the TOF method cannot be improved sufficiently to detect levels well below 1 part per billion in time for UCMR 5, we urge that EPA at least include the TOP Assay, which is in broad use by commercial labs and can detect many PFAS at low parts per trillion (ppt) levels that would not otherwise be found using EPA's current methods. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 62 The EPA should strengthen key provisions in the Proposed Unregulated Contaminant Monitoring Rule (UCMR) 5), 86 Fed. Reg. 13846 (March 11, 2021). Specifically we urge that in addition to requiring that public water systems test for the 29 PFAS that are found using EPA Methods 533 and 537.1, that the agency also require a testing which has the potential to find the presence of the 10,000+ known PFAS. One way to achieve this is by validating the Total Oxidizable Precursors (TOP) Assay or a Total Organic Fluorine (TOF) assay. Their presence isn't all that should be tested for, but also the amounts of exposure, and the EPA should attempt to find the sources of these contaminants wherever amounts are significant. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)

Comment Excerpt from Commenter 65

EPA Must Use Best Available Technology

Lastly, the EPA fails to uphold the SDWA standards of technology. The UCMR program has only verified two methods (533 and 537.1) to measure PFAS in the water. However, these methods are not the best available technology and are not successful at accurately measuring PFAS in the water.

The statute states:

"RISK ASSESSMENT, MANAGEMENT, AND COMMUNICATION.— (A) USE OF SCIENCE IN DECISIONMAKING.—In carrying out this section, and, to the degree that an Agency action is based on science, the Administrator shall use— (i) the best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices; and (ii) data collected by accepted methods or best available methods (if the reliability of the method and the nature of the decision justifies use of the data)" 42 U.S.C. 300g-1(b)(3)(A)

The PR comment from the NRDC, supported by thirty scientists, appropriately outlines the importance of using the best available technology such as Total Oxidizable Precursors (TOP) Assay or a Total Organic Fluorine (TOF) Assay. There is a statutory obligation to use the best available technology when assessing risk and management in decision making. Thus, the EPA should expediate the verification of these assays for the most comprehensive and precise reading of PFAS in water. This is especially important as dangerous contamination levels can be much lower for vulnerable populations, such as children, making accurate measurement imperative. In order to comply with the SDWA, the EPA must use the best available technology to measure and monitor the nation's drinking water. To do this, the EPA needs to validate and use methods that will give the most accurate results, namely TOP and TOF. These methods should be implemented before UCMR 5 testing begins.

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP) and 29 PFAS Using EPA Methods 533 and 537.1.

Comment Excerpt from Commenter 76

I support the UCMR revision 5 proposal (with some suggested modifications to follow) and thank the EPA for taking this step towards protecting the health of Americans. As a resident of Rockland County, NY, who was informed last November of the presence of PFOA and other PFAS chemicals in my water supply, I would like to see the US regulate all PFAS chemicals as a class, require their cleanup, and restrict non-essential uses of these "forever" chemicals which are in the bodies of 99% of Americans.

With regards to this proposed rule, the EPA should require testing for more than the 29 PFAS chemicals detectable by EPA approved tests. I understand that there is other technology such as a Total Oxidizable Precursors (TOP) Assay or a Total Organic Fluorine (TOF) Assay which would provide information about a broader number of PFAS in the environment. Limiting testing to only 29 of the thousands of PFAS chemicals may not present an accurate picture of contamination trends. Our local private water company recently remarked that it will follow the guidelines of UCMR 5 when it comes out, but declined to test for more chemicals now than is currently required, so it seems clear we cannot rely on the water companies to do proactive testing.

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP) and Regulatory Development.

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)

Comment Excerpt from Commenter 79

In the interest of human health and safety and environmental protection, I would greatly appreciate it if the UCMR 5 proposed revision would consider requiring a total PFAS test or total fluorine analysis. I appreciate the steps being taken but I am not comforted knowing there are around 10,000 PFAS molecules in our environment and we are spending all this time and effort focusing on these chemicals one at a time. We look to the EPA to protect us and I would also like to see health protective detection levels for PFAS with our vulnerable populations in mind. We need your help protecting our babies and the future generations from PFAS exposure. Thank you.

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP), New PFAS Methods, and EO 13045: Protection of Children from Environmental Health Risks and Safety Risk.

Comment Excerpt from Commenter 89

II. On the significance and validity of data collected.

Given the likelihood that the PFAS included in the proposed UCMR5 will be found at PWSs across the country and that other PFAS not included in UCMR5 are also present, states recommend that EPA develop a plan to figure out to what extent PFAS are present and where they are coming from. The lack of information for many of these PFAS makes it challenging to understand the significance of PFAS detections through UCMR5. However, given the thousands of PFAS, addressing each individually in a timely manner is not feasible and could potentially delay health-protective drinking water standards. ECOS recognizes the complexities with regulating PFAS as a class. But EPA has implemented group rulemaking in the past (i.e., for polychlorinated biphenyls [PCBs]) and some states would like for EPA to similarly establish rulemaking for some group of PFAS under SDWA, as well as under statutes like the Toxic Substances Control Act (TSCA) and/or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) so the financial burden of PFAS pollution does not rest with drinking water utilities, and ultimately ratepayers.

ECOS has heard several stakeholders discuss the inclusion of qualitative methods like the Total Oxidizable Precursors (TOP) or Total Organic Fluorine (TOF) assays in PWS monitoring to provide information on the total PFAS present in a sample. ECOS generally encourages obtaining as much information as possible. However, some states have expressed concern regarding the quality and reproducibility of data acquired from using non-EPA validated methods. A couple of considerations for possible inclusion:

1. A few states mentioned that it would be beneficial to obtain data on what percentage of PFAS present in their PWSs is being captured by EPA Methods 533 and 537.1. This information could be gathered by adding TOF to the UCMR5 analyte list and would be helpful for targeting additional investigation and making regulatory decisions.
2. TOP and/or TOF could be included in the UCMR5's Screening Survey tier (Tier/List 2) or in the Pre-Screen Testing tier (Tier/List 3). Page 13851 of the Federal Register notice of the proposed UCMR5 indicates that a smaller number of PWSs are required to monitor for Tier 2 (e.g., pertains to monitoring for less established analytical techniques where laboratory capacity and/or cost may be a concern) or Tier 3 (e.g., can be customized to meet specific monitoring objectives for a specific group of PWSs) contaminants. If appropriate and feasible, including TOP and/or TOF in one of these tiers might provide useful information on the occurrence of PFAS as a class in public water systems.
3. If EPA were to standardize analytical methods and procedures to allow for interlaboratory comparisons of results, then these methods would be more viable for use for testing for PFAS and/or PFAS precursors. Until then, states would encourage the use of an assay such as TOP and/or TOF only to complement the targeted methods.

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP), Regulatory Development, and PFAS Contaminants – Miscellaneous Comments.

Comment Excerpt from Commenter 99

We have joined comments with NRDC et al urging EPA to reconsider the potential to use a broader-spectrum laboratory method like the Total Oxidizable Precursors (TOP) Assay in the upcoming round of UCMR monitoring. With PFAS chemicals other than the 29 in the current proposal being found around the country and with many thousands of these chemicals in use in the United States, we are missing the opportunity to get a more comprehensive assessment of the scope of PFAS occurrence in drinking water. We ask EPA to revisit this question before finalization because we could find ourselves behind the curve of concern in four years when UCMR 5 monitoring is finished.

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Comment Excerpt from Commenter 101

- Support the proposal not requiring testing for total organic fluorine.

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Comment Excerpt from Commenter 102

The American Chemistry Council (ACC) appreciates the opportunity to comment on the proposal to collect national occurrence data for 29 per and polyfluoroalkyl substances (PFAS) as part of the fifth Unregulated Contaminant Monitoring Rule (UCMR 5). As indicated in the notice, the proposal implements a requirement of the National Defense Authorization Act for Fiscal Year 2020 [FN1: Public Law 116-92] to include all PFAS in UCMR 5 for which a drinking water method has been validated by the Agency.

The use of validated test methods is critically important to the integrity of the UCMR program. Consequently, the Agency's decision not to include the total organic fluorine (TOF) measurement in the analysis for UCMR 5 is consistent with maintaining the integrity of the program and with Congress' clear direction. In addition to the absence of a robust analytical method, the Agency's proposal notes several significant technical challenges that make TOF measurement the wrong tool for the purposes of the national survey on PFAS occurrence. Notably, TOF and similar non-targeted methods for drinking water are not sufficiently sensitive or specific enough to support decision making. The TOF method, for example, will capture unrelated fluorinated compounds (e.g., pesticides, pharmaceuticals) in the organic fluorine measurement. In contrast, use of validated methods to monitor the 29 PFAS under UCMR5 will allow the Agency to collect information on the concentration(s) of specific PFAS of interest, fostering more sound science and risk-based decisions.

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP) and 29 PFAS Using EPA Methods 533 and 537.1.

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)

Comment Excerpt from Commenter 103

Analytical Methods Measuring Total Fluorine (TF) and Total Organic Fluorine (TOF) should not be included UCMR 5, either in assessment monitoring or any other tier of UCMR monitoring. Methods for TF and TOF are non-specific analytical methods in which there is growing interest. As TF and TOF are partially reflective of fluorine in environmental samples for PFAS there is hope that such methods can serve as surrogate indicators of PFAS compounds, particularly in contaminated site remediation where there is gross contamination.

AWWA shares many of the technical concerns EPA articulates in its UCMR 5 proposal with respect to TOF. At present there are not validated, standard analytical methods appropriate for regulatory purposes for either TF or TOF. The TOF and TF analytical methods currently in use for research and for an ad hoc basis must be used with considerable care:

1. The detection limit (i.e., sensitivity) for the TOF analytical method varies by the laboratory. Detection typically ranges from as low as 500 ng/L to more than 2,000 ng/L. While this level of sensitivity may be suitable for PFAS levels typically observed in contaminated sites or industrial discharges, it is substantially higher than combined PFAS levels observed in drinking water [FN16: Monitoring required by the state of California for 18 PFAS compounds found total PFAS levels at drinking water facilities did not exceed 2,000 ng/L and less than 4% of these systems found more than 500 ng/L.][FN17: A monitoring program conducted by the state of Colorado for 18 PFAS compounds found total PFAS level did not exceed 2,000 ng/L at any drinking water facilities and less than 2% of these systems detected more than 500 ng/L.]. Moreover, it is substantially higher than the levels of PFAS currently being considered for drinking water standards by EPA and state primacy agencies.
2. The observation of fluorine associated with organics does not indicate that PFAS is present absent other information, hence the method's application in remediation settings. Organic fluorine compounds are infrequent in nature but are very frequent in major industrial chemical categories (e.g., pesticides, pharmaceuticals) making TOF an imperfect surrogate PFAS, particularly at low concentrations.
3. The lack of laboratory capacity EPA points out in the notice reflects both the limited established applications for the method and the lack of a standardized and validated method. While EPA is developing a standard method, there is inadequate time for technical comments on that draft method, validation, adoption by environmental laboratories, and subsequent demonstration of laboratory performance prior to the start of UCMR 5.

Given the state of current TOF method development, inclusion of the method in UCMR 5 would not provide data to (1) better understand the occurrence of PFAS in drinking water, (2) provide information EPA could link to available health effects assessment, or (3) facilitate the use of TOF as a tool for drinking water treatment evaluation.

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Comment Excerpt from Commenter 103

5. EPA's proposal appropriately includes 29 PFAS based on the NDAA 2020 requirements. AWWA offers the following recommendations for PFAS monitoring under UCMR 5:
a. AWWA concurs with EPA, that the only PFAS methods appropriately validated to include in UCMR 5 for PFAS are EPA Methods 537.1 and 533. The inclusion of methods, such as Total Fluorine and Total

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)
Organofluorine are not appropriate for inclusion as part of UCMR 5. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP) and 29 PFAS Using EPA Methods 533 and 537.1.
Comment Excerpt from Commenter 104 • PA DEP agrees with EPA's decision not to require monitoring for total organic fluorine (TOF) at this time, given the analytical limitations and the fact that currently available methods are not specific to PFAS; therefore, results obtained would not be useful to support decision making. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 108 C. The Coalition Supports EPA's Proposal Not to Use Non-Approved, Non-Validated Analytical Techniques. EPA's UCMR5 proposal does not recommend the use of the "total organic fluorine" analytical technique to measure PFAS because of the "significant technical challenges" associated with using that technique, and the Coalition supports EPA's rationale and conclusion. As the UCMR5 proposal explains, this analytical technique attempts to correlate measures of total organic fluorine with PFAS, in the aggregate. However, this technique is not an acceptable analytical technique for several reasons. First, EPA has not yet developed a validated, approved test method for total organic fluorine. The use of a validated, approved method is critical to ensuring that these monitoring efforts result in reliable data. Additionally, the total organic fluorine method is not specific to PFAS and analytical results will include any fluorine-containing compound. Accordingly, this under-developed test method cannot produce sufficiently-specific, reliable, and accurate data and should not be used. Further, the test method is not widely available. Laboratories do not have sufficient proficiency in using this test method, and, in turn, PWS would be unable to obtain uniform and validated test results using total organic fluorine methods. Because of the limits of the total organic fluorine testing, it is not a viable or appropriate test method for the UCMR5 proposal. Overall, the Coalition opposes the use of any non-validated, non-approved test method for purposes of the UCMR5 rulemaking or future PFAS rulemakings. Because analytical techniques using total organic fluorine and other total organic precursors are already being used (although not widely), the Coalition does not oppose EPA's consideration and development of these analytical techniques. Even if a validated method for such analytical techniques is developed, the Coalition does not recommend using total organic fluorine and total organic precursor analytical methods to inform standards setting because they cannot provide sufficiently-specific information on individual PFAS compounds. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)

Comment Excerpt from Commenter 110

Total Organic Fluorine (TOF)

Include in UCMR5. We believe that it is important that EPA monitor for total organic fluorine in drinking water supplies. These compounds are known to be persistent, bio accumulative and potentially toxic to people and animals. Regardless of the list of PFAS UCMR 5 chemicals, it is likely that an unpredictable and potentially large number of additional organofluorine compounds may be missed. Where TOF can be measured, in addition to monitoring for specific PFAS compounds, it will give the Agency an idea relative to the level of unmonitored PFAS contaminants that may require future or current action, depending upon the level of contamination. This type of monitoring will add a needed option to monitor gross presence or potentially eliminate concerns and is therefore dependent upon sensitivity. It is critical for the safety of our citizens that EPA accurately assess the threat posed by organofluorine compounds in the drinking water supply system and what technology will help them monitor or identify areas of concern. At this time, TOF capacity is relatively low, but we are certain that the laboratory community will invest to meet the demand that may result from the UCMR 5 program.

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Comment Excerpt from Commenter 111

3. Several Analytical Methods that Measure Total PFAS Are Available and Can Be Used Together with Targeted Methods.

Available analytical techniques provide a more comprehensive assessment of PFAS contamination—including total PFAS. These methods, such as the Total Oxidized Precursor (TOP) Assay, are currently in use commercially throughout the US and in Canada and have been used to identify many PFAS [FN72: U.S. Envtl. Prot. Agency, EPA Researchers Use Innovative Approach to Find PFAS in the Environment (Aug. 13, 2018), https://www.epa.gov/sciencematters/epa-researchers-use-innovative-approach-find-pfas-environment. The TOP Assay converts PFAA precursor compounds to PFAAs through an oxidative digestion process.]. Some states have approved the use of analytical methods that measure total PFAS for various media [FN73: For a review of the status of analytical methods that measure total PFAS, see U.S. Envtl. Prot. Agency, Research on Per and Polyfluoroalkyl Substances (PFAS) (last updated Apr. 20, 2021), https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas#2 and see also U.S. Envtl. Prot. Agency, PFAS Analytical Methods Development and Sampling Research, https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research.]. The European Union is likely to soon require use of a testing method for total PFAS [FN74: The EU is likely to adopt a limit for "total PFAS" and may use the extractable or adsorbable organofluorine methods to determine compliance with that limit. Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Miller M, Ng CA, Scheringer M, Vierke L, Wang Z. Strategies for grouping per and polyfluoroalkyl substances (PFAS) to protect human and environmental health. Environ. Sci.: Processes Impacts, 2020 Jun 4;22:1440– 1460, 1452. https://doi.org/10.1039/D0EM00147C].

As an example of what can be done to advance understanding of PFAS in drinking water, we recommend EPA look to the type of occurrence data survey recently conducted in Pennsylvania. In March 2021, the United States Geological Survey (USGS), in cooperation with the Pennsylvania Department of Environmental Protection, released a first-of-its-kind study of Pennsylvania surface waters [FN75: News Release, USGS Releases First-of-its-Kind Survey of PFAS in Pennsylvania Surface
Waters (Mar. 18, 2021), https://www.usgs.gov/center-news/usgs-releases-first-its-kind-survey-pfas-pennsylvania-surface-waters?qt-news_science_products=2#qtnews_

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science_products]. They collected 216 samples from rivers and streams in this study intended to understand the occurrence, distribution, and concentrations of PFAS across Pennsylvania. The USGS utilized a traditional targeted analytical method and a method that measures total PFAS, the TOP Assay. [FN76: Id. The USGS total PFAS sum values are mathematical sums, rather than an analysis of
all fluorinated organic compounds (TOF) analysis. The USGS laboratory provided a large
number of PFAS compounds results: up to 40 specific compounds.] The results provide data for 33 individual PFAS compounds, 19 PFAS precursors as well as various sums of total PFAS compounds. The sampling results showed a significant difference between the summed PFOA/PFOS results when compared to the broader total PFAS results. Each time, the total PFAS concentrations were greater than the summed concentrations of only PFOA and PFOS. For example, Valley Forge's Valley Creek in Pennsylvania had a PFOA/PFOS total sum of 25.2 ng/l but a total PFAS sum of 103.3 ng/l [FN77: The USGS used the TOP Assay method together with a targeted method for the total PFAS
sums. Duris JW, Eicholtz LW, Williams A, and Shull D. 2021, Per- and Polyfluorinated Alkyl
Substances (PFAS) and associated ancillary data from the Commonwealth of Pennsylvania,
USA, 2019: U.S. Geological Survey data release, https://doi.org/10.5066/P9L4AHN2
(providing the referenced results in the attached file "dataset.1_PA_PFAS_
stream_lake_discrete_201909_wide_simple.csv")]. This USGS occurrence study demonstrates that not only are the broad-based methods for total PFAS available but that the results could provide critical information.

Despite the availability of analytical methods that measure total PFAS, the presence and extent of PFAS contamination in drinking water is still poorly understood because we only sample for a small number of PFAS. We urge EPA to use these available analytical methods to rectify this knowledge gap in PFAS occurrence data and provide significantly more insights on PFAS contamination.

4. EPA is Currently Working to Validate an Analytical Method for Total PFAS and Promised to Do So in 2021.
Consistent with availability of analytical methods just described, EPA is working on a method that the States urge the agency to adopt as an analytical method for measuring total PFAS for use in the largest monitoring tier in the UCMR 5. On its website, EPA states that it is developing two "total" methods aimed at quantifying large groups of PFAS in environmental samples, advertising these methods as "coming soon" [FN78: See U.S. Envtl. Prot. Agency, PFAS Analytical Methods Development and Sampling Research,
https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research]. EPA identified one such method as Total Organic Fluorine (TOF), which will be available soon. EPA states:

EPA is developing a potential rapid screening tool to identify total PFAS presence and absence. This eventual standard operating procedure will be used to quantify TOF. Note: EPA is working to develop this method in 2021 [FN79: Id.].

Similarly, EPA describes the TOP Assay method as follows:
EPA is considering the development of a method, based on existing protocols, to identify PFAS precursors that may transform to more persistent PFAS. Note: TOP methods are commercially available. EPA will consider the need for a thorough multi-laboratory validation study in 2021 [FN80: Id.].

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Given that EPA plans to validate these methods before the UCMR 5 sampling begins, we urge EPA to require monitoring for total PFAS in the UCMR 5 as explained in Section A of these comments. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP) and New PFAS Methods.
Comment Excerpt from Commenter 113 EPA should test for all PFAS. UCMR5 will require that public water systems test for the 29 PFAS that are found using EPA Methods 533 and 537.1. However, PEER believes that EPA must test for a much broader array of PFAS, and tests do exist for this type of testing. For example, this could be done using the Total Organic Fluorine (TOF) assay, which is indicative, but not determinative of PFAS. EPA dismisses this possibility by saying: There are a number of analytical techniques that have been applied to measuring organic fluorine in environmental matrices and drinking water, and some have proposed trying to correlate PFAS, in aggregate, with measurements of total organic fluorine. TOF, by combustion ion chromatography, relies on extracting fluorine-containing compounds from water, defluorinating, and capturing the resulting hydrogen flouride gas in solution for analysis. While there is high interest in TOF (and other techniques that might capture a broader suite of PFAS), the measurement approach is subject to significant technical challenges, and a robust method that would support national monitoring is unlikely to be ready in time to support UCMR 5 rulemaking. Further, TOF methods for drinking water may not be sensitive or specific enough to support decision making; TOF is not specific to PFAS, and any fluorine-containing compounds (e.g., pesticides, pharmaceuticals) that are retained during extraction would be included in the organic fluorine measurement. EPA cannot reliably estimate the cost to measure TOF under UCMR because TOF methods have little commercial laboratory availability at this time [FN3: 86 FR at 13870]. PEER disagrees with EPA's contention that this type of method is "unlikely to be ready in time to support UCMR 5 rulemaking." There are a number of private laboratories, including Eurofins Lancaster, that can currently provide this testing. In addition, given the dangers of PFAS, the sheer number of chemicals in the class, and our lack of the extent of contamination, PEER believes that a test that is slightly over- inclusive is more appropriate than a test that will only measure the amount of 0.3% of the PFAS we know exist. [FN4: EPA plans to measure 29 of the 9,252 PFAS, which is 0.3% of them.] **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 114 Additionally, ASDWA recommends that EPA use this opportunity to obtain additional information on total organic fluorine (TOF). The advantage of using TOF is to do an initial screening of all fluorinated compounds that may be present in the water and ensure that potentially significant contaminants are not being missed. The UCMR presents an opportunity to collect a diverse sample set that could aid in the method development and validation for TOF. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)
Comment Excerpt from Commenter 116 Little Hocking also supports the addition of total PFAS methods, such as the Total Oxidizable Precursors (TOP) Assay or a Total Organic Fluorine (TOF) assay. If one or both methods can be timely validated, they will give the public a better understanding of the scope of PFAS contamination. As NRDC and others point out, "EPA should strive to improve the detection limit of TOF and immediately revise the method when possible so that we can more accurately characterize PFAS contamination of drinking water." **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 117 Total Organic Fluorine ACIL Believes that it is important that EPA monitor for total organic fluorine in drinking water supplies. Man-made organofluorine compounds are known to be persistent, bio accumulative and potentially toxic to people. Even if the Agency takes our advice and expands the list of PFAS chemicals to be monitored for in UCMR 5, it is likely that the presence of hundreds and possibly thousands of additional organofluorine compounds may be missed. It is critically important for the safety of our citizens that EPA accurately assess the threat posed by organofluorine compounds in the drinking water supply system. Determining the level of Total Organic Fluorine, in addition to monitoring for specific PFAS compounds, will give the Agency a much better grasp as to the level of unmonitored for PFAS contaminants as other man-made organofluorine environmental contaminants such as pesticides and pharmaceuticals. How large an unrecognized problem the nation is facing through contamination of drinking water by such chemicals is critically important for the Agency to determine. Adding TOF analysis to UCMR 5 would be an important step in this direction. While current laboratory capacity for TOF is relatively low, ACIL is confident that the industry can and would quickly expand its TOF capacity to meet any increase in demand that might result from the UCMR 5 program. In addition, while the current sample costs for such analyses are in the $200 – 300 range, this should change as additional capacity is brought on to meet the demand and more samples are analyzed. The current price is estimated and is based upon both limited demand and limited capacity. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 118 Given the variety among PFAS substances, any evaluation of their occurrence (or potential health or environmental effects, in future analyses) will vary depending on the specific PFAS under consideration. Perhaps for this reason, EPA has appropriately recognized that total organic fluorine "may not be sensitive or specific enough to support decision making. . . ." 86 Fed. Reg. at 13855. As EPA has noted, total organic fluorine is broader even than PFAS and could capture other fluorine-containing compounds. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)
Comment Excerpt from Commenter 119 Total PFAS methods, such as the Total Oxidizable Precursors (TOP) assay or a Total Organic Fluorine (TOF) assay, are also needed to give us a better understanding of the totality of PFAS contamination. We urge EPA to validate both of these methods as quickly as possible, ideally in time for at least one to be added to UCMR 5. The current detection limit for TOF is likely too high to be useful for drinking water, but research is underway to improve the detection limit. EPA should strive to improve the detection limit of TOF and immediately revise the method when possible so that we can more accurately characterize PFAS contamination of drinking water. And unless and until a much more sensitive TOF method is validated, the agency should take the necessary steps to immediately validate the TOP assay in time to allow its use in UCMR 5. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 119 [Thus, regarding the expansion of PFAS monitored, we recommend that in UCMR 5 EPA:] c. Complete validation of TOF and TOP assays, tools that are urgently needed to better characterize PFAS contamination of drinking water, ideally in time to be included for UCMR 5. EPA should improve detection limits for TOF and immediately revise the method when possible so that we can more accurately characterize PFAS contamination of drinking water. And unless and until a more sensitive TOF method is validated, EPA should take the necessary steps to immediately validate the TOP Assay and integrate it into UCMR 5. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 119 Furthermore, because there are over 9,000 known PFAS compounds, there are additional tests available that could be used to estimate total PFAS using alternative methods. These tests include Total Organofluorine (TOF) and Total Oxidizable Precursor (TOP). NRDC recommends that EPA require the use of a method, or set of methods, that can quantify the greatest number of PFAS compounds and be validated in time for promulgation in the UCMR 5. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 119 3. Total PFAS Total PFAS methods, such as the Total Oxidizable Precursors (TOP) assay or a Total Organic Fluorine (TOF), are needed to give us a better understanding of the totality of PFAS contamination. We urge EPA to validate both methods as quickly as possible, ideally in time for at least one to be added to UCMR 5. According to the website on the status of EPA research and development on PFAS, EPA is currently expecting to complete the evaluation and validation of a TOF method in 2021. ASTM has already drafted a method for TOF in waters - referred to as AOF (Adsorbable Organic Fluorine) - which could provide the basis for EPA to conduct a multi-laboratory validation effort. ASTM has not given this method a number yet but currently references Work Item: WK 68866. TOF methods are now commercially available in the U.S. and globally. The current detection limit for TOF is likely too high to be useful for drinking water, but research is underway to improve the detection limit. NRDC

Comments Received on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)
encourages EPA to follow through in completing the validation of TOF by the end of the year as this tool is urgently needed in many contexts, especially for site characterization. EPA should strive to improve the detection limit of TOF and immediately revise the method when possible so that we can more accurately characterize PFAS contamination of drinking water. Unless and until a much more sensitive TOF method is validated, the agency should take the necessary steps to immediately validate the TOP assay in time to allow its use in UCMR 5. The Total Oxidizable Precursor (TOP) assay, which is in broad use by commercial laboratories, can detect the presence many PFAS (PFAA precursors) at low parts per trillion (ppt) levels that would not otherwise be found using EPA's current validated methods. The TOP assay is in broad use and would not require lengthy development. For example, the TOP Assay already is in widespread use by commercial laboratories in the U.S. and globally, such as by Eurofins, Ventia, Vista, ALS Global, and York (Eurofins, for example, has extensive experience working with EPA and water systems on PFAS analysis, having completed about 40 percent of all PFAS testing done under UCMR 3 using EPA Method 537.) Further, concerns around variability due to incomplete oxidation should not be an issue with drinking water, which does not vary as widely in levels of organic material as other media. EPA states that it is still considering "the need for a thorough multi-laboratory validation study in 2021." We urge EPA to move quickly to validate this method so that this valuable tool can be utilized more broadly. These methods have been used and studied by EPA scientists, and are relied upon for contamination characterization and remediation; Australian authorities require the use of the TOP assay in their firefighting foam testing policies. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP). The research the commenter references authored by EPA scientists reveals some of the inherent limitations of the TOP assay. Researchers found that tested perfluoroalkyl mono- and poly- ethers did not oxidize in the TOP assay and that some polyfluoroalkyl ethers oxidized and others did not or were oxidized to compounds not measured by LC-MS/MS. The authors concluded that a suite of complementary analytical approaches that include TOP, EOF, or AOF, and mass spectrometry methods is needed to better characterize the occurrence of PFAS.
Comment Excerpt from Commenter 120 Total PFAS methods, such as the Total Oxidizable Precursors (TOP) assay or a Total Organic Fluorine (TOF) assay, are also needed to give us a better understanding of the totality of PFAS contamination. We urge EPA to validate both methods as quickly as possible, ideally in time for at least one to be added to UCMR5. The current detection limit for TOF is likely too high to be useful for drinking water, but research is underway to improve the detection limit. EPA should strive to improve the detection limit of TOF and immediately revise the method when possible so that we can more accurately characterize PFAS contamination of drinking water. And unless and until a much more sensitive TOF method is validated, the agency should take the necessary steps to immediately validate the TOP Assay in time to allow its use in UCMR 5. **Individual Response:** Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

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Comment Excerpt from Commenter 122

Inclusion of methods for estimating total PFAS and/or total PFAS precursors in UCMR 5
PFAS are members of a large chemical class that includes thousands of compounds, and it is anticipated that numerous PFAS in addition to the 29 listed in the proposed UCMR 5 are present in drinking water in the U.S. Based on the general characteristics of PFAS, it is likely that many of these additional PFAS are of public health concern due to their toxicity, bioaccumulation, and environmental persistence. For these reasons, it would be valuable for EPA to begin to collect information on the extent of PFAS contamination in drinking water that is not captured by the analytical methods that are currently validated by EPA.

The proposed UCMR 5 discusses the Total Organic Fluorine (TOF) method and other methods for estimating the total concentration of a broader suite of PFAS and invites public comment on this topic. NJDEP recommends that EPA take first steps to gather information on the occurrence of a broader suite of PFAS in drinking water by including pilot monitoring with methods such as Total Organic Fluorine (TOF) which provides an estimate of total PFAS or Total Oxidizable Precursor (TOP), which provides an estimate of total PFAS precursors, in UCMR 5. While the current availability of these methods is not sufficient for monitoring by all of the PWS that will participate in UCMR 5, they could be included as List 2 or List 3 methods, as permitted in UCMR 5. They are appropriate for inclusion on these Lists, since Screening Survey tier methods ("List 2") are stated by EPA to "generally pertains to monitoring with less established analytical techniques, such that laboratory capacity and/or cost may be a concern," and Pre-Screen Testing tier methods ("List 3") are stated by EPA to be methods which "can be customized to meet the specific monitoring objectives for a specific group of PWSs" including in "vulnerable areas." Data from these methods from a subset of PWS would provide useful estimates of how much PFAS in addition to the 29 PFAS included in the validated methods are present in drinking water.

Individual Response: Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Agency Discussion on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)

Agency Topic Discussion: EPA received multiple comments on alternate methods for PFAS analysis other than those proposed for UCMR 5. The Agency may use non-EPA drinking water analytical methods (e.g., consensus methods) for UCMR contaminants, but the consensus method must contain an equivalent level of validation and quality assurance/quality control (QA/QC) requirements as an EPA method. EPA generally relies on methods that have been fully validated by the Agency or others (e.g., voluntary consensus standards organizations), to ensure reliable, accurate, and precise results. EPA Methods 533 and 537.1 are currently the only methods that have been validated, peer-reviewed, and published by EPA to support monitoring for PFAS in drinking water. Together, these two methods can analyze for the 29 specific PFAS contaminants listed in UCMR 5. While other methods, such as EPA OW-Department of Defense Clean Water Act (CWA) Draft Method 1633, for the analysis of additional PFAS are available, it is a single-laboratory validated method to test for PFAS compounds in *non-potable* water (i.e., wastewater, surface water, ground water, and leachate). Similar to other CWA methods, it has different, less stringent quality control (QC) requirements than for drinking water analysis and cannot be used to support monitoring under UCMR 5. EPA's Office of Water and Office of Research and Development (ORD) continue to investigate techniques to expand the number of PFAS that can be monitored in drinking water.

Comments Received on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)

Comment Excerpt from Commenter 110

Polyfluorinated Compounds

Expand the list. The 29 polyfluorinated organic substances (PFAS) compounds that are proposed for analysis in drinking water comprise only a tiny subset (<1%) of the known PFAS chemicals that have been used in commerce. Limiting the monitoring to only 29 compounds is not sufficient to give a good representation of environmental contamination and risk of adverse health effects to the public. The current knowledge of PFAS compounds represents the likelihood that the vast majority will present similar environmental and public health hazards as the 29 compounds listing in the proposed UCMR 5 study.

While it is understandable that the basis for looking at a specific/targeted group chemicals is due to a lack of adequate analytical methodology to easily add or analyze for additional polyfluorinated organic chemicals. Pace has been involved with several development efforts and believes that the additional needed methodology is currently undergoing validation in a joint effort of the Department of Defense (DOD) and EPA. This methodology under development will not cover all PFAS compounds of concern, but is quite expanded compared to the proposed 29 compounds. We are confident in the advantages of expanding the target list for PFAS.

Individual Response: Please see Discussion on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods) and New PFAS Methods.

Comment Excerpt from Commenter 117

The American Council of Independent Laboratories (ACIL), the trade association for the nation's independent environmental laboratory industry, strongly supports the proposed Environmental Protection Agency (EPA) proposed Safe Drinking Water Act rule that would require public water systems to collect occurrence data on a number of chemicals of potential health concern. Our concerns are that the proposed rule is too limited as to the compounds that are targeted for monitoring. Some of our specific concerns and suggestions are described below.

Polyfluorinated Compounds

The 29 polyfluorinated organic substances (PFAS) compounds that are proposed to be analyzed for in drinking water comprise only a tiny subset (<1%) of the known PFAS chemicals in commerce. Given their properties it is likely that the vast majority will present similar environmental and public health hazards as the 29 compounds listing in the proposed UCMR 5 study. Limiting the monitoring to only these 29 compounds will, therefore, give a false measure of environmental contamination and risk of adverse health effects to the public.

ACIL understands that the basis for looking at such a small subset of chemicals is a lack of appropriate analytical methodology for analyzing for additional polyfluorinated organic chemicals. ACIL believes that such methodology has been developed and is undergoing validation in a joint effort of the Department of Defense (DOD) and EPA. While ACIL understands that the methodology under development would not cover all PFAS compounds of concern, its expanded list would be a major improvement to only analyzing for the proposed 29 compounds.

ACIL and its member laboratories stand ready to work with and assist EPA in completing the development and validation of the DOD/EPA PFAS method in order that the Agency will have confidence in the results when applying the methodology to the analysis of drinking water.

Comments Received on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)

Individual Response: Please see Discussion on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods).

Comment Excerpt from Commenter 119

[Thus, regarding the expansion of PFAS monitored, we recommend that in UCMR 5 EPA:]
b. Complete validation of the CWA 1600 series method for 40 PFAS compounds (including its use for drinking water, not just non-potable water) and use in lieu of the current proposal of existing EPA validated methods, Method 537.1 and Method 533; and also,

Individual Response: Please see Discussion on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods) and 29 PFAS Using EPA Methods 533 and 537.1.

Comment Excerpt from Commenter 119

II. DETAILED COMMENTS REGARDING PFAS TESTING UNDER UCMR 5
A. Add a requirement that public water systems test for a broader array of PFAS in addition to the 29 PFAS that are found using EPA Methods 533 and 537.1.
UCMR 5 presents an opportunity to test for an expanded list of PFAS compounds to better understand the extent of PFAS contamination in our public drinking water systems. The current proposal for PFAS proposes to use two EPA validated methods, Method 537.1 and Method 533, to test for a total of 29 PFAS compounds. Several commercial laboratories, however, advertise the capability to test for a larger number of PFAS compounds using a comparable version of Method 533 and EPA is in the process of validating another PFAS method, CWA 1600 series method.

Individual Response: Please see Discussion on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods) and 29 PFAS Using EPA Methods 533 and 537.1.

Comment Excerpt from Commenter 119

2. CWA 1600 Series Method
EPA is developing a CWA 1600 series method in collaboration with the U.S. Department of Defense to test for 40 PFAS compounds in wastewater as well as surface water, groundwater, leachate, soil, sediment, biosolids, and fish tissue. Following single-laboratory validation, which demonstrates proof of concept, a multi-laboratory validation will be conducted to further determine method viability. EPA anticipates that multi-laboratory validation for this method will be finalized in 2021. While this method is not specific for drinking water, there is no reason that a method developed for non- potable water couldn't also be validated for drinking water. Therefore, EPA could also choose to validate the CWA 1600 series method in time for use in UCMR 5 (assuming MRLs are at least as low as achieved by EPA Method 533.) This approach would also provide the added advantage of only requiring one method to fulfill the proposed UMCR5 testing requirements, instead of two.

Individual Response: Please see Discussion on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods) and 29 PFAS Using EPA Methods 533 and 537.1.

Agency Discussion on New PFAS Methods

Agency Topic Discussion: EPA received many comments requesting development of methods for analysis of additional PFAS (i.e., more than the 29 included in UCMR 5) in drinking water, including a single method to test for the presence of a common molecule or trait of PFAS (i.e., total or "aggregate" PFAS). Please see Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP) and Alternate PFAS Methods (ASTM/SM/Other Suggested Methods) for discussion of other methods suggested for PFAS characterization. There is currently no single method for determining "total PFAS." PFAS are a diverse group

Agency Discussion on New PFAS Methods

of compounds with properties different enough to make it impractical for a single method to determine all PFAS. EPA is investigating the development and use of broader measurement techniques to capture a wider array of PFAS in future UCMR monitoring.

Comments Received on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)

Comment Excerpt from Commenter 51

In order to increase the number of substances under the SDWA, the EPA could refer to PFAS generally instead of 29 specific PFAS contaminants and include lithium along with 28 other dangerous contaminants. There are nearly 10,000 harmful PFAS in the environment according to some research, and the EPA should enlist scientists to create one test for the presence of a common molecule or trait of PFAS.

Individual Response: Please see Discussion on New PFAS Methods.

Comment Excerpt from Commenter 78

I'm writing to support UCMR 5.

I live in Rockland County, where PFAS contamination has been detected and our water must be treated. PFAS is clearly a public health crisis. We must learn the full extent of the crisis in order to manage it.

I am also asking EPA extend the testing requirement to ALL PFAS chemicals, as new tests will hopefully be developed. And to extend it to smaller systems and to set stricter reporting standards, to require that all PFAS detections be publicly posted, so that the public knows what's in their water.

Individual Response: Please see Discussion on New PFAS Methods, Sampling Design, PFAS Contaminants – Miscellaneous Comments, and Data Accessibility, CCR, and Public Notification.

Comment Excerpt from Commenter 84

Recognizing that development of valid test methods requires years due to multiple research steps including manufacture of authentic reference standards and blind studies with commercial laboratories, Chemours recommends USEPA prioritize development of validated analytical methods for additional PFAS in drinking water well in advance of the next UCMR. Further understanding of these compounds in the environment is critical to their responsible use, particularly those that are necessary building blocks in manufacturing products critical to modern society, including national strategic priorities such as semiconductors, high capacity batteries, the hydrogen economy, decarbonization, and 5G equipment.

There are 29 PFAS for analysis under UCMR-5 using validated methods (Methods 533 and 537.1). We note that under the NDAA for fiscal year 2020, EPA has identified 175 PFAS for reporting under the Toxics Release Inventory (TRI) and will continue to add additional PFAS compounds to the TRI. Additionally, the 2018 TSCA Inventory Reset Rule identified additional PFAS compounds currently active in commerce. EPA should focus resources on developing validated analytical methods for detection of these compounds in drinking water for future monitoring efforts. Chemours fully appreciates the challenges in developing reliable analytical methods and the importance of authentic reference standards for method development and validation. Chemours has synthesized and shared with EPA analytical reference standards for substances related to our process chemistry and suggests that industry can play a collaborative role in development of validated methods for relevant PFAS compounds.

As EPA prioritizes future analytical method development, we encourage EPA to consider that all PFAS are not the same. Individual chemistries have their own unique properties and uses, as well as environmental and

Comments Received on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)
health profiles. These properties should be taken into consideration when prioritizing future analytical methods. Specifically, EPA should prioritize method development based on relevancy to water. For example, fluoropolymers are insoluble in water, not subject to long-range transport and are not bioavailable or bioaccumulative. Fluoropolymers are a PFAS that satisfy widely accepted assessment criteria to be considered as "polymers of low concern" (PLC). In addition, there are other substances which are not commonly regarded as PFAS but risk being included in a broad-based grouping. These include gases and volatile liquids which would not be relevant for this analysis. These factors should be taken into consideration when prioritizing future analytical methods. **Individual Response:** Please see Discussion on New PFAS Methods.
Comment Excerpt from Commenter 101 • Prioritize the development of validated analytical methods for additional PFAS in drinking water in advance of finalizing the UCMR. Despite the limitations of the analytical techniques used for UCMR 3, more recent sampling by several states confirm low levels of PFAS in public drinking water since the UCMR3 analysis. Further understanding of the distribution, or lack thereof, of these compounds in the environment is critical in building public trust regarding the responsible use of PFAS, which have become critical to modern society. For example, the ANPRM [advance notice of proposed rulemaking] specifies 29 PFAS for analysis under UCMR-5 using validated methods (533 and 537.1). Under the NDAA for fiscal year 2020, EPA has identified 175 PFAS for reporting under the toxics release inventory. Additionally, EPA has information through the Toxic Substance Control Act of additional PFAS compounds in commerce. EPA should focus resources on developing validated analytical methods for detecting these compounds in drinking water for this and future monitoring efforts. **Individual Response:** Please see Discussion on New PFAS Methods.
Comment Excerpt from Commenter 102 In addition, it is recommended that EPA should prioritize development of validated analytical methods for additional PFAS in drinking water in advance of the next UCMR 6, including those identified for reporting under the Toxics Release Inventory. Further understanding of the presence or absence of these compounds in drinking water is critical for building public trust. **Individual Response:** Please see Discussion on New PFAS Methods.
Comment Excerpt from Commenter 105 The guidelines need to include the requirement that public water systems test for more than the 29 PFAS for which there are EPA approved tests. **Individual Response:** Please see Discussion on New PFAS Methods.
Comment Excerpt from Commenter 111 A. EPA Should Require Monitoring for Total PFAS in the UCMR 5. EPA should seize the opportunity presented by the UCMR 5 to gather the best possible data about the occurrence of PFAS in public water systems. The States ask EPA to require public water systems to monitor for total PFAS or, in the alternative, for subclasses of PFAS, and additional, individual PFAS. As explained further below, analytical methods that can measure total PFAS are available, so it is feasible to require monitoring for total PFAS in the UCMR 5 [FN53: See infra at 10, 13—16 for a discussion of the analytical methods that measure total PFAS and the monitoring tiers available in the UCMR]. We urge EPA to require monitoring for total PFAS in the largest monitoring tier, the Assessment Monitoring

Comments Received on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)

Tier, of the UCMR 5 [FN54: In the UCMR 5 proposal, EPA discusses different tiers of contaminant monitoring associated with lists of contaminants but proposes only the Assessment Monitoring Tier. The Assessment Monitoring Tier is the largest in scope and used for estimating national population exposure and generally results in the most complete set of data. EPA did not propose the use of Tier List 2 or Tier List 3 in UCMR 5. It states that it did not do so because the larger Assessment Monitoring Tier is large in scope and will provide robust information]. In the alternative, if EPA decides not to require monitoring for total PFAS in the Assessment Monitoring Tier, then we urge EPA to require a subset of public water systems determined to be vulnerable to PFAS contamination to monitor for total PFAS. EPA can do so either through the Screening Survey Tier or the Pre-Screen Testing Tier. EPA recommends a Screening Survey Tier when the analytical techniques are less established. Thus, the Screening Survey Tier is appropriate for PFAS test methods that are not yet validated by EPA. Alternatively, EPA could require monitoring for total PFAS through a Pre-Screen Testing Tier. EPA describes the Pre-Screen Testing Tier as monitoring that:

can be customized to meet the specific monitoring objectives for a specific group of PWSs. EPA has used pre-screening tools in the past. For example, it used Pre-Screen Testing to collect data for two viruses under UCMR 3. That monitoring relied on specialized analytical methods and sampling techniques, and focused on 800 small, undisinfected groundwater systems in vulnerable areas [FN55: 86 Fed. Reg. at 13,851].

Based on this description of the Pre-Screen Testing Tier, it too seems appropriate for the analytical methods used to measure total PFAS.

If EPA declines to require monitoring for total PFAS at this time, then EPA should pursue other more protective alternatives than requiring monitoring for only 29 PFAS. EPA should consider requiring monitoring for subgroups of PFAS with a focus on PFAAs and their precursors, which would capture 85 percent of PFAS [FN56: Kwiatkowski CF, Andrews DQ, Birnbaum LS, Bruton TA, DeWitt JC, Knappe D, Maffini MV, Miller MF, Pelch KE, Reade A, Soehl A, Trier X, Venier M, Wagner CC, Wang Z, Blum A. Scientific Basis for Managing PFAS as a Chemical Class. Environ. Sci. Technol. Lett. 2020 Jun 30;7, 8:532–543. https://doi.org/10.1021/acs.estlett.0c00255]. Monitoring for and ultimately regulating scientifically based PFAS subgroups is also a logical step toward class-wide regulation [FN57: See Id.].

We also ask EPA to consider including additional individual PFAS in the UCMR 5. For example, EPA could consider some of the 172 PFAS added to the Toxic Release Inventory (TRI) Program through section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA), as well as the 3 added for reporting year 2021 [FN58: U.S. Environmental Protection Agency, Chemicals Added to the Toxics Release Inventory Pursuant to Section 7321 of the National Defense Authorization Act, https://www.epa.gov/sites/default/files/2021-01/documents/tri_non-cbi_pfas_list_1_8_2021_final.pdf (last visited Apr. 16, 2021)]. Pursuant to the 2021 NDAA, the 29 PFAS listed in the proposed UCMR 5 do not count toward the 30 contaminant limit in the UCMR [FN59: National Defense Authorization Act for Fiscal Year 2021, H.R. 6395, 116th Cong. (enacted)]. Thus, EPA can and should include 29 additional PFAS in the UCMR 5 if EPA can validate an analytical method to measure them.

B. EPA Should Promptly Validate an Analytical Method to Analyze Total PFAS in Drinking Water.
We also urge EPA to promptly validate an analytical method for analyzing total PFAS contamination in drinking water. EPA should require use of such a method in any of the various tiers of monitoring in the UCMR 5 to detect a larger spectrum of PFAS comprehensively [FN60: U.S. Envtl. Prot. Agency, PFAS Analytical Methods Development and Sampling Research (last updated Jan. 26, 2021), https://www.epa.gov/water-

Comments Received on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)
research/pfas-analytical-methods-development-and-sampling-research]. Since the UCMR 5 sampling will not begin until 2023, there is ample time for EPA to validate an analytical method and for laboratory capacity to be developed. We recognize there are challenges to understanding total PFAS [FN61: The term "total PFAS" refers to the quantification of all or a large subset of PFAS in a given sample. U.S. Envtl. Prot. Agency, PFAS Analytical Methods Development and Sampling Research, https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research. One constraint on regulating or measuring "total PFAS" is that it is limited by the subclass of PFAS or PFAS that any given analytical method can identify. Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Miller M, Ng CA, Scheringer M, Vierke L, Wang Z. Strategies for grouping per- and polyfluoroalkyl substances (PFAS) to protect human and environmental health. Environ. Sci.: Processes Impacts, 2020 Jun 4;22:1440–1460, 1452. https://doi.org/10.1039/D0EM00147C] in drinking water [FN62: See e.g., Cousins IT, DeWitt JC, Glüge J, Goldenman G, Herzke D, Lohmann R, Miller M, Ng CA, Scheringer M, Vierke L, Wang Z. Strategies for grouping per- and polyfluoroalkyl substances (PFAS) to protect human and environmental health. Environ. Sci.: Processes Impacts, 2020 Jun 4;22:1440-1460. https://doi.org/10.1039/D0EM00147C]. But those challenges are not insurmountable and having occurrence data on the total PFAS in a given sample quantified along with occurrence data on the 29 individual PFAS would allow us to understand the value of analytical methods that measure total PFAS. As EPA states in the preamble of this proposal, the nation's residents, the States, and the federal government all benefit from complete information about whether these unregulated contaminants are present in drinking water [FN63: Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems and Announcement of Public Meeting, 86 Fed. Reg. 13,846, 13,850 (proposed Mar. 11, 2021) (to be codified at 40 C.F.R. pt. 141)]. Without analytical methods that measure total PFAS, public water systems will likely continue to have undetected PFAS contamination. **Individual Response:** Please see Discussion on New PFAS Methods and Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP). UCMR 5 exclusively requires Assessment Monitoring. The monitoring tiers available for UCMR, and the basis for selecting either Assessment Monitoring, Screening Survey or Pre-Screen Testing, are described in EPA document, "Selection of Nationally Representative Public Water Systems for the Unregulated Contaminant Monitoring Rule: 2021 Update" (USEPA, 2021k). Monitoring select PWSs under the Screening Survey or Pre-Screen Testing tiers using a "total PFAS" method was not chosen because of lack of a validated method and because of the limitations of TOF or TOP methodologies as described in the Agency Discussion on Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).
Comment Excerpt from Commenter 111 2. EPA Should Validate an Analytical Method to Measure Total PFAS. The validated targeted analytical methods allow EPA to monitor only a small fraction of the total PFAS that may be present in drinking water. In contrast to the targeted analyses, there are other analytical methods that measure the total PFAS in a sample and then a targeted method can be used to extract information about a specific compound. This additional holistic information on the occurrence of total PFAS is essential to effectively understand how to regulate and remediate PFAS in our drinking water. This rulemaking presents an opportunity to obtain critically needed data to understand exposures. According to some estimates based on the UCMR 3 data, at least 6 million U.S. residents were receiving drinking water contaminated by PFAS at levels exceeding local, state, or national regulations or advisories [FN68: Hu XC, Andrews DQ, Lindstrom AB, Bruton TA, Schaider LA, Grandjean P, Lohmann R, Carignan CC, Blum A, Bălan SA, Higgins CP, Sunderland EM. Detection of Poly and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants. Environ. Sci. Technol. Lett. 2016 Oct11; 3(10):344–350. https://doi.org/10.1021/acs.estlett.6b00260]. Many studies indicate that the full extent of PFAS contamination is significantly underestimated when only targeted analytical methods are used [FN69:

Comments Received on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)

McDonough CA, Guelfo JL. Measuring total PFASs in water: The tradeoff between selectivity and inclusivity. Curr. Opin. Environ. Sci. Health. 2019 Feb;7:13–18. https://doi.org/10.1016/j.coesh.2018.08.005]. Thus, we urge EPA to require that public water systems use an analytical method that will measure the total PFAS in drinking water.

There are many additional advantages to using analytical methods that measure total PFAS. Using such an analytical method along with targeted analyses for specific PFAS will also allow us to investigate and identify sources of contamination based on concentrations of total PFAS, the identification of individual PFAS, and temporal trends in the occurrence data [FN70: Guelfo JL, Adamson DT. Evaluation of a national data set for insights into sources, composition, and concentrations of per and polyfluoroalkyl substances (PFASs) in U.S. drinking water, Environ. Pollut. 2018 May;236: 505–513. https://doi.org/10.1016/j.envpol.2018.01.066.]. As stated above, analytical methods that measure total PFAS will allow public water systems to appropriately invest in treatment systems that can remove more PFAS than just the 29 PFAS identified by targeted analyses. Without information on total PFAS, public water systems may not know about significant concentrations of PFAS in drinking water, which could have serious public health and environmental consequences.

Thus, EPA should validate and require use of analytical methods that measure total PFAS because they provide more complete data about the occurrence of PFAS in public water supplies. Additionally, it is less likely that EPA will have to modify analytical methods as new PFAS continue to emerge [FN71: Winchell LJ, Wells M, Ross JJ, Fonoll X, Norton JW Jr., Kuplicki S, Khan M, Bell KY. Analyses of per and polyfluoroalkyl substances (PFAS) through the urban water cycle: Toward achieving an integrated analytical workflow across aqueous, solid, and gaseous matrices in water and wastewater treatment. Science of the Total Environment. 2021 Jun 20;774:145257. https://doi.org/10.1016/j.scitotenv.2021.145257]. Furthermore, analytical methods that measure total PFAS also have the advantage of allowing retrospective analyses for unknown chemicals.

Individual Response: Please see Discussion on New PFAS Methods.

Comment Excerpt from Commenter 114

ASDWA recommends that EPA continue to develop additional analytical methods for PFAS beyond the 29 proposed in this UMCR, considering the full universe of compounds is in the thousands. Additional analytical methods are urgently needed to address PFAS contamination. For example, at least one state has health recommendations for PFODA, NEtFOSA, and NMeFOSE, but is unable to sample because there are no associated analytical methods. Based on our survey mentioned previously, three states have used PFAS analytical methods other than 537.1 and 533 and have detected as least one of four other PFAS (FOSA, PFOSA, PFTeDA, and PFUDA) for at least one water system source in their state.

Individual Response: Please see Discussion on New PFAS Methods.

Comment Excerpt from Commenter 119

As you know Section 7311 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) (Public Law 116-92), requires that EPA must include all PFAS in UCMR 5 for which a drinking water method has been validated by EPA and that the agency doesn't regulate in drinking water. The NDAA provides that unregulated PFAS included in UCMR 5 don't count towards the SDWA limit of not more than 30 unregulated contaminants being included in the UCMR (see SDWA §1445(a)(2)(B)(i)).

It is important to include a sensitive broad-spectrum PFAS test in the UCMR because there are hundreds of PFAS in use, and by the latest accounting over 9,000 known PFAS. Recently, EPA and New Jersey state scientists identified several new PFAS in groundwater that are not detected by the current EPA methods, and

Comments Received on Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)

we expect that this will increasingly be the case in many communities across the country. Testing for only 29 PFAS will not give us a clear picture of the problem we are facing.

Unless EPA requires a broader spectrum test for PFAS, it is likely that many water systems that are contaminated with PFAS other than the 29 detected by current approved EPA Methods 533 and 537.1 will have PFAS contamination that will go undetected, and/or the scope of their contamination will remain unknown. In such cases, the water systems, state and federal authorities, and the public served by those water systems will not understand the full extent of their PFAS contamination.

While it has been argued by some that methods such as the TOF method or the TOP assay are only useful for contaminated site characterizations but not for "clean" drinking water, this contention misses the point. If a contaminated site is releasing a broad array of PFAS (including many that are not among the 29 identified in the current EPA methods), it is highly likely that at some point these PFAS will reach drinking water intakes. When they do, it will be important to know that they have, so that appropriate actions can be taken to prevent further contamination and potentially to treat the drinking water. Clearly, PFAS tend to be highly persistent in the environment and highly mobile in water, so PFAS-contaminated site releases will be highly likely to reach drinking water sources.

EPA's validation of a total PFAS method will help water systems design more comprehensive solutions for treating drinking water or remediating contamination. Without the validated method, water systems, their consultants, and states are likely to be more hesitant to begin looking at PFAS other than the 29 covered by the current EPA methods. In some cases, water systems will likely fail to take sufficient precautionary measures to protect public health and address the contamination. Moreover, water systems and regulators also may fail to identify and remediate PFAS pollution sources. This could be expected to contribute to delays and the continuing spread of contamination. This may have a direct impact on public health and may result in some water systems not investing in water treatment technologies best suited for their situation. For example, large commercial testing labs report that some water providers are using the TOP Assay and/or TOF to better understand the kinetics of how a proposed treatment technique to remediate PFAS-contaminated water will operate. Better knowledge about the total amount of PFAS in a water system allows water providers to estimate how long treatment media will last before breakthrough occurs, thereby giving water providers more accurate data for budgeting and planning. Therefore, we urge that EPA validate and include in the UCMR 5 requirements a sensitive broader-spectrum PFAS method. We stand ready to work with the agency on this effort.

Individual Response: Please see Discussion on New PFAS Methods and Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP).

Agency Discussion on PFAS Contaminants – Miscellaneous Comments

Agency Topic Discussion: The Agency received many comments relating to monitoring of PFAS in drinking water. Understanding the scope of PFAS occurrence in drinking water including sources, pathways, populations exposed, and levels of exposure is critical to effectively characterizing the potential human health and environmental risks associated with these compounds. EPA's PFAS Strategic Roadmap (USEPA, 2021d) presents EPA's research goals and objectives and planned actions to publish additional toxicity assessments, increase monitoring, and reduce PFAS discharges among others. UCMR monitoring is just one of many planned actions to improve understanding of occurrence and exposure to PFAS. UCMR monitoring results are used to support regulatory determination. Some commenters referenced additional PFAS occurrence or

Agency Discussion on PFAS Contaminants – Miscellaneous Comments

health effects literature. Occurrence and health effects data for the analytes in UCMR 5 monitoring are detailed in the "Information Compendium for Contaminants for the Final Unregulated Contaminant Monitoring Rule (UCMR 5)" (USEPA, 2021j). This Information Compendium contains the best available data as of late 2021.

Comments Received on PFAS Contaminants – Miscellaneous Comments

Comment Excerpt from Commenter 59

Summary
The U.S. Environmental Protection Agency (EPA or Agency) proposes a Safe Drinking Water Act (SDWA) rule that would require public water systems to collect national occurrence data for 29 per and polyfluoroalkyl substances (PFAS). This proposed rule would require all community and non-transient non community water systems serving 3,300 or more people, and a representative sample of smaller water systems, to conduct monitoring. PFAS are not currently subject to national primary drinking water regulations, and EPA proposes requiring the collection of drinking water occurrence data to inform EPA decisions.

National Ground Water Association Comments
The National Ground Water Association strongly supports the U.S. Environmental Protection Agency's collection of data on the occurrence of per and polyfluoroalkyl substances (PFAS) in drinking water across the country. NGWA has focused on concerns about PFAS prior to and since its report:
National Ground Water Association (NGWA). 2017 (and Updates). Groundwater and PFAS: State of Knowledge and Practice. NGWA Press, Westerville, Ohio.

NGWA has also commented on related regulatory proposals affecting PFAS including:
Proposed Rule: Addition of Certain Per and Polyfluoroalkyl Substances; Community Right-to-Know Toxic Chemical Release Reporting, January 23, 2020

Proposed Rule: Addition of Certain Per and Polyfluoroalkyl Substances; Community Right-to-Know Toxic Chemical Release Reporting, February 3, 2020

Preliminary Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List, June 3, 2020.

Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances, February 22, 2021

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments.

Comment Excerpt from Commenter 59

NGWA appreciates EPA moving forward with the UCMR5 monitoring program to establish the occurrence of the 29 PFAS among representative large and small water systems in order to determine exposure of the U.S. population to these chemical substances. This monitoring program should be the basis for a comprehensive approach to protecting our nation's population from these chemicals in the future. NGWA also notes the following factors related to the need for monitoring of PFAS across the country:

The Centers for Disease Control and Prevention reports that PFAS chemicals are in the blood of virtually all Americans [FN1: Centers for Disease Control and Prevention. 2017. Per and Polyfluorinated Substances (PFAS) Factsheet. https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html]. Seventy-seven (77) percent (401 out

Comments Received on PFAS Contaminants – Miscellaneous Comments

of 524) of military installations across the nation have measured levels of PFAS contamination. The Environmental Working Group (EWG) found that 90 more current and former Army and Army National Guard installations had levels of ground or drinking water contamination than previously reported [FN2: Military.com. 2019. List of Bases Contaminated with PFAS Chemicals Expected to Grow, Pentagon Says. https://www.military.com/daily-news/2019/09/13/list-bases-contaminated-pfas- chemicals-expected-growpentagon-says.html].

NGWA is very concerned that Guelfo and Adamson (2018) [FN3: Guelfo, J.L. and D.T. Adamson. 2018. Evaluation of a national data set for insights into sources, composition, and concentrations of per and polyfluoroalkyl substances (PFASs) in U.S. drinking water. Environmental Pollution vol.236 (May), pp.505-513. Cited in U.S. Environmental Protection Agency, Regulatory Determination 4 Support Document; EPA 815-R-19-006, December 2019, p. 3-38.] examined PFAS results from UCMR 3 in detail and found that approximately 50 percent of samples with reportable levels of one or more PFAS detections contained at least two PFAS and 72 percent of detections occurred in groundwater. When detected, median total PFAS concentrations were higher in small PWSs serving 10,000 or fewer persons (0.12 µg/L) than in large PWSs (0.053 µg/L). This PFAS level in small water systems is nearly twice the current Health Reference Level of 70 ppt. This concern is highlighted by the fact that 76 percent (45,693) of all community water systems are primarily ground-supplied, and 96 percent (36,642) of those groundwater-supplied systems are small water systems serving 10,000 or fewer people and have fewer resources to manage their water systems. Ninety-seven (97) percent (95,082) of nontransient and transient noncommunity water systems are groundwater-supplied [FN4: U.S. Environmental Protection Agency. 2020. Drinking Water Government Performance Reporting Act Tool. https://obipublic.epa.gov/analytics/saw.dll?PortalPages&PortalPath=/shared/SFDW/_portal/Public].

Guelfo and Adamson also reported that large water systems serving more than 10,000 persons were 5.6 times more likely than small PWSs to have PFAS detections. Many large systems have groundwater sources for supplementary or backup water supply.

Basis for the Interest of the National Ground Water Association (NGWA) in Regulation of PFAS in Drinking Water
NGWA, the largest trade association and professional society of groundwater professionals in the world, represents over 10,000 groundwater professionals within the United States and internationally. NGWA represents scientists and engineers employed in the private and public sectors, water well contractors, and manufacturers and suppliers of groundwater equipment that make groundwater development possible. NGWA's mission is to advocate for and support the responsible development, management, and use of groundwater. NGWA has continuing concern that PFAS in all waters poses significant health risk to the American people.

Over 41 million people in the United States rely on private wells and nearly 87 million people are served by groundwater from public water systems. NGWA views groundwater and the subsurface as a significant natural resource that should be sustainably managed for current and future use. The subsurface environment should be considered from an integrated resource perspective to ensure that groundwater will continue to be available for drinking, industrial and manufacturing applications, food production, and ecosystem support. The NGWA appreciates the opportunity to comment on this proposed regulation.

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments and Sampling Design.

Comments Received on PFAS Contaminants – Miscellaneous Comments

Comment Excerpt from Commenter 63

Including Legionella pneumophila and Haloacetoneitriles to be monitored in the UCMR 5 would be very beneficial and I believe we would see a decrease in the number of deaths caused by unsafe drinking water because both of these contaminants pose concerning health risks. It would be beneficial to include the other listed contaminants, as they pose just a serious health threats, but with the little research on them and not being able to monitor sufficient levels to monitor the appearance of these contaminants in drinking water. It would be more beneficial to hold off until there is more research done and include them in the next UCMR, when we will actually be able to understand the data collected. I think we should be doing everything in our power to maximize the amount of safe drinking water since it poses such a health threat on those who do not have access to it. It causes transferable diseases causing an increased number of deaths from these sicknesses that could have been prevented.

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments, *Legionella pneumophila*, and Haloacetonitriles. [EPA note: In the context of their full set of comments, it is clear that the commenter is referring to PFAS when they say, "other listed contaminants."]

Comment Excerpt from Commenter 65

Per and polyfluoroalkyl Substances ("PFAS") are a prevalent, mobile, and persistent set of chemicals that are under investigation for their risk in health and safety. PFAS have an incredible range of uses including firefighting foams, stain and water-repellant fabric coatings, and nonstick cookware. In the past, PFAS measurements were skewed to show lower concentrations. However, recent technological advances have made measuring PFAS more accurate. As the accuracy improves, the environmental damage inflicted by this set of chemicals since the 1940s is becoming much clearer, as is the potential risk to humans. What makes PFAS unique is their physical and chemical properties, including the fact that they repel both oil and water. Their chemical make-up is also an important factor in their persistence in the environment. Water treatment facilities are not equipped to handle PFAS, and as a result the chemicals are concentrated in biosolids or are not separated out of the water and therefore exit water and wastewater facilities intact. From there, they enter the drinking supply. It has been estimated that between 98% to 99% of all humans have PFAS in their blood. As of May of 2020, approximately 110 million Americans have PFAS-contaminated tap water, and home water filtration systems are not suited to filter these types of compounds out.

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments.

Comment Excerpt from Commenter 67

I am writing to comment on the Proposed Unregulated Contaminant Monitoring Rule 5. It is essential to urge this rule to ensure food safety. I support the proposed rule because the presence of Per-and Polyfluoroalkyl Substances (PFAS) in drinking water carries several health consequences for infants and women that should be addressed and solved with celerity. In the case of infants and children, PFAS can produce low birth weight, developmental effects, among others. The presence of the 29 PFAS in drinkable water increases cancer risk, disrupts the thyroid hormone, increases blood pressure in pregnant women, and drops the chances to get pregnant, among other multiple health problems. It is possible to prevent illness and increase drinking water consumption confidence through the water sample collections and their evaluation. I support this proposed rule since it will improve the overall health of the country. The inclusion of the 29 substances can save lives and improve people's quality of life exponentially. I ask the Environmental Protection Agency to include the evaluation of the presence of PFAS to understand the frequency of the 29 PFAS found in the nation's drinking water systems and at what levels so it could be a measure to prevent and alleviate public health issues.

Comments Received on PFAS Contaminants – Miscellaneous Comments
Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments and EO 13045: Protection of Children from Environmental Health Risks and Safety Risks.
Comment Excerpt from Commenter 76 PFAS should be regulated as a class, and we know that low levels of different PFAS chemicals can add together in the same water supply to be more dangerous than any of them alone. **Individual Response:** Please see Discussion on PFAS Contaminants – Miscellaneous Comments.
Comment Excerpt from Commenter 77 I am glad to have the opportunity to comment on a rule requiring water companies to test for PFAS - EPA-HQ-2020-0530-0001. I strongly urge the EPA to issue a rule to require water systems/ companies and providers to test for all 29 PFA chemicals for which there are tests immediately. I live in Rockland County, New York where we too, like many other communities have a PFA problem. However our water provider – United Water Suez, a multi billion dollar, multi national company is only required to test for the minimum of contaminant chemicals - known as "forever chemicals." Only two of them. I personally have been working on a right to know Water Quality Bill with local Sierra Club Atlantic Chapter person Gale Pisha and our local Assemblymen Ken Zebrowski and Senators Elijah Reichlin-Melnick and James Skoufis in NY State. I am hopeful this Bill will get passed to protect NY State and I feel that National Safety Standards in testing for PFAS - all 29 so far that can be tested, must be made law. **Individual Response:** Please see Discussion on PFAS Contaminants – Miscellaneous Comments and 29 PFAS Using EPA Methods 533 and 537.1.
Comment Excerpt from Commenter 96 Perfluoroalkyl sulfonamides. The perfluoroalkyl sulfonamides include perfluorobutane sulfonamide (FBSA: CAS 30334-69-1), perfluorohexane sulfonamide (FHxSA: CAS 41997-13-1), and perfluorooctane sulfonamide (FOSA: CAS 754-91-6). They are frequently detected in surface water and groundwater, commonly in association with aqueous film forming foam (AFFF) contamination (McGuire et al. 2014, D'Agostino & Mabury 2017, Ruyle et al. 2021). They have also been found in treated drinking water (Schwanz et al. 2016, Kaboré et al. 2018), indicating the potential for direct human exposure to these compounds through drinking water. Indirect exposure to the perfluoroalkyl sulfonamides in drinking water can also occur when they degrade into the perfluoroalkyl sulfonates, including PFOS, through advanced oxidation processes (Crone et al. 2019). The toxicity and bioaccumulative potential of the perfluoroalkyl sulfonamides have been demonstrated. FOSA is detected in human serum studies, and it is well known to biotransform to PFOS in vivo (Martin et al. 2010, Gebbink et al. 2015). In vitro neurodevelopmental and developmental toxicity in zebrafish have been demonstrated for FOSA, with greater adverse effects compared to PFOS (Slotkin et al. 2008, Dasgupta et al. 2020). The toxicity and bioaccumulation of the short-chained sulfonamides (FBSA and FHxSA) are less well characterized. However, FBSA has been detected in human serum (Aro et al. 2020) and freshwater fish from water bodies across Canada (Chu et al., 2016), indicating its bioaccumulative potential. FHxSA has been found to accumulate in earthworms collected from AFFF-contaminated soils and was found at higher concentrations compared to FOSA (Munoz et al., 2020). Most proposed PFAS on the UCMR 5 analyte list are legacy compounds that are no longer produced or used in

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products in the United States. The inclusion of FBSA and the other perfluoroalkyl sulfonamides would better characterize the emerging risks of current-use PFAS in drinking water. For example, 3M admitted to the illegal discharge of FBSA from its Decatur, Alabama manufacturing facility to the Tennessee River, the source of drinking water for 5 million Americans, between 2009 and 2019 (Hogue 2019, Tennessee Valley Authority n.d.). Biomonitoring data shows increasing trends for FBSA over the past two decades (Barrett et al. 2021), indicating a shift toward the production and use of short-chain PFAS alternatives has resulted in changes in exposure and accumulation of PFAS.

Together, these studies indicate the ongoing and growing potential for direct bioaccumulation of perfluoroalkyl sulfonamides from drinking water sources and associated toxic effects. These analytes are routinely included in standard targeted analysis methods (e.g., Eurofins Environment Testing America and the North Carolina PFAS Testing Network). The EPA is currently collaborating with the U.S. Department of Defense to develop an isotope dilution method that includes FOSA in the analyte list (U.S. EPA n.d.). Because analytical grade standards for FBSA, FHxSA, and FOSA are readily available from commercial suppliers, we strongly recommend the inclusion of all three compounds in the UCMR 5 analyte list.

We hope these comments will be useful to you in your endeavor to protect the environment and human health.

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments. Perfluoroalkyl sulfonamides are not part of the validated EPA methods. There were some perfluorosulfonamidoacetic acids evaluated during Method 533 development that had issues with adequate extraction efficiency; these were also problematic due to the number of isomers eluting within a short retention time making chromatographic separation difficult. It is possible the commenter's proposed analytes would behave similarly.

Comment Excerpt from Commenter 97

The Association of California Water Agencies (ACWA) appreciates the opportunity to provide comments on the U.S. Environmental Protection Agency's (EPA's) proposed Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems and Announcement of Public Meeting (86 Fed. Reg. 13846 (Mar. 11, 2021)). ACWA's 455 public water agency members supply over 90 percent of the water delivered in California for residential, agricultural, and business uses.

I. Introduction

Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals that have been manufactured and widely used in various industries worldwide since the 1940s. PFAS do not break down and accumulate over time in both the environment and the human body – gaining them the nickname "forever chemicals." Exposure to high levels of PFAS can lead to adverse health effects [FN1: See EPA, Basic Information on PFAS (last updated Apr. 6, 2021), click here {https://www.epa.gov/pfas/basic-information-pfas}].

PFAS contamination presents challenges for many safe drinking water providers throughout our nation. Thus, efforts to combat these contaminants is taking place on both the federal and state level – with California on the frontline. [FN2: See California Water Boards, PFAS Drinking Water Resources (last updated Apr. 13, 2021), click here {https://www.waterboards.ca.gov/pfas/drinking_water.html}] ACWA appreciates EPA's efforts to curb exposure to PFAS in drinking water and protect public health. In particular, ACWA applauds EPA's progress under the PFAS Action Plan [FN3: EPA, EPA PFAS Action Plan: Program Update (Feb. 2020), click here {https://www.epa.gov/sites/production/files/2020-01/documents/pfas_action_plan_feb2020.pdf}], including issuance of the proposed UCMR 5, release of an updated toxicity assessment for perfluorobutanesulfonic acid (PFBS) [FN4: EPA, Human Health Toxicity Values for Perfluorobutane Sulfonic Acid (CASRN 375-73-5) and

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Related Compound Potassium Perfluorobutane Sulfonate (Apr. 2021), click here {https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=350888}], and issuance of a final regulatory determination to regulate both perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) [FN5: 86 Fed. Reg. 12272 (Mar. 3, 2021), click here {https://www.govinfo.gov/content/pkg/FR-2021-03-03/pdf/2021-04184.pdf]. ACWA is also encouraged by your recent call for the creation of a new "EPA Council on PFAS" that would be charged with further implementation of the PFAS Action Plan as well as development of a four-year strategy to deliver critical public health protection from PFAS [FN6: EPA, Memo: EPA Council on PFAS (Apr. 27, 2021), click here {https://www.epa.gov/sites/default/files/2021-04/documents/per-and_polyfluoroalkyl_substances.memo_.signed.pdf}]. **Individual Response:** Please see Discussion on PFAS Contaminants – Miscellaneous Comments.
Comment Excerpt from Commenter 99 Thank you for the opportunity to comment on the proposed 5th Unregulated Contaminant Monitoring Rule (UCMR). Clean Water Action and Clean Water Fund are national sister organizations with offices in over a dozen states working on environmental and health issues with an emphasis on water pollution and drinking water issues. Since 2019, we have urged EPA to include all PFAS chemicals for which there is an approved laboratory method at the time of promulgation in UCMR 5 rule. We support inclusion of the 29 proposed PFAS chemicals in the next round of UCMR monitoring. Occurrence information is sorely needed to complement sampling programs that have been conducted in some states. With states moving forward on setting enforceable standards for some of the PFAS on this list and amidst continue public concern is more important than ever. **Individual Response:** Please see Discussion on PFAS Contaminants – Miscellaneous Comments and 29 PFAS Using EPA Methods 533 and 537.1.
Comment Excerpt from Commenter 107 Louisville Water Company appreciates the opportunity to provide comment on EPA 's proposed UCMR 5 Rule. Louisville Water provides safe reliable drinking water to nearly a million customers in Louisville Metro and the surrounding counties. Louisville Water is committed to providing the highest quality water possible; our water quality consistently surpasses regulatory requirements. Louisville Water supports EPA's inclusion of the 29 per and polyfluoroalkyl substances (PFAS) which have validated testing methods. PFAS are a concern to Louisville Water and we appreciate EPA prioritizing PFAS research as to both the occurrence and health effects of these compounds. Louisville Water encourages EPA to continue to keep PFAS amongst the agency's research goals, particularly as this research goes to determining reliable health effects data, developing rapid monitoring/assessment methods, and addressing cost-effective treatment options that may be utilized by water utilities, if necessary. **Individual Response:** Please see Discussion on PFAS Contaminants – Miscellaneous Comments and 29 PFAS Using EPA Methods 533 and 537.1.
Comment Excerpt from Commenter 108 The PFAS Regulatory Coalition (Coalition) appreciates the opportunity to file comments regarding the U.S. Environmental Protection Agency's (EPA's) Proposed Revisions to the Unregulated Contaminant Monitoring Rule (UCMR5) for Public Water Systems, Docket ID No. EPA-HQ-OW-2020-0530, 86 Fed. Reg. 13846 (March 11, 2021). The following comments focus specifically on EPA's proposal as it relates to certain per and

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polyfluoroalkyl substances (PFAS) compounds subject to UCMR5. The Coalition is not submitting comments related to lithium or other pollutants that are not PFAS.

II. The Coalition's Interest

The Coalition is a group of industrial companies, municipal entities, agricultural parties, and trade associations that are directly affected by the development of policies and regulations related to PFAS. Coalition membership includes entities in the automobile, coke and coal chemicals, iron and steel, municipal, paper, petroleum, and other sectors. None of the Coalition members manufactures PFAS compounds. Coalition members, for purposes of these comments, include: Airports Council International – North America; American Coke and Coal Chemicals Institute; American Forest and Paper Association; American Fuel and Petrochemical Manufacturers; American Iron and Steel Institute; American Petroleum Institute; Gary Sanitary District (IN); Illinois Association of Wastewater Agencies; Lowell, MA; Pueblo, CO; Tempe, AZ; Toyota; Trihydro; TRS Group; Utility Solid Waste Activities Group; and Yucaipa Valley Water District (CA).

Coalition members support EPA's efforts to collect data to inform the regulation of individual PFAS substances in drinking water where science supports that those individual compounds pose risks to human health and/or the environment. In the pursuit of such regulations, the Coalition urges regulators to ensure that monitoring standards for public water systems (PWS) are transparent, scientifically supported, cost-effective, and achievable.

III. The Coalition Supports EPA's Leadership to Encourage Uniform Federal Standards

The term, "PFAS," refers to a group of man-made chemicals that including perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), GenX [FN1: Note that "GenX" is a trade name for a specific PFAS compound, ammonium, 2,3,3,3- tetrafluoro-2-(heptafluoropropoxy) propanoate. ITRC "Naming Conventions and Physical and Chemical Properties of Per and Polyfluoroalkyl Substances (PFAS)," at 12, available at https://pfas-1.itrcweb.org/fact_sheets_page/PFAS_Fact_Sheet_Naming_Conventions_April2020.pdf (last visited April 13, 2021). More generically, GenX can be denoted by the abbreviation, "HFPO-DA."], and other fluorinated compounds. The most prevalent and available science regarding the incidence and potential health effects of PFAS is based on PFOA and PFOS, two compounds that have been subject to voluntary phase outs in the United States. Industry has begun using shorter-chain PFAS compounds as replacement chemicals that have different physical, chemical, and toxicological properties from the long-chain PFOA and PFOS. The scientific understanding of how PFAS impacts people and the environment is still developing. From a toxicological perspective, regulators must have adequate science for determining health-based values before promulgating individual compound standards, limits, and related regulations.

The Coalition supports EPA taking the lead on PFAS regulatory matters, as set forth in EPA's PFAS Action Plan and subsequent updates and rulemakings (https://www.epa.gov/pfas). Toxicologists, whether they work for EPA, various state agencies, international standards-setting organizations, academia, or in private practice, use different methodologies, resources, and have not even agreed on which of the hundreds of studies on PFAS compounds are the appropriate or critical components that must or should support appropriate regulatory standards. Different methodologies, levels of experience, procedural prerequisites to standards-setting, and even local political pressures can and have led to highly variable standards in different states and EPA. Accordingly, the Coalition supports EPA's work and leadership in developing science and methodologies to inform and encourage a uniform approach to PFAS regulatory mandates, which states can adopt and follow. Further, we support EPA's leadership role with all of the states to encourage a uniform national approach as opposed to a patchwork of individual state regulation.

Comments Received on PFAS Contaminants – Miscellaneous Comments

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments and Regulatory Development.

Comment Excerpt from Commenter 111

The State Attorneys General of California, Colorado, Connecticut, Delaware, District of Colombia, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota, New Mexico, North Carolina, Oregon, Pennsylvania, Rhode Island, Virginia, Washington, and Wisconsin (collectively States) offer these comments in support of the U.S. Environmental Protection Agency's (EPA) proposed revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems, 86 Fed. Reg. 13,846 (Mar. 11, 2021). In these comments, the States also urge EPA to expand the per- and polyfluoroalkyl substances (PFAS) covered by the rule and to gather more and better data to protect public health from drinking water contamination.

On March 11, 2021, EPA proposed the UCMR 5 to revise the Unregulated Contaminant Monitoring Rule (UCMR) for public water systems under the Safe Drinking Water Act (SDWA), 42 U.S.C. §§ 300f et seq. This rule addresses the PFAS monitoring required by Congress in the 2021 National Defense Authorization Act [FN1: National Defense Authorization Act for Fiscal Year 2021, H.R. 6395, 116th Cong. (enacted).] (monitoring requirements which a group of State Attorneys General supported) [FN2: Attorneys General of Michigan, et al., Comment Letter on the Fiscal Year 2021 National Defense Authorization Act (FY2021 NDAA) conference report (Oct. 5, 2020), https://www.michigan.gov/documents/ag/Letter_2020-10-05_Multistate_Letter_704191_7. pdf] by including the 29 PFAS for which there are validated analytical methods [FN3: These 29 PFAS are within the scope of EPA Methods 533 and 537.1. Method 533 was published by EPA in December 2019. Method 537.1 was initially published by EPA in November 2018 and updated in March 2020. U.S. Envtl. Prot. Agency, PFAS Analytical Methods Development and Sampling Research (last updated Jan. 26, 2021), https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research] but which are not currently subject to national drinking water standards [FN4: See Proposed Rule Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems and Announcement of Public Meeting, 86 Fed. Reg. 13,846 (proposed Mar. 11, 2021) (to be codified at 40 C.F.R. pt. 141). The term PFAS in these comments refers to per and poly-fluoroalkyl substances]. The proposed rule is an important step towards collecting information from drinking water systems on the 29 PFAS and will provide EPA, states, and communities with scientifically valid data on these contaminants to inform regulatory decisions. The States have the following specific recommendations to enhance the proposed rule to ensure comprehensive data collection, improve our understanding of PFAS, and maintain safe drinking water across the nation: (1) require monitoring for total PFAS in the UCMR 5; (2) promptly validate an analytical method to analyze total PFAS; (3) lower the minimum reporting levels in UCMR 5; and (4) advance environmental justice with PFAS monitoring.

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments, Total Organic Fluorine (TOF) and Total Oxidizable Precursor Assay (TOP), Minimum Reporting Level Determination, and EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 111

IMPACTS OF PFAS

PFAS are a class of thousands of synthetic chemicals that have been manufactured and in widespread use since the 1940s [FN12: Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate, 86 Fed. Reg. 12,272 (Mar. 3, 2021) (to be codified at 40 C.F.R. pt. 141).]. Although estimates vary, there are at least 5,000 PFAS in current use [FN13: U.S. Envtl. Prot. Agency,

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PFAS Master List of PFAS Substances (Version 2) (last updated Sept. 16, 2020), https://comptox.epa.gov/dashboard/chemical_lists/pfasmaster] and our knowledge about the negative impacts of PFAS on health and the environment and their occurrence in public drinking water systems continues to grow.

PFAS are Widespread
To date, many studies have focused on perfluoroalkyl acids, particularly PFOA and PFOS, though research is increasingly focusing on other PFAS as well [FN14: See News Release, U.S. Environmental Protection Agency, EPA Releases Updated PFBS Toxicity Assessment (Apr. 8, 2021), https://www.epa.gov/newsreleases/epa-releases-updated-pfbs-toxicity-assessment-after-rigorous-scientific-review-0]. PFAS are used widely in a variety of products and applications due to their unique chemical properties and resistance to degradation [FN15: Guelfo JL, Adamson DT. Evaluation of a national data set for insights into sources, composition, and concentrations of per and polyfluoroalkyl substances (PFASs) in U.S. drinking water. Environ. Pollut. 2018 May;236:505–513. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5849529/; Brusseau ML. The Influence of Molecular Structure on the Adsorption of PFAS to Fluid-Fluid Interfaces: Using QSPR to Predict Interfacial Adsorption Coefficients. Water. Res. 2019 Apr 1;152:148-158. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6374777/]. Scientists have detailed more than 200 uses of PFAS in 64 industrial areas [FN16: Glüge J, Scheringer M, Cousins IT, DeWitt JC, Goldenman G, Herzke D, Lohmann R, Ng CA, Trier X, Wang Z. An overview of the uses of per-and polyfluoroalkyl substances. Environ. Sci. Processes. 2020 Oct 30;22:2345–2373. https://doi.org/10.1039/D0EM00291G]. These products and uses include (a) consumer products such as clothing, food packaging, cookware, cosmetics, and carpeting, (b) industrial use in mining, electroplating, and biotechnology, among others, and (c) in fire-fighting foam [FN17: Id.]. As a result of the manufacturing and processing of PFAS and PFAS-containing products and the use of these products at airports and military installations, PFAS have been released into the air, soil, and water. The widespread use and presence of PFAS creates exposure pathways through occupational exposure, and through contaminated food and drinking water. PFAS are found across the world [FN18: There are many studies documenting this wide-spread occurrence. See, id.; Joseph Allen, Stop playing whack-a-mole with hazardous chemicals, WASH. POST, Dec. 15, 2018, https://www.washingtonpost.com/opinions/stop-playing-whack-a-mole-with-hazardous-chemicals/2016/12/15/9a357090-bb36-11e6-91ee-1adddfe36cbe_story.html; See also Blum A, Bălan SA, Scheringer M, Trier X, Goldenman G, Cousins IT, Diamond M, Fletcher T, Higgins C, Lindeman AE, Peaslee G, de Voogt P, Wang Z, Weber R. The Madrid Statement on Poly and Perfluoroalkyl Substances (PFASs). Envtl. Health Perspectives. 2015 May;123(5):A107– A111. http://dx.doi.org/10.1289/ehp.1509934], including in indoor and outdoor environments in wildlife, and in human tissue and blood serum concentrations [FN19: See Centers for Disease Control and Prevention, Poly and Perfluoroalkyl Substances, Peer Reviewed Publications (last reviewed Mar. 6, 2019), https://www.cdc.gov/nceh/dls/oatb_capacity_14.html], underscoring the need for urgent and comprehensive action to monitor and regulate these contaminants.

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments.

Comment Excerpt from Commenter 118
Any future reliance on the data collected under UCMR 5 should reflect the scope of data collected and the methods used in collecting the data. For instance, these data will be collected from public water supplies, so any extrapolation to other water sources should be appropriately limited. Similarly, if the data are collected for the set of 29 PFAS identified in the Proposed Regulations, any reliance on or interpretation of the data should be limited to those PFAS as measured, and EPA and others should be careful in hypothesizing about fate molecules or potential sources of PFAS that may be extrapolated from the data.

Comments Received on PFAS Contaminants – Miscellaneous Comments

The Proposed Regulations Would Cover a Wide Variety of PFAS.
PFAS includes thousands of chemicals, each of which has its own characteristics, including chemical properties, toxicity profiles, chemical structure, and fate and transport characteristics. To demonstrate, the 29 PFAS in the Proposed Regulations include short and long-chain PFAS, PFAS that are derived from telomerization-based processes and PFAS derived from electrochemical fluorination processes, PFAS that result from the degradation of other chemicals, and PFAS that are used for a variety of purposes.

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments and Sampling Design.

Comment Excerpt from Commenter 121
Background
PFAS are a broad family of over 4,000 compounds [FN2: Sunderland EM, Hu XC, Dassuncao C, Tokranov AK, Wagner CC, Allen JG. A review of the pathways of human exposure to poly and perfluoroalkyl substances (PFASs) and present understanding of health effects. Journal of Exposure Science & Environmental Epidemiology. 2019;29(2):131-147. doi:10.1038/s41370-018-0094-1]. Many PFAS play a role in public safety, as they are often used as flame retardants, and many are used in firefighting foam [FN3: European Commission DG Environment/European Chemicals Agency. The use of PFAS and fluorine-free alternatives in fire-fighting foams. Published online May 2020. https://echa.europa.eu/documents/10162/28801697/pfas_flourine-free_alternatives_fire_fighting_en.pdf/d5b24e2a-d027-0168-cdd8-f723c675fa98]. Exposure to PFAS has been shown to have a variety of negative human health outcomes, including thyroid disease, increased cholesterol, liver damage, and certain cancers. It may pose particular risk to pregnant women and their fetus, including delayed mammary gland development of the mother, and lower birth weight and reduced response to vaccines in the baby [FN4: Fenton SE, Ducatman A, Boobis A, et al. Per and Polyfluoroalkyl Substance Toxicity and Human Health Review: Current State of Knowledge and Strategies for Informing Future Research. Environmental Toxicology and Chemistry. 2021;40(3):606-630. doi: https://doi.org/10.1002/etc.4890]. PFAS are used in many consumer and industrial products, but a substantial route of exposure is drinking water [FN2: Sunderland EM, Hu XC, Dassuncao C, Tokranov AK, Wagner CC, Allen JG. A review of the pathways of human exposure to poly and perfluoroalkyl substances (PFASs) and present understanding of health effects. Journal of Exposure Science & Environmental Epidemiology. 2019;29(2):131-147. doi:10.1038/s41370-018-0094-1].

Individual Response: Please see Discussion on PFAS Contaminants – Miscellaneous Comments.

Comment Excerpt from Commenter 121
There has been movement in recent years to stop production of longer-chain PFAS, but there are still many being manufactured, including the 29 highlighted in this rule. While the EPA has made it clear that cleaning up areas contaminated with PFAS is a priority of the 2019 PFAS Action Plan, there are still new concentrations of these compounds being released into the environment daily through manufacturing [FN5: EPA. EPA PFAS Action Plan: Program Update. Published online February 2020. https://www.epa.gov/sites/default/files/2020-01/documents/pfas_action_plan_feb2020.pdf] [FN2: Sunderland EM, Hu XC, Dassuncao C, Tokranov AK, Wagner CC, Allen JG. A review of the pathways of human exposure to poly and perfluoroalkyl substances (PFASs) and present understanding of health effects. Journal of Exposure Science & Environmental Epidemiology. 2019;29(2):131-147. doi:10.1038/s41370-018-0094-1]]. Reporting on the levels of these compounds will enable local, state, and federal officials to identify any issues before they make people sick. Without monitoring, researchers and health professionals will have no knowledge base from which to draw. It

Comments Received on PFAS Contaminants – Miscellaneous Comments
is important for the EPA, as well as other federal bodies such as the HHS, CDC, USDA, and FDA to be aware of how these compounds are impacting health, and specifically the health of vulnerable populations. Data is an incredibly strong tool for demonstrating inequities. **Individual Response:** Please see Discussion on PFAS Contaminants – Miscellaneous Comments, EO 13045: Protection of Children from Environmental Health Risks and Safety Risks, and EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
Comment Excerpt from Commenter 122 The New Jersey Department of Environmental Protection (NJDEP) is pleased to provide comments on the U.S. Environmental Protection Agency's (EPA) proposed "Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems and Announcement of Public Meeting." Our comments focus on the 29 per and polyfluoroalkyl substances (PFAS) included in proposed UCMR 5, recommendation of including methods for estimating of total PFAS and/or total PFAS precursors in List 2 and/or List 3 of UCMR 5, and recommendation for inclusion of additional contaminants in UCMR 5. PFAS included in proposed UCMR 5 NJDEP supports inclusion of the 29 PFAS included in analytical methods for drinking water that have been validated by EPA, as required by the National Defense Authorization Act (NDAA). Nationwide monitoring of public water systems for these PFAS will provide an extensive and valuable dataset on the frequency of occurrence, levels, and number of people exposed to these PFAS in finished drinking water in the United States. **Individual Response:** Please see Discussion on PFAS Contaminants – Miscellaneous Comments.
Comment Excerpt from Commenter 122 Exposures to even low levels of PFAS are of concern as indicated by their low-dose toxicity in experimental animals and increased risk of numerous human health effects at exposure levels prevalent in the general population. Understanding occurrence of PFAS in drinking water is particularly important because even low levels of PFAS in drinking water can overwhelm other exposure sources that are prevalent in the general population (e.g., diet, consumer products). For example, ongoing ingestion of drinking water contaminated with 20 ng/L PFOA is predicted to result in a greater than 2-fold increase in the blood serum PFOA levels, based on the average level in the U.S. general population, and ongoing ingestion at the EPA Health Advisory level is predicted to increase blood serum levels by several fold (New Jersey Drinking Water Quality Institute, 2017; Post et al., 2017). Additionally, and importantly, infants, who are a sensitive subpopulation for adverse effects of PFAS, receive higher exposures from drinking water than older individuals (New Jersey Drinking Water Quality Institute, 2015; New Jersey Drinking Water Quality Institute, 2017; Post et al., 2017; New Jersey Drinking Water Quality Institute, 2018; Goeden et al., 2019; Post, 2021). **Individual Response:** Please see Discussion on PFAS Contaminants – Miscellaneous Comments and EO 13045: Protection of Children from Environmental Health Risks and Safety Risks.

Agency Discussion on Lithium

Agency Topic Discussion: EPA received multiple comments supporting the inclusion of lithium in UCMR 5. The Agency identified one EPA-developed analytical method and multiple optional alternative methods to analyze samples for lithium under UCMR 5. Occurrence and health effects data for the analytes in UCMR 5 monitoring are detailed in the "Information Compendium for Contaminants for the Final Unregulated Contaminant Monitoring Rule (UCMR 5)" (USEPA, 2021j). This Information Compendium contains the best available data as of late 2021.

Comments Received on Lithium

Comment Excerpt from Commenter 58

6. Include Lithium in the UCMR 5, for the reasons EPA has proposed.

Individual Response: Please see Discussion on Lithium.

Comment Excerpt from Commenter 63

There is some research showing that lithium in water may actually have a relation to anti-suicide and the decreasing number of crimes being committed in some area. To find out if this is true, we would need to monitor the lithium levels in drinking water and compare that to the rates we are seeing in different areas. If this is true, it will be very a beneficial breakthrough for scientists and would be especially beneficial to know during times like now when we are seeing suicide numbers rise due to the Covid-19 pandemic and the several months of quarantining causing an increase rate of depression. ("Lithium).

Individual Response: Please see Discussion on Lithium.

Comment Excerpt from Commenter 103

6. EPA's proposal to require monitoring for lithium while also requiring monitoring for PFAS through the UCMR 5 program effectively balances EPA's statutory obligation, data needed to support timely drinking water standard development, and EPA's programmatic capacity. However, the existing provisional risk assessment for lithium should be reviewed.

Individual Response: Please see Discussion on Lithium and General Support of UCMR Program and Proposed UCMR 5 Approach.

Comment Excerpt from Commenter 103

Lithium

Occurrence monitoring for lithium has been previously conducted under the EPA's National Inorganics and Radionuclides Survey (NIRS) in 1987. The results of this study found that lithium was present in 55.7% of drinking water samples (supplied by groundwater) at a level of 5 parts per billion (ppb) or higher and a 90th percentile detection of 63 ppb. A separate, more recent, study by the USGS has also found lithium in groundwater and public water supply wells at levels ranging from less than 1 ppb to 396 ppb (median of 8.1). EPA's proposal to require monitoring for lithium in addition to PFAS through the UCMR 5 program effectively balances EPA's statutory obligation, data needed to support timely drinking water standard development, and EPA's programmatic capacity.

While the USGS study is substantially smaller than the anticipated UCMR 5 dataset (i.e., 1,464 community water system wells), EPA could collaborate with USGS such that sampling of water systems in UCMR 5 complements rather than duplicates that dataset.

The EPA's Provisional Peer Reviewed Toxicity Values (PPRTV) for Lithium (2009) evaluated available toxicity

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information for lithium and estimated a provisional reference dose of 2 micrograms per kilogram body weight per day (µg/kg-day). Using this reference dose, the equivalent health risk level would be 14.4 µg/L. As the EPA works to finalize UCMR 5, the toxicity value should be reviewed, and revisions should be considered. In particular, EPA should consider:

1. While the PPRTV developed a reference dose for lithium, the confidence level in the provisional reference dose was noted as low-to-medium. The reasoning that the EPA put forward for this assessment is that the database lacked key information to support comprehensive toxicity information at relevant doses.
2. The PPRTV was developed in 2009 and does not account for the more than 12 years of research that has been published on the health effects of lithium at levels relevant for drinking water, which may likely improve the strength of the database for lithium health effects and the confidence level for a health risk level.

Individual Response: Please see Discussion on Lithium. The scope of UCMR 5 monitoring for lithium is consistent with the terms of SDWA, as amended by AWIA. Occurrence data available from USGS studies, EPA's NIRS survey, and other sources will be considered by the agency during the Regulatory Determination process.

Comment Excerpt from Commenter 114

The inclusion of lithium in the proposed UCMR is further evidence that there is an issue with the regulatory development process for identifying unregulated contaminants. Lithium's inclusion in this UCMR poses questions such as: Why wasn't lithium included on CCL 4? Is the scientific development process moving too fast for the regulatory process to keep up? Does lithium have much more new health effects data, as opposed to other CCL4 contaminants? Should the drinking water community be evaluating the effectiveness of the current regulatory development process and developing improved methods for assessing contaminants for further SDWA regulatory actions?

Individual Response: Please see Discussion on Lithium, Interrelationship of CCL, UCMR, and Regulatory Determinations, and Contaminant Selection Process and Supporting Documents.

Comment Excerpt from Commenter 119

6. Include Lithium in the UCMR 5, for the reasons EPA has proposed.

Individual Response: Please see Discussion on Lithium.

Comment Excerpt from Commenter 120

6. Include Lithium in the UCMR 5, for the reasons EPA has proposed.

Individual Response: Please see Discussion on Lithium.

Agency Discussion on *Legionella pneumophila*

Agency Topic Discussion: EPA received many comments on *Legionella pneumophila* reflecting mixed opinions on the appropriateness of including it in UCMR 5 monitoring. Consistent with the UCMR 5 proposed rule, EPA has decided not to include *Legionella pneumophila* in the final UCMR 5. EPA acknowledges that *Legionella pneumophila* is a public health concern. However, the Agency agrees with the commenters who believe that monitoring for *Legionella* under UCMR 5 would not be the most effective strategy for collecting comprehensive, risk-management information.

Under EPA's Surface Water Treatment Rule (SWTR), EPA established NPDWRs for *Giardia*,

Agency Discussion on *Legionella pneumophila*

viruses, *Legionella*, turbidity, and heterotrophic bacteria and set maximum contaminant level goals of zero for *Giardia lamblia*, viruses, and *Legionella pneumophila* (54 FR 27486, June 29, 1989 (USEPA, 1989)). EPA is currently examining opportunities to enhance protection against *Legionella pneumophila* through revisions to the suite of Microbial and Disinfection Byproduct (MDBP) rules. In addition to the SWTR, the MDBP suite includes the Stage 1 and Stage 2 Disinfectants and Disinfection Byproduct Rules; the Interim Enhanced Surface Water Treatment Rule; and the Long Term 1 Enhanced Surface Water Treatment Rule.

As stated in the conclusions from EPA's third "Six-Year Review of Drinking Water Standards" (82 FR 3518, January 11, 2017 (USEPA, 2017)), "EPA identified the following NPDWRs under the SWTR as candidates for revision, because of the opportunity to further reduce residual risk from pathogens (including opportunistic pathogens such as *Legionella*) beyond the risk addressed by the current SWTR." In accordance with the dates in the Settlement Agreement between EPA and Waterkeeper Alliance (*Waterkeeper Alliance, Inc. v. U.S. EPA*, No. 1:19-cv-00899-LJL (S.D.N.Y. Jun. 1, 2020)), the agency anticipates signing a proposal for revisions to the MDBP rules and a final action on the proposal by July 31, 2024 and September 30, 2027, respectively. EPA has concluded that UCMR 5 data collection for *Legionella pneumophila* would not be completed in time to meaningfully inform MDBP revision and that UCMR 5 data for *Legionella pneumophila* would soon lack significance because it would not reflect conditions in water systems after any regulatory revisions become effective (because water quality would be expected to change as a result of PWSs complying with such regulatory revisions).

EPA estimates that *Legionella pneumophila* monitoring under UCMR 5 would have added $10.5 million in new expenses for large PWSs, $20 million in new expenses for the agency for small system monitoring, and $0.5 million in new expenses for small PWSs and states over the 5-year UCMR period. Because the data would not be available in time to inform MDBP regulatory revisions and because MDBP revisions could change the presence of *Legionella pneumophila* in drinking water distribution systems (*Legionella* occurrence may change, for example, if the required minimum disinfectant residual concentration is higher following MDBP revisions), EPA concluded that the expense of this monitoring is not warranted given the limited utility of the data.

Translating UCMR occurrence data (or lack thereof) to exposure risk for *Legionella* results would have been problematic. Significant risk communication implications exist, particularly those related to premise plumbing versus PWSs as the source of *Legionella*. Lack of *Legionella* detections under UCMR could lead PWS customers (including hospitals and other large buildings) to falsely conclude that they need not be vigilant and that they do not need a drinking water risk management plan. EPA has provided PWSs, States, and building operators and hospitals with guidance on the factors that contribute to *Legionella* occurrence and information about available technologies for *Legionella* control for their specific situation and water type (USEPA, 2016d).

Nearly all legionellosis cases for which a causative agent was identified are due to *Legionella pneumophila*. Thus, specificity in analytical method relative to *Legionella* is an important consideration in the interpretation of *Legionella* monitoring results and associated health risks. As commenters advocating for inclusion of *Legionella* pointed out, some *Legionella* analytical methods are currently being used by both private and public laboratories in outbreak or local scenarios. EPA is aware that there are a number of potential techniques for measuring *Legionella pneumophila*, including the commercially-available Legiolert™ test (IDEXX Laboratories, Inc., 2020), but the Agency has not yet evaluated or validated these methods. Prior to securing laboratory support for *Legionella* monitoring (whether via UCMR, and ICR study, a research study, or other means), the Agency would need to identify a method, complete method validation, and develop PT

Agency Discussion on *Legionella pneumophila*

samples. Laboratories would need additional time to develop and demonstrate proficiency with the method, and EPA would need to conduct a multi-laboratory study to establish an MRL for *Legionella*.

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Comment Excerpt from Commenter 57

The information collection provisions do not maximize the public benefit and the utility of the data collected because they do not include Legionella pneumophila ("Legionella") in the proposed list of contaminants required to be monitored. Legionella is a pathogen present in drinking water and the public would benefit directly and substantially from knowing whether there are unregulated pathogens and contaminants, like Legionella, in their drinking water. Further, and in the future, inclusion in the UCMR process will help ensure drinking water systems can have data-driven guidance from the Agency on how to respond to this risk.

Legionella has been on the Contaminant Candidate List ("CCL") as an unregulated contaminant for nearly a decade and it presents a great public health concern related to exposure from drinking water; yet EPA has never required monitoring of Legionella or data collection on instances in drinking water. IDEXX believes this would be an ideal time to finally include Legionella in the list of unregulated contaminants to be monitored, and that doing so would maximize the benefit to the public without significant burden.

The UCMR 5 information collection provisions must minimize the burden on the public. Including Legionella in UCMR 5 can be achieved while minimizing the burden on the public by leveraging existing sampling processes at water utilities. EPA can (1) take advantage of the existing sample collection already to be undertaken by utilities as part of the UCMR 5 sampling and/or (2) leverage the utility's required sampling under the Revised Total Coliform Rule to collect an additional volume of water for Legionella analysis.

Individual Response: Please see Discussion on *Legionella pneumophila* and Cost Associated with Alternative Contaminants Considered – *Legionella pneumophila*.

Comment Excerpt from Commenter 57

Again, we very much appreciate the work of EPA in developing this list of contaminants for future study, however in order to maximize utility of the UCMR 5, we believe the information collection provisions in UCMR 5 should include Legionella in order to meet the requirements under the PRA.

We know that EPA is keenly focused on protecting the public health and that addressing environmental justice and current inequities is a top priority – particularly as it relates to ensuring all Americans have access to safe water free of harmful contaminants. We applaud the agency for its work to ensure all communities have access to safe drinking water, and firmly believe the inclusion of Legionella for further study on UCMR 5 will help the agency meet those goals.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 58

3. Add Legionella to UCMR 5, or at least promptly issue an Information Collection Rule (ICR) to require a statistically valid sample of PWSs to do Legionella monitoring in time for MDBP revisions rule. The National Academy of Sciences has recommended that there be a significant increase in Legionella monitoring by drinking water systems since these bacteria are linked to up to 70,000 disease cases per year and afflicts and kills more people than any other reported waterborne disease.

Individual Response: Please see Discussion on *Legionella pneumophila*.

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Comment Excerpt from Commenter 71

The Metro Group agrees with those various entities advocating for the addition of L. pneumophila to the EPA's final list of contaminants study.

As members of the commercial/industrial water treatment service community, our interest is in understanding the pathogenic organisms that can enter building water systems. Incorporating source water/distribution system detection strategies for Legionella will logically reduce the potential for downstream growth and proliferation of that known pathogen within buildings as it is passed through points of entry. Early detection should inform corrective or remedial disinfection strategies and improve the safety of municipally supplied water to protect occupants and the public.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 72

The Association of Water Technologies (AWT) commends the Environmental Protection Agency's commitment to gathering comprehensive data through the UCMR process to inform future policies to protect the public from waterborne health risks. AWT is an international trade association representing over 550 companies that specialize in applying treatments for industrial and commercial cooling, heating and potable water systems. AWT members help municipalities, commercial buildings, health care facilities, and manufacturers of electronics, chemicals, paper, petroleum, and steel to clarify water and prevent pollution, scale formation, biological growth, and corrosion in potable, boiler and cooling systems. A large number of our member's work involves managing the risk of Legionellosis associated with building water systems and reservoir devices.

AWT professionals work diligently to ensure water that may become aerosolized through building plumbing systems and cooling towers does not endanger the health of the buildings' occupants, neighbors, or employees who manage those systems. We urge you to take advantage of the UCMR process to formally study the prevalence of Legionella pneumophila in public water distribution systems.

Legionella pneumophila is a pathogen that is naturally present in source water. When even small amounts make their way from this source through the public water systems to complex building water and cooling tower systems, they have the potential to proliferate, become airborne and cause Legionnaires' disease. In fact, the CDC Toolkit on Legionnaires' disease prevention specifically calls out the risk of poor incoming water quality. Unfortunately, despite much greater awareness, focus and spending by private industry on implementing premise water management plans and treatment over the last decade, this process of Legionella pneumophila entering a premise, growing, becoming airborne and causing disease repeats itself again and again in every state in the nation. According to the US CDC, Legionnaires' disease cases increased nearly 900% between 2000 and 2018, causing 1 in 10 of all diagnosed patients to die, and death in 1 in 4 healthcare-associated cases. The need to address this deadly cycle is only increasing with the millions of Americans at greater risk of Legionnaires' disease because of respiratory weakness and other significant health issues caused by COVID-19.

As water treatment professionals, we are constantly educating building owners about prevention and are proud to do our part in reducing Legionnaires' disease every day. But we can't do it alone. Incoming distribution water quality matters tremendously and research, including research cited by the EPA in this docket, has documented that Legionella can be present even in public water systems that are adhering to current Safe Water Drinking Act standards. As our Association articulated in our AWT Legionella 2019 Position

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Statement and Guidance Document, "Proper treatment of public water systems is important in the utility plant as well as the distribution system. Domestic water systems in buildings supplied by water of high quality and relatively high disinfectant residuals are less likely to have hazardous levels of Legionella than buildings with water of poorer quality and lower disinfectant levels."

We would like to call the Agency's attention to the consensus recommendation expressed by the scientists and experts who authored the 2019 National Academies of Science, Engineering & Medicine, Management of Legionella in Water Systems, that "the EPA should require a minimum disinfectant residual throughout public water systems to prevent the growth of Legionella and validate treatment performance by routine monitoring." At the same time, we understand and support the Agency's need to make data-driven decisions about which policies and regulations are most appropriate for our nation's water. We strongly encourage you to utilize the robust nationwide study process which was expressly designed for this purpose and add Legionella pneumophila to the final list of contaminants to study under UMCR 5.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 73

IDEXX would like to thank EPA for its continued work in supporting public and environmental health through the development of the draft UCMR 5. In the docket EPA states it is interested in receiving comments regarding Legionella pneumophila. We are pleased to offer the following comment and supporting information for consideration. Our hope is EPA will conclude the addition of Legionella to UCMR 5 can lead to data that can support better health for all US citizens and help put a stop to a largely preventable disease.

Include Legionella pneumophila in UCMR 5

Legionella pneumophila is the most common and dangerous drinking water pathogen in the U.S. It is the causative agent of Legionnaires' disease, a respiratory disease with a high mortality rate that is responsible for almost every death associated with U.S. drinking water outbreaks over the last twenty years. Those fortunate enough to survive often suffer from associated long-term disabilities. It is estimated to affect 70,000 people annually in the U.S. according to the National Academy of Science, Engineering and Medicine (NASEM) Legionella report (2019) which was supported, in part, by the EPA.

Legionella pneumophila risks are heightened now because of the SARS-CoV-2 (COVID 19) pandemic. Because Legionnaires' disease is most dangerous to those with pre- existing respiratory issues, many COVID-19 victims whose respiratory systems have been weakened by COVID-19 are now at risk of suffering secondary infections from bacteria such as L. pneumophila. This is expected to have a particularly broad impact within our most vulnerable citizens in underserved communities, who have disproportionally already suffered from COVID-19 and are likely to live where drinking water infrastructure maintenance has been less consistent.

EPA has included L. pneumophila on its contaminant candidates list (CCL) for over 10 years, well before the advent of the pandemic – and EPA has specifically requested comment on L. pneumophila in its April 2021 public webinars. We strongly encourage EPA reconsider adding L. pneumophila to the final UCMR 5 list of contaminants for data collection.

Legionella pneumophila poses a significant and increasing risk to public health

As we mention above, Legionella pneumophila, the causative agent of Legionnaires' disease, poses a significant health risk to the public, with mortality rates of 10% in the general population and 25% for those who contract it in healthcare setting. Annual Legionnaires' disease cases in the U.S. have increased more than

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600% since 2000 and have done so in every state (according to CDC Data).

Because of the COVID-19 pandemic, the public health risk for Legionnaires' disease (also a severe respiratory disease) has now increased substantially. The probability of contracting Legionnaires' disease is particularly high for people with chronic lung issues. As we now know, COVID-19 impacts lung function and may cause permanent lung damage. With more than 32 million Americans having contracted COVID-19, a large new subset of the population is now particularly vulnerable to Legionnaires' disease.

Additionally, COVID-19 has disproportionally affected communities of color and essential workers in low-income or otherwise marginalized areas, the very same communities that have historically suffered from underinvestment in the public and private infrastructure maintenance required to ensure safe water and reduce Legionnaires' disease risk.

L. pneumophila is substantially likely to be found in public water systems at a "frequency and level of concern" and there is a "meaningful opportunity for health risk reduction through national drinking water regulation" of this pathogen
L. pneumophila has been shown to occur in drinking water (LeChevallier, 2019, 2019). The Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), and National Academies of Sciences, Engineering, and Medicine (NASEM) all state that Legionella pneumophila is the number one waterborne disease-causing contaminant in drinking water.

Although L. pneumophila is a naturally occurring waterborne pathogen, Legionnaires' disease is preventable through better water management; up to 90% of the time, according to the US CDC. CDC materials specifically highlight the quality of incoming drinking water as a risk to be understood and managed. (CDC Vital Signs, 2017).

The 2020 NASEM report on Legionella, commissioned by the EPA, CDC and VA and the Sloan Foundation from the National Academies of Science, Engineering & Medicine concluded the Safe Water Drinking Act "is not protective of the end user with respect to Legionella contamination" A key recommendation from the report includes the assessment of drinking water "…validate treatment performance by routine monitoring."

EPA has established an understanding of the risk L. pneumophila poses to public health as described in both the current docket materials and past EPA publications including: Legionella Health Advisories in March 1987, March 2001, the Legionella: Drinking Water Fact Sheet of 2000 and the EPA literature review of Technologies for Legionella Control in Premise Plumbing Systems.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 73

UCMR 5 is an appropriate and viable vehicle to generate the data needed when considering any policy change recommendations
L. pneumophila has been on the Contaminant Candidate Lists 3 and 4 but EPA has not yet moved this pathogen to data collection under a UCMR. We think EPA is missing an opportunity to include well more than just PFAS contaminants on the UCMR 5. The bulk of the draft UCMR 5 list – indeed, 29 out of the 30 contaminants to be studied, include per and polyfluoroalkyl substances (PFAS) – which we agree pose a risk to human health and need to be examined. However, the FY2020 National Defense Authorization Act (NDAA) in Sec 7311 instructed EPA to not count PFAS compounds toward the limit of 30 contaminants to be proposed in

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UCMR 5, explicitly leaving room for other contaminants of known and documented hazard to public health, such as L. pneumophila. Furthermore, on January, 20 2021, President Biden issued an Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis. This EO affirms a commitment to making science-based, data-driven policy decisions. Data on L. pneumophila occurrence is essential to inform any potential policy changes through the upcoming 6-Year Review process. Specifically, attempting to address L. pneumophila risk through disinfectant minimums without meaningful data to understand the scope of the problem or support the effectiveness of this approach puts both distribution systems and public health in jeopardy. **Individual Response:** Please see Discussion on *Legionella pneumophila* and NDAA Provision Allowing Consideration of More than 30 Contaminants.
Comment Excerpt from Commenter 73 Rulemaking for Microbial and Disinfection Byproducts Rules ("MDBP") is currently underway and in order for EPA to fully develop an assessment as to whether any revision to the MDBP rules would be effective at reducing L. pneumophila, obtaining baseline data would be necessary. Such baseline data would allow future revisions to MDBP rules to be more appropriately tailored to address L. pneumophila contamination. Responsible regulation requires responsible data – making data collection via UCMR 5 all the more important. Leveraging the well-established UCMR process during UCMR 5 would reduce the need and added expense for future L. pneumophila data collection events to support 6-Year Review, reducing costs and reducing further delays to urgent water quality policy discussions. We recognize that the 6-Year Review and UCMR processes are not in sync with regard to timing. This timing differential will be an on-going impediment to making policy decisions grounded in science unless EPA considers alternatives to the traditional UCMR calendar. It is feasible for the required data collection for L. pneumophila to occur in the earlier of the three UCMR data collection years (2023) so these findings can inform the 6-Year Review process, a draft of which is due later in 2024. Validated methods are readily available for accredited laboratories to use in testing water samples for L. pneumophila, including, but not limited to, the IDEXX Legiolert method, mentioned in the docket materials **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 74 As a provider of products and services for building water systems, Garratt-Callahan supports the position paper as submitted by IDEXX concerning EPA UMCR 5. **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 86 4. It is CT DPH's interpretation that the National Defense Authorization Act intended the 29 PFAS to be in addition to the 30 contaminants required through the SDWA process. EPA considered additional contaminants for monitoring in UCMR5 and rejected including those contaminants. CT DPH believes that additional contaminants warrant inclusion in the final UCMR5, specifically Legionella pneumophila. While it is primarily considered a premise plumbing problem, studies have also linked Legionella pneumophila to storage tanks. EPA should be looking holistically at the issues. Legionella pneumophila control must be a shared responsibility between water systems and building owners. Data from Legionella pneumophila monitoring under UCMR, in conjunction with other data (source type, disinfectant residuals, disinfectant type, etc.), may lead to better control measures, both in buildings and distribution systems. Including Legionella pneumophila

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would be an opportunity to get a baseline of data and provide better support for both EPA and states in addressing Legionella pneumophila. **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 92 Garratt-Callahan as a provider of water treatment products and services to include testing and treatment for Legionella in building water systems, supports the position of IDEXX in their comments on EPA UMCR 5. **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 93 Integrated Resource Management, Inc. (IRM) and Erin Brockovich have worked collaboratively with Community Drinking Water Systems across the United States and internationally for over 25 years. Together we support the work of the Alliance to Prevent Legionnaires' Disease, actively participate in guidance documents, best management practices and regulation adoption processes with equal depth, breadth and enthusiasm. IRM and Erin Brockovich would like to thank the USEPA for their continued work in supporting public and environmental health through the development of the 5th UCMR draft. In Docket EPA-HQ-OW-2020-0530 it states the USEPA is interested in receiving comments regarding Legionella pneumophila. We are pleased to offer the following comments and supporting information for consideration. Insomuch as 96% reported Legionella pneumophila cases are sporadic, indicating distribution through community drinking water systems, our hope is the USEPA will see that this addition can lead to data that can support better health for all consumers in the United States and help put a stop to a nearly preventable disease. **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 93 Legionella pneumophila is the most common and dangerous drinking water pathogen in the United States. Legionella pneumophila is the causative agent of Legionnaires' disease, a respiratory disease with a high mortality rate that is responsible for almost every death associated with United States drinking water outbreaks over the last twenty years. Those fortunate enough to survive often suffer from associated longterm disabilities. It is estimated to affect 70,000 people annually in the United States according to the National Academy of Science, Engineering and Medicine (NASEM) Legionella report (2019) which was supported, in part, by the USEPA. The USEPA has included Legionella pneumophila on its contaminant candidates list (CCL) for over 10 years; we now strongly encourages the USEPA to add Legionella pneumophila to the final UCMR 5 list of contaminants for data collection. Legionella pneumophila poses a significant and increasing risk to public health • Legionella pneumophila, the causative agent of Legionnaires' disease, poses a significant health risk with mortality rates of 10% in the general population and 25% for those who contract it in a healthcare setting. • Annual Legionnaires' disease cases in the United States have increased more than 600% since 2000 and have done so in every state (CDC Data). • Because of the COVID-19 pandemic, the public health risk for Legionnaires' has increased substantially. The probability of contracting Legionnaires' disease is particularly high for people with chronic lung issues. COVID-19 impacts lung function and may cause permanent lung damage. With more than 32 million

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Americans having contracted COVID-19, a large new subset of the population is now particularly vulnerable to Legionnaires' disease. • COVID-19 has disproportionally affected communities of color and essential workers in low-income or otherwise marginalized areas, the very same communities that have historically suffered from underinvestment in the public and private infrastructure maintenance required to ensure safe water and reduce Legionnaires' disease risk. Legionella pneumophila is substantially likely to be found in public water systems at a "frequency and level of concern" and there is a "meaningful opportunity for health risk reduction through national drinking water regulation" of this pathogen Legionella pneumophila occurs in drinking water and has been linked to cases and outbreaks (data available). • The Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), and National Academies of Sciences, Engineering, and Medicine (NASEM) all state that Legionella pneumophila is the number one waterborne disease-causing contaminant in drinking water. • However, although Legionella pneumophila is a naturally occurring waterborne pathogen, Legionnaires' disease is preventable through better water management; up to 90% of the time, according to the US CDC. CDC materials specifically highlight the quality of incoming drinking water as a risk to be understood and managed. (CDC Vital Signs, 2017). • The 2020 NASEM report on Legionella, commissioned by the EPA, CDC, VA and the Sloan Foundation from the National Academies of Science, Engineering & Medicine concluded the Safe Water Drinking Act "is not protective of the end user with respect to Legionella contamination." A key recommendation from the report includes the assessment of drinking water "…validate treatment performance by routine monitoring." • The Agency has established an understanding of the risk Legionella pneumophila poses to public health as described in both the current docket materials and past USEPA publications including: Legionella Health Advisories in March 1987, March 2001, the Legionella: Drinking Water Fact Sheet of 2000 and the EPA literature review of Technologies for Legionella Control in Premise Plumbing Systems. UCMR 5 is an appropriate and viable vehicle to generate the data needed when considering any policy change recommendations • Legionella pneumophila has been on the Contaminant Candidate Lists 3 and 4 but the Agency has not yet moved this pathogen to data collection under a UCMR. **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 93 • On January, 20 2021, President Biden issued an Executive Order (EO) on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis. This EO affirms a commitment to making science-based, data-driven policy decisions. Data on Legionella pneumophila occurrence is essential to inform any potential policy changes through the upcoming 6-Year Review process. Specifically, attempting to address Legionella pneumophila risk through disinfectant minimums without meaningful data to understand the scope of the problem or support the effectiveness of this approach puts both distribution systems and public health in jeopardy. • Leveraging the well-established UCMR process during UCMR 5 would reduce the need and added expense for future Legionella pneumophila data collection events to support the 6-Year Review, reducing costs and reducing further delays to urgent water quality policy discussions. • The 6-Year Review and UCMR processes are not synchronized regarding timing. The timing mismatch

Comments Received on *Legionella pneumophila*
remains an on-going impediment to making policy decisions grounded in science unless the USEPA considers alternatives to the traditional UCMR calendar. It is feasible for the required data collection for Legionella pneumophila to occur in the earlier of the three UCMR data collection years (2023) so these findings can inform the 6-Year Review process, a draft of which is due later in 2024. Integrated Resource Management, Inc. and Erin Brockovich applaud the USEPA for the opportunity to comment on Docket EPA-HQ-OW-2020-0530. IRM appreciates USEPA's prioritization of environmental justice issues and inequity, particularly as they relate to ensuring all Americans are supplied safe drinking water with minimal risk from harmful contaminants; however, we are deeply concerned with the years of unnecessary delay in establishing policies that could have prevented untold Legionnaires' disease cases and deaths. Thank you for your commitment to the USEPA's mission and for your thoughtful consideration of our comments. **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 94 Integrated Resource Management, Inc. (IRM) and Erin Brockovich have worked collaboratively with Community Drinking Water Systems across the United States and internationally for over 25 years. Together we support the work of the Alliance to Prevent Legionnaires' Disease, actively participate in guidance documents, best management practices and regulation adoption processes with equal depth, breadth and enthusiasm. IRM and Erin Brockovich would like to thank the USEPA for their continued work in supporting public and 5th environmental health through the development of the UCMR draft. In Docket EPA-HQ-OW-2020-0530 it states the USEPA is interested in receiving comments regarding Legionella pneumophila. We are pleased to offer the following comments and supporting information for consideration. Insomuch as 96% reported Legionella pneumophila cases are sporadic, indicating distribution through community drinking water systems, our hope is the USEPA will see that this addition can lead to data that can support better health for all consumers in the United States and help put a stop to a nearly preventable disease. **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 94 Legionella pneumophila is the most common and dangerous drinking water pathogen in the United States. Legionella pneumophila is the causative agent of Legionnaires' disease, a respiratory disease with a high mortality rate that is responsible for almost every death associated with United States drinking water outbreaks over the last twenty years. Those fortunate enough to survive often suffer from associated longterm disabilities. It is estimated to affect 70,000 people annually in the United States according to the National Academy of Science, Engineering and Medicine (NASEM) Legionella report (2019) which was supported, in part, by the USEPA. The USEPA has included Legionella pneumophila on its contaminant candidates list (CCL) for over 10 years; we now strongly encourages the USEPA to add Legionella pneumophila to the final UCMR 5 list of contaminants for data collection. Legionella pneumophila poses a significant and increasing risk to public health • Legionella pneumophila, the causative agent of Legionnaires' disease, poses a significant health risk with mortality rates of 10% in the general population and 25% for those who contract it in a healthcare setting. • Annual Legionnaires' disease cases in the United States have increased more than 600% since 2000 and have done so in every state (CDC Data).

Comments Received on *Legionella pneumophila*
• Because of the COVID-19 pandemic, the public health risk for Legionnaires' has increased substantially. The probability of contracting Legionnaires' disease is particularly high for people with chronic lung issues. COVID-19 impacts lung function and may cause permanent lung damage. With more than 32 million Americans having contracted COVID-19, a large new subset of the population is now particularly vulnerable to Legionnaires' disease. • COVID-19 has disproportionally affected communities of color and essential workers in low-income or otherwise marginalized areas, the very same communities that have historically suffered from underinvestment in the public and private infrastructure maintenance required to ensure safe water and reduce Legionnaires' disease risk. Legionella pneumophila is substantially likely to be found in public water systems at a "frequency and level of concern" and there is a "meaningful opportunity for health risk reduction through national drinking water regulation" of this pathogen Legionella pneumophila occurs in drinking water and has been linked to cases and outbreaks (data available). • The Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), and National Academies of Sciences, Engineering, and Medicine (NASEM) all state that Legionella pneumophila is the number one waterborne disease-causing contaminant in drinking water. • However, although Legionella pneumophila is a naturally occurring waterborne pathogen, Legionnaires' disease is preventable through better water management; up to 90% of the time, according to the US CDC. CDC materials specifically highlight the quality of incoming drinking water as a risk to be understood and managed. (CDC Vital Signs, 2017). • The 2020 NASEM report on Legionella, commissioned by the EPA, CDC, VA and the Sloan Foundation from the National Academies of Science, Engineering & Medicine concluded the Safe Water Drinking Act "is not protective of the end user with respect to Legionella contamination." A key recommendation from the report includes the assessment of drinking water "…validate treatment performance by routine monitoring." • The Agency has established an understanding of the risk Legionella pneumophila poses to public health as described in both the current docket materials and past USEPA publications including: Legionella Health Advisories in March 1987, March 2001, the Legionella: Drinking Water Fact Sheet of 2000 and the EPA literature review of Technologies for Legionella Control in Premise Plumbing Systems. UCMR 5 is an appropriate and viable vehicle to generate the data needed when considering any policy change recommendations • Legionella pneumophila has been on the Contaminant Candidate Lists 3 and 4 but the Agency has not yet moved this pathogen to data collection under a UCMR. • **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 94 • On January, 20 2021, President Biden issued an Executive Order (EO) on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis. This EO affirms a commitment to making science-based, data-driven policy decisions. Data on Legionella pneumophila occurrence is essential to inform any potential policy changes through the upcoming 6-Year Review process. Specifically, attempting to address Legionella pneumophila risk through disinfectant minimums without meaningful data to understand the scope of the problem or support the effectiveness of this approach puts both distribution systems and public health in jeopardy. • Leveraging the well-established UCMR process during UCMR 5 would reduce the need and added expense

Comments Received on *Legionella pneumophila*

for future Legionella pneumophila data collection events to support the 6-Year Review, reducing costs and reducing further delays to urgent water quality policy discussions.

- The 6-Year Review and UCMR processes are not synchronized regarding timing. The timing mismatch remains an on-going impediment to making policy decisions grounded in science unless the USEPA considers alternatives to the traditional UCMR calendar. It is feasible for the required data collection for Legionella pneumophila to occur in the earlier of the three UCMR data collection years (2023) so these findings can inform the 6-Year Review process, a draft of which is due later in 2024.

Integrated Resource Management, Inc. and Erin Brockovich applaud the USEPA for the opportunity to comment on Docket EPA-HQ-OW-2020-0530. IRM appreciates USEPA's prioritization of environmental justice issues and inequity, particularly as they relate to ensuring all Americans are supplied safe drinking water with minimal risk from harmful contaminants; however, we are deeply concerned with the years of unnecessary delay in establishing policies that could have prevented untold Legionnaires' disease cases and deaths. Thank you for your commitment to the USEPA's mission and for your thoughtful consideration of our comments.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 104

- PA DEP supports EPA's decision not to require monitoring for Legionella pneumophila at this time, for the reasons provided in the proposed rule. Specifically, since an approved laboratory method does not currently exist, there would be no laboratory capacity for analysis. Additional recommendations to address Legionella are included below.

PA DEP offers the following comments and recommendations to EPA to clarify and strengthen the rulemaking.

- While PA DEP supports EPA's decision not to require monitoring for Legionella under UCMR 5, PA DEP strongly recommends that EPA take other steps to adequately address the risks to public health from Legionella. PA DEP recommends that EPA include Legionella in the potential revisions to the Microbial and Disinfection Byproducts (MDBP) Rules, and continue to review, develop, and validate analytical methods for the detection of Legionella.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 110

Pace Analytical would like to thank the Agency for their continued work in supporting public and environmental health through the development of the 5th UCMR draft. In the docket it states the Agency is interested in receiving comments regarding Legionella pneumophila, Haloacetonitriles, and Total Organic Fluorine. We are pleased to offer the following comments and supportive information for EPA consideration for those requested and a few additional thoughts on the proposed PFAS compounds. Our hope is the Agency will see that these changes can lead to data that can contribute to better health for all citizens.

Legionella pneumophila
Include in UCMR5
Legionella pneumophila is the most common and dangerous drinking water pathogen in the U.S. It is the causative agent of Legionnaires' disease, a respiratory disease with a high mortality rate that is responsible for almost every death associated with U.S. drinking water outbreaks over the last twenty years. Those fortunate enough to survive often suffer from associated long-term disabilities. It is estimated to affect 70,000 people annually in the U.S. according to the National Academy of Science, Engineering and Medicine (NASEM) Legionella report (2019) which was supported, in part, by the EPA.

Legionella pneumophila risks are heightened now because of the SARS-CoV-2 (COVID 19) pandemic. Because

Comments Received on *Legionella pneumophila*

Legionnaires' disease is most dangerous to those with pre- existing respiratory issues, many COVID-19 victims whose respiratory systems have been weakened by COVID-19 are now at risk of suffering secondary infections from bacteria such as L. pneumophila. This is expected to have a particularly broad impact within our most vulnerable citizens in underserved communities, who have disproportionally already suffered from COVID-19 and are likely to live where drinking water infrastructure maintenance has been less consistent.

The Agency has included L. pneumophila on its contaminant candidates list (CCL) for over 10 years, well before the advent of the pandemic and the Agency specifically requested comment on L. pneumophila in its April 2021 public webinars. We strongly encourage the Agency to add L. pneumophila to the final UCMR 5 list of contaminants for data collection.

- Legionella pneumophila, the causative agent of Legionnaires' disease, poses a significant health risk with a mortality rates of 10% in the general population and 25% for those who contract it in healthcare setting. Cases in the U.S. have increased more than 600% since 2000 and has impacted every state.
- The probability of contracting Legionnaires' disease is particularly high for people with chronic lung issues. COVID-19 impacts lung function and may cause permanent lung damage. With more than 32 million Americans having contracted COVID-19, a large new subset of the population is now particularly vulnerable to Legionnaires' disease.
- COVID-19 has disproportionally affected communities and essential workers in low- income or otherwise marginalized areas. These communities are ones that have historically suffered from underinvestment in the public and private infrastructure maintenance required to ensure safe water and reduce Legionnaires' disease risk.
- L. pneumophila occurs in drinking water and has been linked to cases and outbreaks (data available). Multiple health organizations state that Legionella pneumophila is the number one waterborne disease-causing contaminant in drinking water. It is preventable through better water management; up to 90% of the time, according to the US CDC.
- Validated methods are readily available for accredited laboratories to use in testing water samples for L. pneumophila.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 114

Additionally, ASDWA does not agree with EPA's reasoning for excluding Legionella pneumophila and haloacetonitriles in the proposed UCMR5. EPA states in the Federal Register notice (86 FR 13846) it has "concerns about the utility of a UCMR5 data set on Legionella pneumophila based on the timeframe for the Agency deliberations about the [Microbial and Disinfection Byproduct (MDBP)] revisions. The UCMR5 data collection would not be complete in time to inform regulatory revision and would not reflect conditions in water systems after any regulatory revisions become effective." EPA uses the same reasoning for not including haloacetonitriles in UCMR5. Postponing, perhaps indefinitely, the monitoring of these contaminants due to mismatched regulatory timelines is short sighted. Prioritization of contaminants for UCMR should be based on risk. Information on occurrence of these contaminants is important and necessary regardless of regulatory timelines, especially because EPA cannot know at this time if these contaminants will even be addressed in the MDBP rule revisions. Because there is no UCMR data to provide occurrence information, it is difficult to see how EPA would be able to adequately address the contaminants if they are addressed in the MDBP rule revisions at all. EPA should set itself up for having this data to inform future regulatory revisions, beyond those the agency is already working on. ASDWA does, however, recognize the additional complexity, burden, and expense of monitoring for these contaminants.

Comments Received on *Legionella pneumophila*

While it is primarily considered a premise plumbing problem, studies have also linked Legionella pneumophila to existing in storage tanks, and the water sector should be looking holistically at addressing this contaminant. ASDWA recommends that EPA develop a holistic research strategy in coordination with the Centers for Disease Control. This strategy should include directions detailing where to test for Legionella pneumophila and remediation actions to take once it is found. While UCMR5 is not likely to be the correct avenue to currently address Legionella pneumophila, comprehensive studies on this contaminant are needed, both in distribution system and within building plumbing. Legionella pneumophila is a significant public health problem that warrants a holistic research strategy so that progress can be made to address the problem. The public health problem goes way beyond the water sector, with significant responsibilities residing with the building owners and managers.

Individual Response: Please see Discussion on *Legionella pneumophila* and Haloacetonitriles.

Comment Excerpt from Commenter 115

The Alliance to Prevent Legionnaires' Disease (Alliance) is an organization that strives to reduce the occurrence of Legionnaires' disease by promoting public research and education on the disease, and best practices and policy for its prevention. We appreciate this opportunity to submit comments regarding Revisions to the Unregulated Contaminant Monitoring Rule for Public Water Systems. As background, the Alliance advocates for:

- Providing the public—with special regard for patients—the best available information on Legionnaires' disease.
- Requirement for prompt notification to communities of possible higher Legionella levels in the public water supply due to significant disruptions, including water main breaks, infrastructure changes and severe weather.
- Increased government and private research on Legionella and disease prevention.
- Improved water quality from source-to-tap with greater investments in infrastructure to ensure consistently safe water quality throughout the public water distribution system to residences and buildings.
- Mandated use of CDC investigation protocols by public health officials to determine root causes of outbreaks and sporadic cases of Legionnaires' disease.
- Widespread voluntary adoption of the Legionnaires' disease prevention best practices found in ASHRAE Standard 188 or the CDC Water Management Toolkit.

The Alliance would like to thank the USEPA for their continued work in supporting public and environmental health through the development of the 5th UCMR draft. Docket EPA-HQ-OW-2020-0530 states the USEPA is interested in receiving comments regarding Legionella pneumophila. We are pleased to offer the following comment and supporting information for consideration.

The Alliance centers its approach around comprehensive solutions that address water from source to tap as the only meaningful way to effectively address the risk of Legionnaires' disease and reduce the occurrence not only of outbreaks, but individual, sporadic Legionnaires' disease cases which comprise 96% of all recorded cases, indicating distribution through community drinking water systems. Since the discovery of this disease and the bacteria that causes it 45 years ago, Legionnaires' disease prevention has involved a predominantly singular focus on addressing the end of an extremely complex and variable system. While we have learned more about Legionnaires' disease in that time, cases have increased steadily, and individuals are still

Comments Received on *Legionella pneumophila*

vulnerable to contracting this disease where they live. Our hope is the USEPA will see that this addition can lead to data that can support better health for all consumers in the United States and help put a stop to a nearly preventable disease.

Legionella pneumophila poses a significant and increasing risk to public health with mortality rates of 10% in the general population and 25% for those who contract it in healthcare setting. Annual CDC data shows that Legionnaires' disease cases in the United States have increased more than 600% since 2000 and have done so in every state.

Legionella pneumophila is substantially likely to be found in public water systems at a "frequency and level of concern" and there is a "meaningful opportunity for health risk reduction through national drinking water regulation" of this pathogen.

- The Centers for Disease Control and Prevention, World Health Organization, and National Academies of Sciences, Engineering, and Medicine all state that Legionella pneumophila is the number one waterborne disease-causing contaminant in drinking water.
- Although Legionella pneumophila is a naturally occurring waterborne pathogen, Legionnaires' disease is preventable through better water management from source-to- tap; up to 90% of the time, according to the CDC. CDC materials specifically highlight the quality of incoming drinking water as a risk to be understood and managed. (CDC Vital Signs, 2017).
- The 2020 NASEM report on Legionella, commissioned by the EPA, CDC and VA and the Sloan Foundation from the National Academies of Science, Engineering & Medicine concluded the Safe Water Drinking Act "is not protective of the end user with respect to Legionella contamination." A key recommendation from the report includes the assessment of drinking water supply systems "…validate treatment performance by routine monitoring."
- USEPA has established an understanding of the risk Legionella pneumophila poses to public health as described in both the current docket materials and past USEPA publications including: Legionella Health Advisories in March 1987, March 2001, the Legionella: Drinking Water Fact Sheet of 2000 and the EPA literature review of Technologies for Legionella Control in Premise Plumbing Systems.

UCMR 5 is an appropriate and viable vehicle to generate the data needed when considering any policy change recommendations.

- Legionella pneumophila has been on the Contaminant Candidate Lists 3 and 4 but USEPA has not yet moved this pathogen to data collection under a UCMR.
-

Individual Response: Please see Discussion on *Legionella pneumophila* and Cost Associated with Alternative Contaminants Considered – *Legionella pneumophila*.

Comment Excerpt from Commenter 115

- Leveraging the well-established UCMR process during UCRM 5 would reduce the need and added expense for future Legionella pneumophila data collection events to support 6-Year Review, reducing costs and reducing further delays to urgent water quality policy discussions.
- The timing mismatch of the 6-Year Review and UCMR processes remains an on-going impediment to making policy decisions grounded in science. It is feasible for the required data collection for Legionella pneumophila to occur in the earlier of the three UCMR data collection years (2023) so these findings can inform the 6-Year Review process, a draft of which is due later in 2024.
- While data collection can incur seemingly significant costs, the costs associated with the failure to address this growing water supply and distribution system issue is resulting in significantly greater costs associated with the loss of life, health care costs, investigation costs, and misguided regulatory initiatives

Comments Received on *Legionella pneumophila*
uninformed of the key factors driving the individual and sporadic cases that comprise 96% of all cases. There is a critical need for new data and insights to better guide solutions that can reverse the rate increases of this disease. For these reasons, the Alliance now strongly encourages the USEPA to add Legionella pneumophila to the final UCMR 5 list of contaminants for data collection. The Alliance is grateful for this opportunity to comment on Docket EPA-HQ-OW- 2020-0530 and appreciates USEPA's prioritization of environmental justice issues and inequity, particularly as they relate to ensuring all Americans are supplied safe drinking water with minimal risk from harmful contaminants; however, we are deeply concerned with the years of unnecessary delay in establishing policies that could have prevented untold Legionnaires' disease cases and deaths. Having heard from countless families and survivors impacted by Legionnaires' disease, the Alliance urges swift action to prevent the pain, suffering, and loss associated with this preventable illness. Thank you for your commitment to the USEPA's mission and for your thoughtful consideration of the Alliance's comments. **Individual Response:** Please see Discussion on *Legionella pneumophila* and Cost Associated with Alternative Contaminants Considered – *Legionella pneumophila*.
Comment Excerpt from Commenter 117 Legionella pneumophila Legionella pneumophil, the agent responsible for Legionnaires' Disease, is the most common and dangerous drinking water pathogen in the U.S. It is estimated to affect 70,000 people annually in the U.S. according to the National Academy of Science, Engineering and Medicine (NASEM) Legionella report (2019). EPA has included L. pneumophila on its contaminant candidates list for over 10 years, and the Agency specifically requested comment on L. pneumophila in its April 2021 public webinars. We now strongly encourage the Agency to add L. pneumophila to the final UCMR 5 list of contaminants for data collection. The availability of appropriate monitoring methodology and adequate laboratory capacity would not be issues and adding this analyte should thus not impact UCMR 5 implementation. Summary In summary, while ACIL supports the proposed rulemaking, it believes that it is critically important that the additional monitoring described above be included in UCMR 5. ACIL and its member laboratories and analytical instrument manufacturers stand ready to assist the Agency in addressing any outstanding concerns that it may have with respect to appropriate analytical methodology. **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 119 3. Add Legionella to UCMR 5, or at least promptly issue an Information Collection Rule (ICR) to require a statistically valid sample of PWSs to do Legionella monitoring in time for MDBP revisions rule. The National Academy of Sciences has recommended that there be a significant increase in Legionella monitoring by drinking water systems since these bacteria are linked to up to 70,000 disease cases per year and afflicts and kills more people than any other reported waterborne disease. [FN1: National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Division on Earth and Life Studies; Board on Population Health and Public Health Practice; Board on Life Sciences; Water Science and Technology Board; Committee on Management of Legionella in Water Systems. Management of Legionella in Water Systems. Washington (DC): National Academies Press (US); 2019

Comments Received on *Legionella pneumophila*
Aug 14. PMID: 32200596.] It is therefore crucial that EPA require monitoring to determine the scope of Legionella contamination of drinking water. If such monitoring cannot be completed in time to be useful for the MDBP revisions rule, the agency should at a minimum establish an ICR that requires a statistically valid sampling of public water systems to monitor for this important contaminant. Newer, faster and less-expensive methods such as Legioalert can detect L. pneumophila which reportedly causes 100% of deaths from Legionnaires' disease outbreaks [FN2: IDEXX, Reducing Legionnaire's Disease Risk, 2021, citing Centers for Disease Control and Prevention. Table 1, Waterborne disease outbreaks associated with treated recreational water and untreated recreational water, by year and jurisdiction—waterborne disease and outbreak surveillance system, United States, 2011–2012. https://www.cdc.gov/healthywater/surveillance/recreational/2013%E2%80%932014-tables.html. Updated March 28, 2018. Accessed March 24, 2019; Centers for Disease Control and Prevention. Table 1, Waterborne disease outbreaks associated with treated recreational water or untreated recreational water, by year and jurisdiction—waterborne disease and outbreak surveillance system, United States, 2013–2014. https://www.cdc.gov/mmwr/volumes/66/wr/mm6644a4.htm. Updated May 16, 2018. Accessed March 24, 2019; Centers for Disease Control and Prevention. Outbreaks associated with environmental and undetermined water exposures—United States, 2011–2012. MMWR Morb Mortal Wkly Rep. 64(31);849-851. https://www.cdc.gov/MMWR/preview/mmwrhtml/mm6431a3.htm. Accessed March 24, 2019; Centers for Disease Control and Prevention. Waterborne disease outbreaks associated with environmental and undetermined exposures to water—United States, 2013–2014. MMWR Morb Mortal Wkly Rep. 66(44);1222–1225. https://www.cdc.gov/mmwr/volumes/66/wr/mm6644a4.htm. Accessed March 24, 2019; Centers for Disease Control and Prevention. Surveillance for waterborne disease outbreaks associated with drinking water—United States, 2011–2012. MMWR Morb Mortal Wkly Rep. 64(31);842–848. https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6431a2.htm. Accessed September 14, 2018; Centers for Disease Control and Prevention. Surveillance for waterborne disease outbreaks associated with drinking water—United States, 2013–2014. MMWR Morb Mortal Wkly Rep. 66(44);1216–1221. https://www.cdc.gov/mmwr/volumes/66/wr/mm6644a3.htm. Accessed September 14, 2018.], and 97% of Legionnaires' disease cases, based on data from cultures of 4,719 patients over 7 years in 17 countries. [FN3: See, Id., citing Surveillance report: Legionnaires' disease in Europe (Years 2009–2015). Stockholm, Sweden: European Centre for Disease Prevention and Control; published 2011–2017.] **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 120 3. Add Legionella to UCMR 5, or at least promptly issue an Information Collection Rule (ICR) to require a statistically valid sample of PWSs to do Legionella monitoring in time for MDBP revisions rule. The National Academies of Sciences have recommended that there be a significant increase in Legionella monitoring by drinking water systems since these bacteria are linked to up to 70,000 disease cases per year and afflicts and kills more people than any other reported waterborne disease. **Individual Response:** Please see Discussion on *Legionella pneumophila*.
Comment Excerpt from Commenter 122 Legionella pneumophila The proposed UCMR 5 discusses the possibility of including Legionella pneumophilia as a microbial monitored contaminant of concern. Legionella pneumophilia is a microbe of increasing concern in all scales of public

Comments Received on *Legionella pneumophila*

water systems, as its complex microbial physiology and ecology make it adept to survival and proliferation in many distribution systems. The UCMR 5 proposal justifies exclusion of Legionella pneumophilia due to the timing of proposed changes to rules which may affect the occurrence of Legionella pneumophilia in drinking water. These rules, which include Microbial and Disinfection Byproducts (MDBP) and Surface Water Treatment Rules (SWTR), may potentially enhance protection of public water systems and end users from intrusion of Legionella pneumophila.

Gathering data before the MDBP rule changes go into effects will be useful in evaluation of the effectiveness of the rule changes in reducing the presence of Legionella pneumophila in drinking water. However, it is key that data on the occurrence of Legionella pneumophilia in drinking water is evaluated under the right conditions and in conjunction with data on disinfection residuals, disinfection type, source type, and other water quality parameters. Thus, NJDEP is urging EPA to consider a special data collection request similar to the Information Collection Rule (ICR) prior to rule changes in lieu of monitoring under the constraints of UCMR 5. The special data collection would also provide additional flexibility on timing and location of monitoring that posed challenges in monitoring under UCMR 4 for Harmful Algal Blooms, due to the seasonal variability and lengthy analysis timelines.

Additionally, the proposed UCMR 5 fails to mention detection methods that are available other than Most Probable Number based methods. These other methods, including culture or molecular detection, could reduce the cost of evaluation and screening for large public water systems that may already have equipment or contracts to conduct the work but lack an EPA-certified method for detection. [References: See Document ID EPA-HQ-OW-2020-0530-0122]

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 123

As a provider of risk reduction services of waterborne pathogens, I support the comments and position submitted by IDEXX Water regarding the addition of Legionella pneumophila to UCMR 5.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 124

ASHRAE would like to thank the Agency for their continued work in supporting public and environmental health through the development of the 5th UCMR draft. In the docket it states the Agency is interested in receiving comments regarding Legionella pneumophila. We are pleased to offer the following comment and supporting information for consideration. Our hope is the Agency will see that this addition can lead to data that can support better health for all US citizens and help put a stop to a nearly preventable disease.

Include Legionella pneumophila in UCMR5

Legionella pneumophila is the most common and dangerous drinking water pathogen in the U.S. Legionella pneumophila harms building occupants when the bacteria commonly found in drinking water is aerosolized and inhaled deeply into the victim's lungs. It is not harmful by ingestion. Legionella pneumophila is the causative agent of Legionnaires' disease, a respiratory disease with a high mortality rate that is responsible for most deaths associated with U.S. drinking water outbreaks over the last twenty years. Those fortunate enough to survive often suffer from associated long-term disabilities. It is estimated to affect 70,000 people annually in the U.S. according to the National Academy of Science, Engineering and Medicine (NASEM) Legionella report (2019) which was supported, in part, by the EPA.

Comments Received on *Legionella pneumophila*

Legionella pneumophila risks are heightened now because of the SARS-CoV-2 (COVID 19) pandemic. Because Legionnaires' disease is most dangerous to those with pre- existing respiratory issues, many COVID-19 victims whose respiratory systems have been weakened by COVID-19 are now at risk of suffering secondary infections from bacteria such as L. pneumophila. This is expected to have a particularly broad impact within our most vulnerable citizens in underserved communities, who have disproportionally already suffered from COVID-19 and are likely to live where drinking water infrastructure maintenance has been less consistent. In addition, with some buildings being unused for several weeks or months, stagnant water in buildings can cause contaminants L. pneumophila to proliferate.

The Agency has included L. pneumophila on its contaminant candidates list (CCL) for over 10 years, well before the advent of the pandemic and the Agency specifically requested comment on L. pneumophila in its April 2021 public webinars. We now strongly encourage the Agency to add L. pneumophila to the final UCMR 5 list of contaminants for data collection.

Legionella pneumophila poses a significant and increasing risk to public health

- Legionella pneumophila, the causative agent of Legionnaires' disease, poses a significant health risk with a mortality rates of 10% in the general population and 25% for those who contract it in healthcare setting.
- Annual Legionnaires' disease cases in the U.S. have increased more than 600% since the year 2000 and have done so in every state (CDC Data)
- Because of the COVID-19 pandemic, the public health risk for Legionnaires' disease (a severe respiratory disease) has now increased substantially. The probability of contracting Legionnaires' disease is particularly high for people with chronic lung issues. COVID-19 impacts lung function and may cause permanent lung damage. With more than 32 million Americans having contracted COVID- 19, a large new subset of the population is now particularly vulnerable to Legionnaires' disease. In addition, recently reopened buildings that were closed due to the pandemic can present additional risks as a result of stagnant indoor plumbing and cooling systems.
- COVID-19 has disproportionally affected communities of color and essential workers in low-income or otherwise marginalized areas. These are the same communities that have historically suffered from underinvestment in the public and private infrastructure maintenance that is required to ensure safe water and reduce Legionnaires' disease risk.

L. pneumophila is substantially likely to be found in public water systems at a "frequency and level of concern" and there is a "meaningful opportunity for health risk reduction through national drinking water regulation" of this pathogen

L. pneumophila occurs in drinking water and has been linked to cases and outbreaks (data available).

- The Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), and National Academies of Sciences, Engineering, and Medicine (NASEM) all state that Legionella pneumophila is the number one waterborne disease-causing contaminant in drinking water.
- However, although L. pneumophila is a naturally occurring waterborne pathogen, Legionnaires' disease is preventable through better water management; up to 90% of the time, according to the US CDC. CDC materials specifically highlight the quality of incoming drinking water as a risk to be understood and managed. (CDC Vital Signs, 2017). The CDC has produced Toolkit materials around the Legionnaires Disease issue, that promote building water management plans based on ASHRAE Standard 188 (2018) - Legionellosis: Risk Management for Building Water Systems. Standard 188 indicates that the bacteria is known to enter the building water system in the water supplied at the entry point. Understanding and potentially reducing or eliminating the bacteria from the entering water is a necessary goal for the EPA.

Comments Received on *Legionella pneumophila*

- The 2020 NASEM report on Legionella, commissioned by the EPA, CDC and VA and the Sloan Foundation from the National Academies of Science, Engineering & Medicine concluded the Safe Water Drinking Act "is not protective of the end user with respect to Legionella contamination" A key recommendation from the report includes the assessment of drinking water "…validate treatment performance by routine monitoring."
- The Agency has established an understanding of the risk L. pneumophila poses to public health as described in both the current docket materials and past EPA publications including: Legionella Health Advisories in March 1987, March 2001, the Legionella: Drinking Water Fact Sheet of 2000 and the EPA literature review of Technologies for Legionella Control in Premise Plumbing Systems.

UCMR 5 is an appropriate and viable vehicle to generate the data needed when considering any policy change recommendations

- L. pneumophila has been on the Contaminant Candidate Lists 3 and 4 but the Agency has not yet moved this pathogen to data collection under a UCMR.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Comment Excerpt from Commenter 124

- On January, 20 2021, President Biden issued an Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis. This EO affirms a commitment to making science-based, data-driven policy decisions. Data on L. pneumophila occurrence is essential to inform any potential policy changes through the upcoming 6-Year Review process. Specifically, attempting to address L. pneumophila risk through disinfectant minimums without meaningful data to understand the scope of the problem or support the effectiveness of this approach puts both distribution systems and public health in jeopardy.
- Leveraging the well-established UCMR process during UCRM 5 would reduce the need and added expense for future L. pneumophila data collection events to support 6- Year Review, reducing costs and reducing further delays to urgent water quality policy discussions.
- The 6-Year Review and UCMR processes are not in sync with regard to timing. This timing mismatch will be an on-going impediment to making policy decisions grounded in science unless the Agency considers alternatives to the traditional UCMR calendar. It is feasible for the required data collection for L. pneumophila to occur in the earlier of the three UCMR data collection years (2023) so these findings can inform the 6- Year Review process, a draft of which is due later in 2024.
- Validated methods are readily available for accredited laboratories to use in testing water samples for L. pneumophila.

ASHRAE applauds the Agency for the deep and substantial work to generate the 5th UCMR and for its longstanding efforts to protect both our environment and public health. We know EPA is prioritizing addressing environmental justice issues and inequity, particularly as they relate to ensuring all Americans are supplied water that is safe for human use and with minimal risk from harmful contaminants. Yet, we have already seen years of delay in establishing better policies that could have prevented untold Legionnaires' disease cases and deaths.

Individual Response: Please see Discussion on *Legionella pneumophila*.

Agency Discussion on Haloacetonitriles

Agency Topic Discussion: EPA received many comments on the four unregulated haloacetonitrile DBPs considered but not proposed for inclusion in UCMR 5. Some commenters agreed with EPA's rationale for not including the haloacetonitriles in UCMR 5, while others encouraged EPA to include them. Consistent with the

Agency Discussion on Haloacetonitriles

UCMR 5 proposed rule, EPA has decided not to include haloacetonitriles in the final UCMR 5.

As was the case with *Legionella pneumophila*, EPA has concluded that UCMR 5 data collection for haloacetonitriles would not be completed in time to meaningfully inform MDBP revision and that UCMR 5 data would not reflect conditions in water systems after any regulatory revisions become effective (haloacetonitrile occurrence may change, for example, if the required minimum disinfectant residual concentration is higher following MDBP revisions).

Additionally, as with *Legionella pneumophila*, inclusion of haloacetonitriles in UCMR 5 would introduce significant monitoring and reporting complexity and cost compared to the sampling design for PFAS and lithium. If haloacetonitriles were to be added to UCMR 5, most of the additional expenses would be borne by large PWSs (for analysis of their samples) and EPA (for analysis of samples from small PWSs). EPA estimates this would result in $13 million in new expenses for large PWSs, $19 million in new expenses for the agency, and $0.5 million in new expenses for small PWSs and states over the 5-year UCMR period.

Because the data would not be available in time to inform MDBP regulatory revisions and because MDBP revisions could change the presence of haloacetonitriles in drinking water distribution systems, EPA concluded that the expense of this monitoring is not warranted given the limited utility of the data.

EPA Method 551.1 is currently the only appropriately validated analytical method available to measure haloacetonitriles. EPA attempted to find laboratories to perform lowest concentration minimum reporting level (LCMRL) studies using Method 551.1 in order to establish MRLs; however, few laboratories responded. Thus, EPA believes that laboratory capacity would have also been a concern.

EPA will consider addressing outstanding questions regarding haloacetonitrile occurrence through focused research projects. For additional information, see Discussion on Cost Associated with Alternative Contaminants Considered – Haloacetonitriles.

Comments Received on Haloacetonitriles

Comment Excerpt from Commenter 53

I am a professor in the Department of Civil and Environmental Engineering at Stanford University. I have also served on the EPA's Science Advisory Board for drinking water. My research focuses on disinfection byproducts (DBPs). Over the years, we have conducted studies indicating that HANs are likely to be of higher toxicological importance within disinfected drinking waters relative to other DBPs, including regulated trihalomethanes (THMs) and haloacetic acids (HAAs) as well as unregulated nitrosamines.

I was pleased to see that the US EPA recognizes the toxicological importance of haloacetonitriles relative to regulated trihalomethanes and haloacetic acids in disinfected drinking waters. The agency is aware of the number of studies that have indicated that, not only do haloacetonitriles (HANs) exhibit higher toxic potencies than the currently regulated THMs and HAAs, but when measured concentrations in drinking waters are weighted by metrics of toxic potency, the HANs contribute more to the calculated toxicity than do THMs and HAAs. Research has demonstrated that HAN concentrations do not correlate with THM concentrations, and so THM measurements are inadequate to measure exposure to HANs. The last nationwide survey to measure HAN concentrations occurred in ~1998. Since that time, utilities have increased their use of water supplies impaired by algal blooms and wastewater effluents (including planned potable reuse of municipal wastewater), changes which are expected to increase consumer exposure to HANs. Moreover, utilities have

Comments Received on Haloacetonitriles
switched from a predominant reliance on free chlorine disinfection to different disinfectant combinations. The changes in disinfectant practice should impact HAN formation. There is a need to re-evaluate consumer exposure to HAN s under the new conditions experienced in water treatment plants. This information is vital to enable the EPA to properly evaluate whether HANs should be regulated. In reading through the federal register notice, it looks like EPA decided NOT to include HANs in the UCMR5. The rationale seemed to be that the UCMR would not be complete until 2026, while the revisions to the DBP Rule mandated by a settlement with Waterkeeper are due by Sept 2027. Therefore, there was not time to incorporate revisions to the DBP rule based on the findings of UCMR5. I can see that that might be a rush for that particular set of revisions, but won't this be a continuing excuse to avoid potential HAN regulations in the future? For example, the UCMR6 deadlines would likely continue to clash with the ability to make changes in the subsequent 6-year review of the DBP rules. I would urge the EPA to proceed with including HANs within the UCMR5 now so that in the following 6-year review the data would already be available. The EPA's cost evaluations indicate that the additional cost would be marginal, particularly considering that the analytical methods needed for evaluation of dihalogenated acetonitriles are relatively inexpensive and commercially available. It is particularly noteworthy that the occurrence of HAN s is expected to be nearly ubiquitous in chlorine or chloramine-disinfected waters. Accordingly, this class of compounds should be prioritized based on the exposure risk. **Individual Response:** Please see Discussion on Haloacetonitriles.
Comment Excerpt from Commenter 58 4. Add the four haloacetonitriles EPA is considering to UCMR 5, or at least promptly issue an ICR to require a statistically valid sample of PWSs to monitor for those haloacetonitriles in time for the MDBP revisions rule. EPA admits that these chemicals are “generally considered more cytotoxic and genotoxic than the regulated” disinfection byproducts. They also are likely to widely occur and thus EPA should require monitoring for them. **Individual Response:** Please see Discussion on Haloacetonitriles.
Comment Excerpt from Commenter 64 Upon reading the Federal Register notice, it seems that EPA has decided not to include haloacetonitriles (HANs) in the UCMR5. The rationale is that the UCMR would not be complete until 2026, while the revisions to the DBP Rule are due by Sept 2027. Therefore, there was not time to incorporate revisions to the DBP Rule based on the findings of UCMR5. I can understand that it might be a bit rushed for that particular set of revisions, but won't this be a continuing excuse to avoid potential HAN regulations in the future? For example, the UCMR6 deadlines would likely continue to clash with the ability to make changes in the following 6-Year Review of the DBP rules. As such wouldn't it make sense to proceed with UCMR5 now so that in the following 6-Year Review the data would already be available? A few months ago, I presented results of our Forcing Factors Study while serving on an invited expert panel for the 6-Year Review of the D/DBP Rule (attached here). We showed convincing evidence that the HANs strongly correlate with measured cytotoxicity across a variety of drinking waters (impacted and not impacted) in the U.S. In addition, the dihaloacetonitriles showed the strongest correlations with toxicity, and they can be easily measured using existing EPA Methods. Further, the National Toxicology Program (NTP) has published results showing that dibromoacetonitrile (DBAN) is carcinogenic in 2 animal species (rats and mice), and DBAN is the 5th most cytotoxic DBP studied to-date. I strongly urge the U.S. EPA to include HANs in the next UCMR. This would provide important national occurrence data for an important class of DBP that has convincing animal cancer data. [Attachment: See Document ID EPA-HQ-OW-2020-0530-0064]

Comments Received on Haloacetonitriles
Individual Response: Please see Discussion on Haloacetonitriles.
Comment Excerpt from Commenter 68 3. As a result of the Third Six Year Review and a settlement agreement with Waterkeeper's Alliance, EPA has committed to review and revision as warranted of existing drinking water standards for+ Legionella and disinfection byproducts (DBPs). Monitoring through UCMR 5 will only be informative for this rulemaking if the rulemaking is delayed or pursued through a staged process. **Individual Response:** Please see Discussion on Haloacetonitriles and *Legionella pneumophila*.
Comment Excerpt from Commenter 75 For the past decade my laboratory demonstrated that the forcing factors for DBP cytotoxicity and genotoxicity were not related to the EPA-regulated DBPs. Our data presented convincing evidence that the haloacetonitriles (HANs) strongly correlated with mammalian cell cytotoxicity and genotoxicity across a variety of drinking waters (impacted and not impacted) and defined DBP mixture studies. The dihaloacetonitriles showed strong and significant correlations with toxicity and genotoxicity of disinfected and recycled waters. The National Toxicology Program (NTP) previously published results that dibromoacetonitrile (DBAN) was carcinogenic in 2 animal species (rats and mice). DBAN was among the most cytotoxic genotoxic DBP studied to-date using mammalian cell methods. I strongly argue that the U.S. EPA include HANs in the next UCMR. This would provide important national occurrence data for an important class of DBP that has convincing animal cancer data. [Attachments: See Document ID EPA-HQ-OW-2020-0530-0075] **Individual Response:** Please see Discussion on Haloacetonitriles.
Comment Excerpt from Commenter 99 We recognize the additional costs associated with adding legionella pneumophila and the four haloacetonitriles as well as the timing issues given the schedule for review of regulations related to microbial contaminants and disinfection byproducts. Nonetheless, we are concerned that lack of information about occurrence of these contaminants is a lost opportunity as review of those regulations proceeds. If addition to UCMR 5 is impractical, EPA should consider an Information Collection Rule or other means of obtaining much-needed information on these contaminants. **Individual Response:** Please see Discussion on Haloacetonitriles and *Legionella pneumophila*.
Comment Excerpt from Commenter 103 7. There is an opportunity for the UCMR 5 to be expanded by one analytical method, EPA Method 551.1, to capture occurrence data on bromochloroacetonitrile (CAS# 83463-62-1), dibromoacetonitrile (CAS# 3252-43-5), dichloroacetonitrile (CAS# 3018-12-0), and trichloroacetonitrile (CAS# 545-06-2) in support of EPA' ongoing microbial / disinfection byproducts (M/DBPs) rule risk management evaluation [FN3: EPA, 1990, Method 551.1 Determination of Chlorination Disinfection Byproducts, Chlorinated Solvents, and Halogenated Pesticides/Herbicides in Drinking Water by Liquid-Liquid Extraction and Gas Chromatography with Electron-Capture Detection. https://www.epa.gov/sites/default/files/2015-06/documents/epa-551.1.pdf]. Inclusion would complicate UCMR 5 data collection and reporting as well as represent a significant additional cost for EPA's small system sampling responsibilities under UCMR 5. However, it could provide information for EPA's current M/DBP effort if that process were delayed or was subsequently implemented in stages. AWWA did not identify any other analytical methods for inclusion in UCMR 5 in support of that rulemaking for which EPA had (1) a sufficient record of review and validation nor (2) an appropriate sampling strategy. AWWA identified in previous comments to EPA regarding UCMR 4 that a cohesive data and information collection strategy was needed to support the M/DBP process, and that UCMR is only one element of such a strategy. The EPA's

Comments Received on Haloacetonitriles

deadline to propose potential revisions for M/DBPs is currently July 31st, 2024 but may be extended to January 31st, 2026 if a data collection rulemaking is conducted [FN4: Waterkeeper Alliance vs. EPA Settlement Agreement. Case: 1:19-cv-00899-LJL. Filed 06/02/20. https://waterkeeper.org/wp-content/uploads/2020/06/Settlement-Agreement.pdf].

Individual Response: Please see Discussion on Haloacetonitriles.

Comment Excerpt from Commenter 103

Considerations for other Contaminants
Microbials and Disinfection Byproducts (M/DBPs)
In 2016 AWWA's comments on the proposed fourth UCMR cycle supported the collection of DBP occurrence data in UCMR 4, but more importantly recommended that EPA engage utilize "a cohesive research and information collection strategy" for DBP occurrence data [FN23: AW WA, 2016, Comment submitted by G. Tracy Mehan, III, Executive Director of Government Affairs, American Water Works Association (AWWA), EPA-HQ-OW-2015-0218-0083]. The current UCMR 5 Federal Register notice and docket does not yet include such a strategy and AWWA remains concerned that without a cohesive strategy EPA will be unable to meet its statutory and legal obligations.

As observed in the UCMR5 proposal, EPA entered a settlement with Waterkeeper's Alliance to propose revisions to a number of the existing microbial and DBP drinking water standards by summer 2023 and to publish final revisions by 2025. EPA's M/DBP rulemaking is already in development with EPA having started stakeholder outreach in October 2020. The lack of a cohesive strategy is an even more acute concern today, given this legal settlement, than it was in 2016 when EPA was simply following through on its Six-Year Review analysis.

As a part of this effort, the Agency is considering potential inclusion of Legionella, haloacetonitriles (HANs), and other DBPs. According to the settlement agreement between According to the proposed UCMR 5, HANs and Legionella were considered but not included due to the timeline for data collection and the proposed revisions. AWWA appreciates EPA's concern to consider the ability of UCMR 5 data collection to support the current effort to revise these rules. EPA should also consider the following for these contaminants:

1. While the timeline for the data collected under UCMR 5 may limit the data's impact on the current round of revisions for M/DBPs, EPA should consider how the collection of this data may improve our understanding of M/DBP occurrence for the next Six-Year Review.
2. HANs are currently unregulated but are expected to be prevalent throughout drinking water systems. Monitoring of HANs was conducted under the DBP Information Collection Rule in 1997 to 1998. While collection of HAN occurrence information under UCMR 5 may not be able to contribute wholly to a proposed revision of existing rules, the initial data collection efforts may help better characterize occurrence of HANs as EPA evaluates revisions.
3. During the October 2020 public meetings to present potential revisions for M/DBPs, iodinated DBPs were also featured. Characterizing the occurrence of iodinated DBPs presents an opportunity to support future rulemaking efforts for a contaminant of potential concern. However, the current lack of a standard drinking water methods for iodinated DBPs presents substantial knowledge gaps to support their inclusion under UCMR 5.
4. As EPA considers including any of these contaminants in the fine rule, EPA should consider whether the UCMR 5 will be reflective of contaminant occurrence following a revision to the existing rules that will guide the potential formation of DBPs in the distribution and the conditions for pathogen growth and control.

Comments Received on Haloacetonitriles

Individual Response: Please see Discussion on Haloacetonitriles and *Legionella pneumophila*.

Comment Excerpt from Commenter 104

- PA DEP recommends inclusion of haloacetonitriles in UCMR 5. At 86 FR 13854, the supplementary information for the proposed rule describes haloacetonitriles as more cytotoxic and genotoxic than the regulated disinfection byproducts and frequently detected. In addition, there is an existing validated, approved laboratory method, Method 551.1, for analysis of haloacetonitriles. If the goal is to "enhance protection against" haloacetonitriles, and if there is significant concern about their toxicity, then UCMR 5 is an opportunity to begin monitoring sooner rather than later.

Individual Response: Please see Discussion on Haloacetonitriles.

Comment Excerpt from Commenter 109

American Water supports USEPA's determination to not include the following analytes on UCMR5: Legionella pneumophila; four haloacetonitriles (dichloroacetonitrile, dibromoacetonitrile, trichloroacetonitrile, and bromochloroacetonitrile); 1,2,3- trichloropropane; and "total organic fluorine''. As outlined in the notice, there are alternative approaches that are more appropriate to pursue and would allow USEPA to focus on PFAS and lithium in the UCMR process. This includes:

- Data collection would not be sufficiently timely to be useful / data collection would not be complete in time to inform regulatory revision.
- Due to limitations of analytical methodologies, data collection would not be useful.
- Data collection would not reflect conditions in water systems after anticipated regulatory revisions become effective.

Individual Response: Please see Discussion on Haloacetonitriles, Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP), *Legionella pneumophila*, and 1,2,3-Trichloropropane.

Comment Excerpt from Commenter 110

Haloacetonitriles

Include in UCMR5. Pace supports the concern that EPA has with requiring that water suppliers monitor for the four listed haloacetonitriles given that the Agency is contemplating changes to the revisions to its microbials and disinfection byproduct rules (MDBP) rules which may make the data not valid after such rules are promulgated.

However, for the Agency to develop and promulgate appropriate changes to the MDBP rules, it would need to demonstrate the necessity for such changes. It is our belief that the decisions will be more relevant when based upon recent data collected via the UCMR 5 study and not on the data that was collected more than a decade ago.

Individual Response: Please see Discussion on Haloacetonitriles.

Comment Excerpt from Commenter 117

Haloacetonitriles

ACIL understands the concern that EPA has with requiring that water suppliers monitor for the four listed haloacetonitriles given that the Agency is contemplating changes to the revisions to its microbials and disinfection byproduct rules (MDBP) rules which may make the data not valid after such rules are promulgated.

However, for the Agency to develop and promulgate appropriate changes to the MDBP rules, it would need to

Comments Received on Haloacetonitriles

demonstrate the necessity for such changes. ACIL does not believe that basing such changes on data collected more than a decade ago would be justifiable and more current occurrence data should be obtained through the UCMR 5 study.

Individual Response: Please see Discussion on Haloacetonitriles.

Comment Excerpt from Commenter 119

4. Add the four haloacetonitriles EPA is considering to UCMR 5, or at least promptly issue an ICR to require a statistically valid sample of PWSs to monitor for those haloacetonitriles in time for the MDBP revisions rule. EPA admits that these chemicals are "generally considered more cytotoxic and genotoxic than the regulated" disinfection byproducts. They also are likely to widely occur. EPA should either include these four compounds in the UCMR 5 or, if such monitoring cannot be completed in time for its fruitful consideration during the MDBP revisions rulemaking, the agency should promptly promulgate an ICR requiring statistically valid sampling of public water systems in time for the data to be considered as part of that rulemaking.

Individual Response: Please see Discussion on Haloacetonitriles.

Comment Excerpt from Commenter 120

4. Add the four haloacetonitriles EPA is considering to UCMR 5, or at least promptly issue an ICR to require a statistically valid sample of PWSs to monitor for those haloacetonitriles in time for the MDBP revisions rule. EPA admits that these chemicals are "generally considered more cytotoxic and genotoxic than the regulated" disinfection byproducts. They also are likely to widely occur and thus EPA should require monitoring for them.

Individual Response: Please see Discussion on Haloacetonitriles.

Agency Discussion on 1,2,3-Trichloropropane

Agency Topic Discussion: EPA received many comments on the consideration of 1,2,3-trichloropropane (1,2,3-TCP) monitoring under UCMR 5. Some support the agency's proposed decision to not include 1,2,3-TCP monitoring in UCMR 5, and others recommending that it be included. EPA concluded that appropriate analytical methods are not currently available to support additional UCMR data collection (i.e., above and beyond the data collection under UCMR 3); see Appendix C of the "Final Regulatory Determination 4 Support Document" (USEPA, 2021e).

Several commenters suggested that EPA consider analytical methods to monitor for 1,2,3-TCP at lower levels. They suggested, for example, that the agency use California method SRL-524M (California DHS, 2002), which is prescribed by the state for compliance monitoring at 0.005 µg/L (5 ng/L). That method has not been through a validation that would support its use in UCMR 5, nor is it practical for EPA to complete such a validation prior to publishing the final UCMR 5.

Under UCMR 3, an MRL of 0.03 µg/L (30 ppt) was established for the method used to analyze 1,2,3-TCP (EPA Method 524.3). While the UCMR 3 data indicated 1,2,3-TCP occurrence was relatively low, the UCMR 3 MRL is significantly higher than the EPA Health Reference Level (HRL) associated with 10^{-6} cancer risk (0.0004 µg/L) but lower than the level associated with 10^{-4} cancer risk. EPA's March 2021 "Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List" did not include a preliminary determination for 1,2,3-trichloropropane due to these analytical method-based limitations (USEPA, 2021b).

Agency Discussion on 1,2,3-Trichloropropane

Even if a 0.005 µg/L (5 ppt) MRL, as has been proposed by some, could be met by a validated method for 1,2,3-TCP data collection in UCMR, collecting such data would still not support conclusions about occurrence relative to the 10^{-6} HRL.

Consideration of 1,2,3-trichloropropane for a future cycle of UCMR will depend on the development of a more sensitive method that can reliably be used by the network of laboratories that support national monitoring. Occurrence data collected during UCMR 3 (USEPA, 2012) for 1,2,3-trichloropropane may be found at https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule#3.

Comments Received on 1,2,3-Trichloropropane

Comment Excerpt from Commenter 55

I am a staff scientist inside a small law firm which litigates against manufacturers of chemicals and pesticides on behalf of public water supplier cleints. I have been working on 1,2,3-trichloropropane (TCP) since 2003.

I hope the information I provide you will assist the US government to include TCP in UCMR 5, with a low-detect method. I understand that the information you need can only be competently provided by an experienced laboratory. Since that is not my role, I am instead providing you with the identification of where the information you seek can be found. I have also reached out to a handful of California laboratories to inform them of your request and to encourage them to respond directly.

For two decades, numerous laboratories in California have been testing and reporting TCP in drinking water down to 5 ppt, using California method SRL-524M. This method, published in 2002, is included with my comments. I'm also including a 2018 list of laboratories which are certified by California to use the SRL-524M method.

The following list of individuals and companies are laboratories which I am personally aware are capable of reporting TCP below 5 ppt. They each have stated that they can achieve TCP reporting limits as low as 0.7 ppt. BSK, in particular, has been reporting TCP results to our clients at levels as low as 0.7 ppt since 2011. I believe BSK, in recent years, has achieved even lower reporting levels, mostly by purchasing newer and more precise equipment.

Michael Brechmann, BSK Laboratories, Fresno, California
Gabe Stivala, PACE Laboratories, Sacramento, California
Andrew Eaton, Eurofins Eaton Laboratories, Monrovia, California

Additionally, one of the researchers in California who contributed to the 2002 SRL- 524M method is Wenta Liao. Ms. Liao is a Ph.D. chemist doing research with the Drinking Water and Radiation Laboratory of the California Department of Public Health. In 2016, she and other authors published an article describing a method to detect TCP at levels below 1 ppt. Liao, et al (2016) Lowering detection limits for 1,2,3-trichloropropane in water using solid phase extraction coupled to purge and trap sample introduction in an isotope dilution GC-MS method. Chemosphere 158 (2016) 171-176.

Comments Received on 1,2,3-Trichloropropane

Taken in all, California laboratories have been achieving far lower reporting levels than the EPA's UCMR 3 method for TCP and they have been doing so for decades. TCP is a very stable chemical in the environment. It is extremely toxic. And as an impurity in pesticides, TCP has been injected into soils all across the United States - Hawaii, California, New Jersey, Maryland, New York, Washington, Oregon, Arizona, South Carolina, and more. Three states have an MCL for TCP - Hawaii (60 ppt), California (5 ppt) and most recently New Jersey (30 ppt). There is a need for a federal TCP MCL. Your work to investigate and bring the skills and experience of the California laboratories to the rest of the country is critical. I thank you for your work. [Attachments: See Document ID EPA-HQ-OW-2020-0530-0055]

Individual Response: Please see Discussion on 1,2,3-Trichloropropane.

Comment Excerpt from Commenter 58

5. Add 1,2,3-trichloropropane to UCMR 5. Expeditiously work with commercial labs and EPA ORD to improve detection and quantification limits for 1,2,3-TCP. Include in UCMR 5. EPA reports that current methods cannot reliably quantify the level of this contaminant down to the level at which it poses significant public health risks. This must be fixed.

Individual Response: Please see Discussion on 1,2,3-Trichloropropane.

Comment Excerpt from Commenter 103

1,2,3-Trichloropropane (1,2,3-TCP)
Monitoring of 1,2,3-TCP has previously been required under the Third UCMR (UCMR 3) but resulted in occurrence data that provided limited insight on occurrence at relevant levels of health concern. Subsequently, EPA has not delayed a determination for 1,2,3- TCP due to the inadequate data. In comments to the EPA on the proposed UCMR 3, AWWA advised that EPA consider the method developed in California based on EPA Method 524.2 to achieve lower MRLs [FN24: AWWA, 2011, Comments Revisions to the Unregulated Contaminant Monitoring Regulation (UCMR 3) for Public Water Systems, Docket ID No. OW–2009–0090.][FN25: California Department of Health Services. Determination of 1,2,3-Trichloropropane in Drinking Water by Purge and Trap Gas Chromatography/Mass Spectrometry. February 2002.]. EPA should consider the capacity of this method and the potential impacts on the MRL for 1,2,3- TCP.

Individual Response: Please see Discussion on 1,2,3-Trichloropropane.

Comment Excerpt from Commenter 104

- PA DEP recommends EPA reconsider inclusion of 1,2,3-trichloropropane in UCMR 5. PA DEP acknowledges the need to collect lower level occurrence data, which may not be possible during UCMR 5 due to the current minimum reporting level (MRL) of 0.03 µg/L. However, while the MRL is not currently low enough to detect 1,2,3- trichloropropane at levels as low as the health reference level (HRL) associated with a cancer risk level of one cancer case per 1,000,000 people (0.0004 µg/L), it is lower than the cancer risk level associated with one cancer case per 10,000 people (0.04 µg/L). In EPA's "The Third Unregulated Contaminant Monitoring Rule (UCMR 3): Data Summary, January 2017," it is reported in the Data Summary for Chemical Contaminants table on page 11 that 1.4% of systems had 1,2,3,-trichloropropane concentrations above 0.0004 µg/L and 1.1% above 0.04 µg/L. Thus, there is a risk that this contaminant could be present above the range of cancer risk levels at small systems that did not previously conduct monitoring during UCMR 3. With the expanded scope of UCMR 5, monitoring for 1,2,3-trichloropropane as part of UCMR 5 would provide data for a significant number of small systems that were not included in UCMR 3. EPA could also consider adding 1,2,3-trichloropropane as a Screening Survey tier (List 2) or Pre-screen Testing tier (List 3) contaminant, and only require monitoring at small systems that were not

Comments Received on 1,2,3-Trichloropropane

included in UCMR 3 monitoring.

Individual Response: Please see Discussion on 1,2,3-Trichloropropane.

Comment Excerpt from Commenter 116

4. Little Hocking supports the addition of 1,2,3-trichloropropane to UCMR 5. In Little Hocking's case, for example, the chemical was likely associated with the current and/or prior manufacture of Hexafluoropropylene at Washington Works, yet it has never been tested at the wellfield despite multiple pathways of migration. Little Hocking also supports NRDC's and others' comment that US EPA should "expeditiously work with commercial labs and EPA ORD to improve detection and quantification limits for 1,2,3- TCP." This should include efforts to remedy the fact that current methods cannot reliably quantify the level of 1,2,3-TCP down to the level at which it poses significant public health risks.

Individual Response: Please see Discussion on 1,2,3-Trichloropropane.

Comment Excerpt from Commenter 119

5. Add 1,2,3-trichloropropane to UCMR 5. The EPA Office of Water should expeditiously work with commercial labs and EPA ORD to improve detection and quantification limits for 1,2,3-TCP. The agency should include this compound in the final UCMR 5. While it may occur widely, EPA reports that current methods cannot reliably quantify the level of this contaminant down to the level at which it poses significant public health risks. This must be fixed.

Individual Response: Please see Discussion on 1,2,3-Trichloropropane.

Comment Excerpt from Commenter 120

5. Add 1,2,3-trichloropropane to UCMR 5. Expeditiously work with commercial labs and EPA ORD to improve detection and quantification limits for 1,2,3-TCP. Include in UCMR 5. EPA reports that current methods cannot reliably quantify the level of this contaminant down to the level at which it poses significant public health risks. This must be fixed.

Individual Response: Please see Discussion on 1,2,3-Trichloropropane.

Comment Excerpt from Commenter 122

1,2,3-Trichloropropane
The proposed UCMR 5 states that 1,2,3-trichloropropane is not included because available analytical methods do not detect concentrations lower than those detected in UCMR 3 (i.e., 0.03 µg/L; 30 ng/L), which is higher than the drinking water concentration determined by EPA to be associated with a 1 x 10- 6 (one in one million) cancer risk (i.e., 0.0004 µg/L; 0.4 ng/L). In the proposed UCMR 5, EPA requested comments on analytical methods with quantitation levels below 0.0004 µg/L (0.4 ng/L). In 2018, the New Jersey Drinking Water Quality Institute evaluated performance data for two analytical methods California ELAC Method 524M and EPA 524.3 (SIM) and concluded that there is sufficient information to recommend that laboratories could achieve a Reporting Level of 0.005 ug/l (5 ng/l) using these methods. While this is not below the one in one million cancer risk level of 0.0004 µg/L, it is 6-fold lower than the MRL in the method used in UCMR 3.

Individual Response: Please see Discussion on 1,2,3-Trichloropropane.

Agency Discussion on Other Recommended Priority Contaminants

Agency Topic Discussion: The Agency received multiple comments suggesting other contaminants for UCMR 5 monitoring, including drinking water and waterborne diseases (i.e., *Mycobacterium avium* (MAC) and

Agency Discussion on Other Recommended Priority Contaminants

Pseudomonas aeruginosa), pharmaceuticals and personal care products (PPCPs), and additional chemicals on the Contaminant Candidate List 4 (CCL4) (USEPA, 2016e). EPA acknowledges the interest in these contaminants.

EPA evaluated MAC for potential inclusion in UCMR 5 and concluded that there are not appropriate, validated analytical methods that would support UCMR monitoring for these pathogens.

EPA considered the 12 PPCP analytes that can be measured by EPA Method 542 during the contaminant selection process for UCMR 5. Based on a review of available information, the agency concluded that there was not good reason to expect occurrence of the contaminants in drinking water above levels of health concern. See also Discussion on Contaminant Selection Process and Supporting Documents.

Comments Received on Other Recommended Priority Contaminants

Comment Excerpt from Commenter 104

In addition, PA DEP recommends that EPA consider taking steps to address other biofilm-related pathogens in drinking water including Mycobacteria avium and Pseudomonas aeruginosa. A recent article from the Centers for Disease Control and Prevention titled "Estimate of Burden and Direct Healthcare Cost of Infectious Waterborne Disease in the United States" by Collier et al. in Emerging Infectious Diseases, Vol. 27, No. 1, January 2021, determined that most hospitalizations and deaths from waterborne disease are caused by nontuberculous mycobacteria infection, Legionnaires' disease, and Pseudomonas pneumonia. Given the significant impact of these bacterial respiratory infections, EPA should consider steps to address these biofilm-related waterborne bacteria, including validating laboratory methods for analysis in drinking water.

Individual Response: Please see Discussion on Other Recommended Priority Contaminants.

Comment Excerpt from Commenter 117

Pharmaceuticals and Personal Care Products

It has long been recognized that pharmaceuticals and personal care product chemicals pose a substantial threat to public health due to their resistant to wastewater treatment and eventual contamination of drinking water supplies. EPA has recognized this in the UCMR 3 study when it included six hormonal chemicals to the monitoring program. However, these were just the tip of the iceberg and much more monitoring needs to be done to determine the level of exposure that consumers of drinking water are receiving. Such data are critical to the Agency being able to accurately judge the risk such chemicals pose.

Given the difficulty and expense such monitoring entails, ACIL recommends that, as a next step in its process to study the problem, the Agency should monitor for the 12 compounds listed in EPA Method 542 to UCMR 5. Since Method 542 has already been validated and issued by the Agency, ensuring the availability of an appropriate monitoring method would not be an issue and would not hold up implementation of the UCMR 5 study.

Individual Response: Please see Discussion on Other Recommended Priority Contaminants.

Comments Received on Other Recommended Priority Contaminants

Comment Excerpt from Commenter 122
Inclusion of additional contaminants in UCMR 5
The National Defense Authorization Act permits the inclusion of up to 30 contaminants, in addition to all PFAS included in EPA-validated drinking water analytical methods, in UCMR 5. However, the proposed UCMR 5 includes only lithium in addition to the 29 PFAS included in EPA-validated methods. The proposed UCMR 5 discusses several additional contaminants unrelated to PFAS that were considered for inclusion and invites public comment on this topic. NJDEP provides specific comments on two of these contaminants, 1,2,3-trichloropropane and Legionella pneumophila, below.

There are currently 46 chemicals and 11 microbial constituents on the Contaminant Candidate List 4 that have not yet been included in UCMR monitoring. These compounds include herbicides (e.g., acrolein and clethodim), pesticides and degradates of pesticides (e.g. 3-hydroxycarbofuran), pharmaceuticals, plasticizers and manufacturing chemicals, among others. NJDEP urges EPA to review available occurrence data, and analytical methods, as well as potential funding sources, and to consider the potential for the inclusion of some of these contaminants in UCMR 5.

Individual Response: Please see Discussion on Other Recommended Priority Contaminants, Contaminant Selection Process and Supporting Documents, and NDAA Provision Allowing Consideration of More than 30 Contaminants.

Contaminant Selection Process and Supporting Documents

Agency Discussion on Contaminant Selection Process and Supporting Documents

Agency Topic Discussion: EPA received multiple comments regarding the UCMR contaminant selection process and supporting documents for the final rule. Commenters generally supported the proposed UCMR 5 contaminants (29 PFAS and lithium) in the final rule, as the Agency has done. The purpose of UCMR is to collect nationally representative occurrence data that can be used to inform regulatory determinations. Occurrence data are collected specifically for unregulated contaminants that have known or potential health effects, may occur in drinking water, and can reliably be measured

EPA evaluated candidate UCMR 5 contaminants using a stepwise prioritization process, in accordance with the SDWA as amended by AWIA and the NDAA, and in consideration of "EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan" (USEPA, 2019b). The Agency considered the current (fourth) Contaminant Candidate List (CCL 4) (81 FR 81099, November 17, 2016; USEPA, 2016e), which includes 97 chemicals or chemical groups and 12 microbes. EPA evaluated contaminants nominated by the public for potential inclusion in CCL 5 (83 FR 50364, October 5, 2018; USEPA, 2018; USEPA, 2021c), as well as other priority contaminants. EPA also considered Workgroup and stakeholder input; looked at cost-effectiveness of the potential monitoring approaches; considered implementation factors (e.g., laboratory capacity); and further evaluated health effects, occurrence, source, persistence, and mobility data to identify the proposed list of UCMR 5 contaminants. The first step included identifying contaminants that: (1) were not monitored for during previous UCMR cycles; (2) are anticipated to have significant occurrence nationally; and (3) are expected to have a completed, validated drinking water method in time for rule proposal. Including multiple contaminants that can be measured with a single method (i.e., multiple CCL analytes, or related non-CCL analytes that can be measured concurrent with monitoring for CCL analytes) creates a more cost-effective design. The next step was to select contaminants associated with one or more of the following considerations: an available health assessment to facilitate regulatory determinations; high public concern;

Agency Discussion on Contaminant Selection Process and Supporting Documents

critical health endpoints (e.g., likely or suggestive carcinogen); active use (e.g., pesticides); or an occurrence data gap. During the final step, EPA considered workgroup and stakeholder input; looked at cost-effectiveness of the method/contaminant groups; considered implementation factors (e.g., laboratory capacity); and further evaluated health, occurrence, and persistence/mobility data to identify a proposed list of UCMR 5 contaminants. Further information on this prioritization process, as well as contaminant-specific information and available occurrence data that EPA used to prioritize contaminants, is contained in "Information Compendium for Contaminants for the Final Unregulated Contaminant Monitoring Rule (UCMR 5)" (USEPA, 2021j), available at www.regulations.gov under Docket ID No. EPA-HQ-OW-2020-0530.

Comments Received on Contaminant Selection Process and Supporting Documents

Comment Excerpt from Commenter 101

We, the undersigned organizations representing a coalition of companies and trade associations from across the economy, appreciate the opportunity to provide comments on the proposed revisions to the Unregulated Contaminants Monitoring Rule for Public Water Systems. We support gathering additional scientifically valid data on the national occurrence of select PFAS in drinking water. Our customers, employees, and communities depend on clean water for a better quality of life and economic growth. This information is a critical input in determining whether and how EPA should regulate particular contaminants for treatment.

In March 2021, our coalition offered a cover letter and suggested principles for the potential regulation of PFAS. These principles offer a possible roadmap for addressing PFAS consistent with sound science and recognizing the important economic, technological, and public safety roles that specific PFAS fill. We urge EPA to consider the following as the monitoring rule is finalized:

- Reexamine the list of impacted chemistries. All 29 PFAS chemistries that can be detected by Method 533/537 are included. However, only nine have any documented human health concerns or EPA Integrated Risk Information System assessments in progress. The rest have no EPA health assessments or occurrence data in public water systems to justify analysis and sampling. The objective of the UCMR rule is to collect representative data for potential contaminants that require regulation under the Safe Drinking Water Act to protect human health. The purpose of the UCMR is to gather finished water occurrence data. It is not intended to compel the level of investigation needed to properly characterize PFAS water sources. If there are no health assessments available and no concerns identified yet for a given PFAS chemistry, more health data should be understood before conducting sampling and obtaining occurrence data. EPA should reconsider this list to be grounded in science.
- Identify risks to the environment and human health of each PFAS chemistries, including chemistries of low concern. For example, because they are insoluble in water, not subject to long-range transport, and not bioavailable or bio-accumulative, Fluoropolymers are a PFAS that satisfy widely accepted assessment criteria to be considered as polymers of low concern.
- Develop any subclasses not based on physical and chemical properties alone, but also on toxicological endpoints and potency and mode of action. All PFAS are not the same. Individual chemistries have unique properties and uses, as well as environmental and health profiles. Grouping by methods should replace this kind of analysis.
-

Individual Response: Please see Discussion on Contaminant Selection Process and Supporting Documents and PFAS Contaminants – Miscellaneous Comments.

Comments Received on Contaminant Selection Process and Supporting Documents

Comment Excerpt from Commenter 104

- PA DEP requests that the following references, which do not appear to be publicly available, be made available for review:
  - USEPA. 2020a. Selection of Nationally Representative Public Water Systems for the Unregulated Contaminant Monitoring Rule: 2020 Update. EPA 815-B-20-008. Office of Water. December 2020.
  - USEPA. 2020b. Draft Information Collection Request for the Unregulated Contaminant Monitoring Rule (UCMR 5). EPA 815-D-20-002. Office of Water. December 2020.
  - USEPA. 2020e. Information Compendium for Candidate Contaminants for the Proposed Unregulated Contaminant Monitoring Rule (UCMR 5). EPA 815-B-20- 006. Office of Water. December 2020.
  - USEPA. 2020f. UCMR 5 Laboratory Approval Manual. EPA 815-B-20-007. Office of Water. December 2020. Again, PA DEP would like to thank you for the opportunity to comment on EPA's proposed Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5).

Individual Response: Please see Discussion on Contaminant Selection Process and Supporting Documents. The supporting documents listed above by the commenter, all of which have been updated for the final rule, are available in the UCMR 5 public docket.

Agency Discussion on NDAA Provision Allowing Consideration of More than 30 Contaminants

Agency Topic Discussion: Many comments cited the National Defense Authorization Act for Fiscal Year 2020 (NDAA) specifications for UCMR monitoring, particularly as they relate to unregulated PFAS included in UCMR 5 not counting towards the traditional SDWA limit of 30 UCMR contaminants (Section 1445(a)(2)(B)(i)). SDWA, as amended by Section 7311 of the NDAA (Public Law 116-92), also specifies that EPA shall include all PFAS in UCMR 5 for which a drinking water method has been validated by the Administrator, and that are not subject to an NPDWR. This final rule addresses the requirements of the NDAA by including all 29 PFAS that are within the scope of EPA Methods 533 and 537.1. Both of these methods have been validated by EPA for drinking water analysis.

Although the NDAA provides the Agency with the flexibility to require monitoring for more contaminants than the 30 included in the final UCMR 5, EPA believes that the utility of the additional data does not warrant the cost and complexity associated with their inclusion, as described in this document's discussion of other candidate contaminants (e.g., *Legionella pneumophilia*, Haloacetonitriles, 1,2,3-Trichloropropane, and other recommended priority contaminants). EPA considers the burden that UCMR places on water systems and, in accordance with SDWA Section 1445(j)(1) and 1445(j)(3); the expenses incurred by EPA to implement small-system monitoring; the laboratory capacity to support the analysis of UCMR samples; and the utility of the information to be collected. Please see the following sections for more information on the Agency's rationale for not including *Legionella pneumophila*, Haloacetonitriles, 1,2,3-Trichloropropane, and Other Recommended Priority Contaminants.

Comments Received on NDAA Provision Allowing Consideration of More than 30 Contaminants
Comment Excerpt from Commenter 57 As you know, the Safe Drinking Water Act (SDWA) Amendments of 1996 call for EPA to monitor up to 30 contaminants every five years through the UCMR. The FY2020 National Defense Authorization Act ("NDAA") included language that stipulated that UCMR 5 include per and polyfluoroalkyl substances ("PFAS"), but the NDAA additionally specified that the PFAS compounds "…shall not count towards the limit of 30 unregulated contaminants to be monitored by public water systems…" Therefore, it is possible to include up to 30 non-PFAS unregulated contaminants in UCMR 5. Lithium is currently the only unregulated contaminant in the proposed UCMR 5 since the 29 PFAS do not count towards the limit. In our view, given the clear intent of Congress, the information collection provisions do not maximize the UCMR process, and there is additional opportunity to protect public health and maximize public benefit by requiring the monitoring of additional unregulated contaminants. **Individual Response:** Please see Discussion on NDAA Provision Allowing Consideration of More than 30 Contaminants.
Comment Excerpt from Commenter 89 To that end, EPA was mandated by the Fiscal Year 2020 National Defense Authorization Act (NDAA) to monitor in this UCMR cycle for each PFAS for which a drinking water method has been EPA-validated and that are not subject to a national primary drinking water standard under the SDWA. States recognize that the 29 PFAS chosen for UCMR5 are those that are detected by EPA Methods 533 and 537.1, and thus where the most meaningful monitoring and potentially regulatory opportunities exist. Some states did note, however, that the NDAA excludes PFAS from the SDWA's limit of 30 unregulated contaminants per UCMR cycle, so more contaminants could have been selected for monitoring. States attest that EPA should gather as much data under UCMR5 as possible, especially since UCMR data is a valuable publicly-available resource, as long as the data is purposefully collected, sampled, and analyzed with non- burdensome costs. **Individual Response:** Please see Discussion on NDAA Provision Allowing Consideration of More than 30 Contaminants.
Comment Excerpt from Commenter 93 • The FY2020 National Defense Authorization Act (NDAA) in Sec 7311 instructed EPA to not count PFAS compounds toward the limit of 30 contaminants to be proposed in UCMR 5, explicitly leaving room for other contaminants of known and documented hazard to public health, such as Legionella pneumophila. **Individual Response:** Please see Discussion on NDAA Provision Allowing Consideration of More than 30 Contaminants and *Legionella pneumophila*.
Comment Excerpt from Commenter 94 • The FY2020 National Defense Authorization Act (NDAA) in Sec 7311 instructed EPA to not count PFAS compounds toward the limit of 30 contaminants to be proposed in UCMR 5, explicitly leaving room for other contaminants of known and documented hazard to public health, such as Legionella pneumophila. **Individual Response:** Please see Discussion on NDAA Provision Allowing Consideration of More than 30 Contaminants and *Legionella pneumophila*.

Comments Received on NDAA Provision Allowing Consideration of More than 30 Contaminants
Comment Excerpt from Commenter 103 [2. EPA has the responsibility to finalize UCMR 5 in response to two recent laws:] b. The National Defense Authorization Act for Fiscal Year 2020 (Public Law 116-92) (NDAA 2020) requires that the EPA include per and polyfluoroalkyl substances (PFAS) detectable with an EPA validated method for drinking water in UCMR 5. **Individual Response:** Please see Discussion on NDAA Provision Allowing Consideration of More than 30 Contaminants.
Comment Excerpt from Commenter 109 American Water appreciates the opportunity to provide feedback to the U.S. Environmental Protection Agency (USEPA) regarding the request for comment on the fifth Unregulated Contaminant Monitoring Rule (UCMR5) as described in the March 12, 2021 Federal Register (86 FR 14063). Our comments are based on our extensive experience and expertise in drinking water as American Water serves over 15 million customers in 46 states including more than 300 public water drinking water systems, contracts with the Department of Defense for the operation and maintenance of water and wastewater services on 17 military bases, and various other homeowner services in communities throughout the United States. Analytes American Water agrees with USEPA's proposal to require monitoring for 29 per and polyfluoroalkyl substances (PFAS) and lithium for the reasons described in the notice. We further concur with USEPA's determination that "[a]lthough the NDAA allows the Agency to require monitoring for more contaminants beyond those proposed, EPA believes that the utility of the additional data that would be collected does not warrant their inclusion." **Individual Response:** Please see Discussion on NDAA Provision Allowing Consideration of More than 30 Contaminants and General Support of UCMR Program and Proposed UCMR 5 Approach.
Comment Excerpt from Commenter 115 • The FY2020 National Defense Authorization Act (NDAA) in Sec 7311 instructed EPA not to count PFAS compounds toward the limit of 30 contaminants to be proposed in UCMR 5, explicitly leaving room for other contaminants of known and documented hazard to public health, such as Legionella pneumophila. **Individual Response:** Please see Discussion on NDAA Provision Allowing Consideration of More than 30 Contaminants and *Legionella pneumophila*.
Comment Excerpt from Commenter 124 • The FY2020 National Defense Authorization Act (NDAA) in Sec 7311 instructed EPA to not count PFAS compounds toward the limit of 30 contaminants to be proposed in UCMR5, explicitly leaving room for other contaminants of known and documented hazard to public health, such as L. pneumophila. **Individual Response:** Please see Discussion on NDAA Provision Allowing Consideration of More than 30 Contaminants and *Legionella pneumophila*.

Reporting

Agency Discussion on SDWARS Functionality/Improvements
Agency Topic Discussion: The Agency received a comment requesting that EPA improve the functionality of its electronic reporting system, SDWARS. EPA has updated SDWARS to accommodate PWS reporting of the information required by UCMR 5. EPA expects that "SDWARS 5" will also include a number of improvements

Agency Discussion on SDWARS Functionality/Improvements

that reflect lessons learned from previous UCMR data reporting. EPA is committed to streamlining data entry in SDWARS 5 to the extent practical, without comprising data quality. SDWARS 5 will give laboratories error messages indicating problems with files. SDWARS 5 and/or EPA guidance will provide information on how to resolve the issues. EPA recommends that laboratories submit small data files (i.e., per method, with entire analytical and extraction batches), instead of large files, to make troubleshooting any QC or reporting issues easier for the laboratory. EPA will provide laboratories time to practice, ready their laboratory information management system (LIMS), and provide a platform for feedback on uploading data to SDWARS 5 before monitoring starts.

Comments Received on SDWARS Functionality/Improvements

Comment Excerpt from Commenter 103

EPA should modify Safe Drinking Water Accession and Review System (SDWARS) to allow collection and maintenance of relationships between analyte concentrations, sample locations, prior treatment, data characterizing water influent to treatment, and consecutive system receiving water. Analysis of UCMR 3 and 4 data has illustrated several challenges maintaining relationships between these data elements that subsequently stymie analysis of occurrence data. [FN12: Seidel et al. 2017. Disinfection Byproduct Occurrence at Large Water Systems After Stage 2 DBPR. Journal AWWA. https://doi.org/10.5942/jawwa.2017.109.0082][FN13: Unpublished research. AWWA. 2020. Analysis of UCMR4 brominated haloacetic acid data with respect linking HAA observation at sample location, treatment facility, and source water characterization data]

Individual Response: Please see Discussion on SDWARS Functionality/Improvements.

Agency Discussion on New Data Elements

Agency Topic Discussion: Reporting requirements for UCMR include submission of information from PWSs in the form of "data elements." EPA received multiple general comments on the UCMR 5 contaminant-specific data elements, with some commenters questioning the quality, reliability, and utility of some of the data that would be provided to the Agency, as well as increased reporting burden. Commenters requested that EPA include rationale explaining the intended use of such data. This final rule removes 1 of the proposed data elements ("Direct Potable Reuse Water Information") and maintains the 27 others. EPA acknowledges that a study of this magnitude is subject to some degree of incomplete information and inaccuracy and the data collected will have some limitations. However, EPA's experience with prior UCMR cycles indicates that most water systems will comply with the data reporting requirements and provide accurate and complete information that is still valuable.

The Agency has updated some of the data element definitions for clarity and consistency in the reporting requirements. Please see Table 1 of 40 CFR 141.35(e) for the complete list of data elements, definitions, and drop-down options that will be provided in the data reporting system. Additional rationale is provided below, describing how the information could impact regulatory decision making and risk-management strategies.

New data elements required for UCMR 5 regarding historical detection and treatment of contaminants and PFAS sources will provide EPA with more detailed qualitative information to understand the occurrence data for contaminants. UCMR 5 provides a valuable opportunity to collect important existing data to inform future regulatory considerations and decision making on PFAS, such as those related to compliance monitoring and treatment. EPA balanced the burden on PWSs with the practicality of collecting information and the usefulness of the information, in deciding what to include in the final rule. The modest burden associated

Agency Discussion on New Data Elements

with the data collection has been clarified in the ICR (USEPA, 2021n).

The new data elements may help EPA and interested stakeholders identify potential correlations between occurrence data and treatment technology type, known/suspected sources of the contaminant(s), etc. Site-specific characteristics may inform a vulnerability assessment for a water system, which may ultimately justify a waiver of some or all routine monitoring requirements under the standardized monitoring framework.

PWSs are required to report some data elements prior to collecting UCMR samples, including the sampling location and inventory information. The required metadata should be reported for each sampling point at the time of (or as close as possible to) collection of the sample to reduce reporting bias.

As in previous cycles, EPA will input account information, inventory, and schedules for small systems (i.e., those serving 10,000 or fewer people). The small systems will be responsible for creating an account in SDWARS 5 and must have an active SDWARS account to view inventory and analytical results. To request any inventory, data element, or contact information changes, a small system must contact EPA. For large water systems, the PWS is responsible for entering the data elements into SDWARS for each sampling point (40 CFR 141.35(c)(6)). In order to meet this requirement, the large system must have an active SDWARS 4 account. Large water systems may update/edit their data elements at any time.

Comments Received on New Data Elements

Comment Excerpt from Commenter 81

Finally, AMWA would like to highlight a concern within certain data elements included in the reporting requirements for UCMR 5, particularly elements 26, 27, and 28. The association understands EPA's desire to obtain data related to water treatment for the identified UCMR contaminants, potential PFAS sources, and direct potable reuse as this information can help to inform the agency's work. However, AMWA would like to emphasize the limitations of this data for informing any future regulatory actions. The questions as proposed are broad and therefore open to interpretation and EPA will likely get a wide swath of varied answers which the agency will likely struggle to characterize in any systematic way. If EPA decides to keep these questions, it should explain in the final rule the rationale for these questions and also discuss the limitations in the data for rulemaking. If the agency is hoping to use this data simply as a baseline in which EPA can seek further information at a later time via a more robust ICR, then the agency should clearly express this in the preamble to the final rule. AMWA is concerned that having utilities report this information without context could be misused, misrepresented or misunderstood by groups outside of EPA and by the agency itself.

Individual Response: Please see Discussion on New Data Elements. EPA did not include proposed Data Element 28 regarding potable water reuse in the final UCMR 5 based on further evaluation of the utility of the information.

Comment Excerpt from Commenter 103

3. UCMR objectives should be weighed and balanced with challenges. The proposed UCMR 5 includes requirements associated with administration of the program, data sampling and collection activities, as well as the inclusion of ancillary data. Data collection must be limited to what is feasible and will provide informative data.

Individual Response: Please see Discussion on New Data Elements.

Comments Received on New Data Elements

Comment Excerpt from Commenter 103

Requirements for water systems to collect (1) ancillary data (e.g., treatment characterization, water quality parameters) and (2) additional source water characterization (e.g., monitoring in source water, identification of sources of contamination, etc.) are a substantial additional burden beyond the already substantial costs associated with UCMR sampling, sample analysis, quality assurance / quality control, reporting, and public communication. Data collection must be limited to what is feasible and will provide informative data. While it is tempting to collect extensive information in order to support in-depth analysis of observed contaminant occurrence, simple associations can be misleading and adequately detailed data collection to support robust analysis are prohibitively expensive both for water systems and EPA.

Individual Response: Please see Discussion on New Data Elements.

Agency Discussion on Historical Information for Contaminant Detections and Treatment

Agency Topic Discussion: EPA received multiple comments specifically on the Data Element 26 reporting requirement, "Historical Information for Contaminant Detections and Treatment." The information reported may inform an understanding of the effectiveness of different treatment approaches. This is an objective reporting requirement that should be easily addressed by PWSs.

UCMR is a national occurrence study, and excluding PWSs based solely on the unlikelihood of detection due to existing treatment for the contaminant of interest would bias the resulting dataset. The inclusion of Data Element 26 will help EPA better understand the occurrence data in those cases where PWSs that may have put in PFAS-related treatment prior to UCMR 5 sampling.

When developing regulations, the Agency considers ancillary "co-benefits" that may be more difficult to quantify than direct benefits. One example is the possible impact on disinfection byproducts, such as total trihalomethanes (TTHM), that may result from PFAS treatment methods. The additional information associated with the responses to the new data elements under UCMR 5 may be informative for future regulatory decisions.

Comments Received on Historical Information for Contaminant Detections and Treatment

Comment Excerpt from Commenter 103

[5. EPA's proposal appropriately includes 29 PFAS based on the NDAA 2020 requirements. AWWA offers the following recommendations for PFAS monitoring under UCMR 5:]
d. The proposed data collection for existing treatment for PFAS is ineffective and can, and should, be accomplished through other mechanisms, such as focused research programs.

Individual Response: Please see Discussion on Historical Information for Contaminant Detections and Treatment.

Comment Excerpt from Commenter 103

Proposed ancillary data characterizing previous treatment changes to address PFAS detections is ineffective and can be better accomplished through other mechanisms. The proposed UCMR 5 includes a requirement for water systems to indicate if previous PFAS monitoring efforts have been conducted and whether treatment was subsequently installed to address detections [FN18: 86 FR 13869]. UCMR 5 is an inappropriate mechanism to collect this data from water systems, because the questions imply that systems have:

Comments Received on Historical Information for Contaminant Detections and Treatment

1. Collected data of sufficient quantity and quality to make a treatment change decision
2. Had sufficient time and resources to install treatment specific to PFAS or take other steps
3. Installed treatment with the same treatment objectives as their peers that similarly provide an affirmative response (e.g., PFAS observed triggering treatment change, PFAS removal objectives, etc.)
4. An opportunity to make treatment decisions for PFAS removal independent of other water quality challenges rather than in a more holistic manner
5. Not made water supply source selection or treatment choices proactively to reduce the opportunity for contamination by sources of PFAS

"Whether and which water systems have installed additional treatment specifically to remove PFAS?" is an important question if adequate information is collected to use the data to inform risk management decision-making. The most cost-effective mechanism for EPA to gather necessary insight into this question is by requesting the data via state primacy agencies and EPA regions. EPA should not request this the data of water systems and instead expand the draft UCMR Information Collection Request with respect to state tasks and burdens [FN19: EPA, 2020, Draft Information Collection Request for the Unregulated Contaminant Monitoring Rule (UCMR 5), EPA-HQ-OW-2020-0530-0046]. States and EPA Regions should use their administrative records of water systems improvements to document the following for EPA:

1. The PWSID, system name, source, and water treatment plant at which treatment was modified to address PFAS levels of concern.
2. The PWSID, system name, source, and water treatment plant at which a source was abandoned or blended to address PFAS levels of concern
3. The treatment technology installed (e.g., RO = Reverse osmosis, NF = Nanofiltration, IX = Ion Exchange, GAC = granular activated carbon)
4. Design flow and performance criteria for the installed treatment
5. Which observed PFAS and the levels at which PFAS was observed that triggered initiation source changes or treatment installation
6. The year(s) PFAS was observed triggering treatment

Water systems included in such a submittal by states or EPA Regions to EPA should be afforded an opportunity to review the draft submittal to confirm that correct information is being provided to EPA.

Individual Response: Please see Discussion on Historical Information for Contaminant Detections and Treatment.

Comment Excerpt from Commenter 109

Historical Information for Contaminant Detections and Treatment

American Water appreciates USEPA's desire to understand if systems have already installed treatment that would impact PFAS or lithium levels at the point of entry. While collecting this data will help draw a more accurate picture of raw water occurrence, it could be misconstrued to overestimate actual exposure, which could be further misinterpreted in cost-benefit or other calculations.

Although American Water does not oppose USEPA requesting specific data that water systems have previously collected, American Water does not support a requirement that water systems submit such data. Water systems will need to determine if the data quality is sufficient to support the UCMR process before submitting such data and USEPA must include checks to ensure that any data that is submitted meets required criteria.

Individual Response: Please see Discussion on Historical Information for Contaminant Detections and Treatment.

Agency Discussion on Potential PFAS Sources

Agency Topic Discussion: EPA also received multiple comments specifically on Data Element 27, "Potential PFAS Sources." Information from utilities on possible sources of PFAS in their drinking water sources can help in the evaluation of UCMR 5 occurrence data. EPA recognizes that responding to Data Element 27 requires judgement and that some PWSs will have more complete information than others. That said, information on the current and historical sources of PFAS, even if based on PWS judgement, may help the Agency better identify and evaluate regulatory strategies should the UCMR 5 data indicate that the contaminants occur at levels and frequencies of concern.

Collecting information related to the potential influence of PFAS sources to a drinking water system under UCMR may also allow EPA to develop potential regulatory flexibilities to reduce the burden on water systems for complying with a PFAS drinking water rule, while still protecting public health. EPA estimated the burden for Data Element 27 to reflect the expected accuracy and robustness of PWS answers and will assess the information accordingly; if a PWS is not readily aware of nearby PFAS sources and would need to invest significant effort investigating the matter, they have the option of answering "DK – Do not know."

EPA agrees with a commenter in that "the identification of potential PFAS sources in the watershed is complex, costly and requires a thorough series of steps to identify and confirm sources." Data Element 27 is not asking for a formal, in-depth, source water evaluation; the responses are not intended to substitute for a more thorough evaluation of PFAS sources.

Comments Received on Potential PFAS Sources

Comment Excerpt from Commenter 103

[5. EPA's proposal appropriately includes 29 PFAS based on the NDAA 2020 requirements. AWWA offers the following recommendations for PFAS monitoring under UCMR 5:]
e. The proposed data collection for identifying potential PFAS sources nearby can, and should, be accomplished through other EPA programs, such as the Toxic Substances Control Act (TSCA).

Individual Response: Please see Discussion on Potential PFAS Sources.

Comment Excerpt from Commenter 103

Proposed ancillary data collection to characterize PFAS sources does not adequately reflect challenge this task poses. The proposed UCMR 5 ancillary data collection includes identification of potential current and/or historical sources of PFAS that may have impacted drinking water sources for the water system. There are several underlying challenges with this request as presently framed in the proposal. Under 5 CFR 1320.8 (b)(3), EPA is required to indicate why information is being collected, how this information will be used, and the burden estimate. The proposal and draft ICR for UCMR 5 do not adequately meet these requirements.

According to the proposal, the benefits of the proposed action are limited to "information about whether or not unregulated contaminants are present in their drinking water". While the draft ICR for UCMR 5 includes a note that the "data can guide future source water protection efforts", the purpose of the data collection is not clearly and directly described in either document. Beyond the general intent to guide source water protection efforts, EPA has not described how this effort would be initiated nor would be accomplished. Transparency with stakeholders requires that EPA provide a clear statement of the purpose and how the data collected are adequate to address that purpose. As UCMR collects data to support SDWA regulatory determinations and regulations, the stated purpose and data quality for data that is collected should be adequate to answer key questions associated with risk management decisions.

Comments Received on Potential PFAS Sources

A core requirement of 5 CFR 1320.8(b)(3) is the estimation of burden that UCMR 5 would place onto public water systems. The identification of potential PFAS sources in the watershed is complex, costly, and requires a thorough series of steps to identify and confirm sources. AWWA has recently developed the "Source Water Evaluation Guide for PFAS" (attached) that demonstrates the level of effort and planning that is required to identify potential sources of PFAS for the water system. Previous efforts to conduct such an investigation have necessitated investigative monitoring throughout the watershed and a concerted effort by the water system to identify relevant industries active in the watershed's area as well as to understand the historical uses of PFAS.

It does not appear the proposed rule anticipates preparation of a credible characterization of sources of PFAS. As proposed, the task is framed as a check-the-box, speculative exercise which provide useful insights if completed at the level of effort described in the UCMR ICR. As currently presented the ICR anticipates small, large, and very large water systems will respectively fulfill all of their ICR responsibilities with 2.2, 7.5, and 10.7 hours, respectively. This number of hours represents an improbably low estimate of the hours to perform only the tasks associated with sampling, quality assurance, and data entry. Anticipating that these systems can also prepare and submit a useful characterization of past and present potential PFAS sources within the allocated hours used to calculate the ICR burden is very unrealistic. Furthermore, any characterization that could be prepared at levels of effort close to those anticipated would be poor. Both EPA and water systems are ill-advised to incorporate a poor characterization of potential PFAS sources into UCMR 5 since:

1. EPA does not have a means within UCMR to understand the basis for or level of confidence in the response provided
2. Differing assumptions regarding the concentration of PFAS that is generally present in modern society and thus the environment will substantially influence responses. Confidence in the response will be very low because assumption-based responses will span a wide spectrum (e.g., no knowledge based on lack of specific-knowledge, apparent predominance of responses based on presumption of ubiquity, presumption of inevitability based on the size of a watershed / aquifershed) making the responses uninformative for decision-making.
3. Bias in response based on presumed criticality of sources based on limited direct knowledge (e.g., recognizing the use of fire foam in a watershed without understanding if that fire foam would have been one containing PFAS, knowledge that Class C fire foam historically contained PFAS but not identify wastewater effluent from metal plater facilities are a vector for PFAS contamination).
4. Third-party analysis of a low-quality response misrepresenting the relative importance of sources of contamination of the nation's water supplies.

AWWA has developed a "Source Water Evaluation Guide for PFAS", which provides a framework for the process that is required for water systems to identify and investigate potential sources of PFAS in the watershed/aquifershed. [FN20: AWWA. 2020. Source Water Evaluation Guide for PFAS.] This guide provides a well-defined, objective, and data driven characterization to conduct a PFAS source investigation driven by water systems. This guide includes several critical aspects that would also apply to the effort proposed in UCMR 5:

1. Review of water sources and definition of study area
2. Review of existing, publicly available occurrence data and previously detected contamination
3. Review of the types and locations of potential facilities associated with PFAS and 1. characterization of their relative potential risk

Comments Received on Potential PFAS Sources

4. Development of a targeted monitoring program
5. Interpretation of monitoring results

While not separately highlighted as a separate step, communication and preparation for community outreach is an underlying theme that must be done in parallel when identifying potential sources. Water systems working to identify PFAS sources nearby need to be prepared to communicate about the objectives, results, and follow-up action. Preliminary tasks associated with a source water evaluation (excluding completing a monitoring program) can range in project costs from $10,000 to more than $40,000 depending on the number and types of water sources, the extent of data collection that occurs, and other factors [FN21: Unpublished Case Study. AWWA. 2021. PFAS case study describing a PFAS source investigation project in the Mid-Atlantic region.]. The cost of conducting a source water evaluation would be significantly higher given the extent of sampling that is necessary to link contamination to potential sources, the difficulty of which is compounded by the lack of a validated EPA method for groundwater and surface water.

Given the level of effort that this would require from EPA to prepare necessary guidance and participating water systems to execute, collection of these data by public water systems under UCMR 5 is inappropriate. Such a data collection effort would be more appropriate and effective through other EPA offices, including:

1. The EPA's Office of Research and Development (ORD) would be best positioned to conduct a research project understanding the relationship of PFAS detections with PFAS sources. Such a research effort would provide a more targeted approach and would provide more effective, higher confidence data in support of in-depth analysis.
2. The Office of Chemical Safety and Pollution Prevention (OCSPP) has direct authority of formulators and manufacturers. EPA's OCSPP is currently collecting and analyzing information related to potential PFAS sources through the Toxics Release Inventory and recent regulatory efforts.
3. Similarly, EPA's Office of Land and Emergency Management (OLEM) has direct authority of other types of potential PFAS sources including landfills and contaminated sites. EPA's OLEM is also positioned to provide information regarding related sites that may have impacted drinking water sources.

Instead of requiring water systems to either prepare a characterization on a case-by-case basis, with limited confidence and capacity, EPA's Office of Water should coordinate with other relevant EPA offices (e.g., ORD, OCSPP, and OLEM) to identify these potential PFAS sources. Such an effort could include state involvement and could focus on developing a geographic information system (GIS) product supported by model watershed field testing.

UCMR source water PFAS concentrations and potential PFAS data should be collected by other EPA programs. As the EPA considers how to collect this data in an effective way, AWWA also recommends that EPA consider how UCMR 5 could be supported by other EPA authorities and programs. The following authorities and programs should be considered:

1. The Office of Research and Development (ORD) continues work related to improving our understanding of PFAS treatment and transport through the environment. The UCMR 5 program should be supported by subsequent research activities through ORD, specifically targeting treatment performance and potential PFAS sources.
2. Under Section 7333 of NDAA 2020, the United States Geologic Survey (USGS) is required to conduct monitoring of sources of common sources of drinking water (lakes, rivers, aquifers, etc) and potentially finished drinking water. With an expedited timeline for this program, USGS will be able to collect monitoring data that meets the requirements of Section 7333 and supports the objectives of the UCMR data collection.

Comments Received on Potential PFAS Sources

3. EPA has various statutory authorities that provide an avenue for data collection activities that can provide valuable insights in support of the objectives of the proposed UCMR 5. The opportunities under these authorities include the following:
    a. In 2020 the EPA added 172 PFAS to the Toxics Release Inventory (TRI) in accordance with NDAA 2020. At present, this rule is not designed to fully support water systems.
        i. First, EPA should eliminate the de minimis exemption for PFAS in the TRI to capture environmental releases that may impact water system. This exemption for certain releases eliminates the available data for PFAS releases to the environmental that can be reasonably expected to impact drinking water sources, given the magnitude of difference between the de minimis exemption level and the EPA's published cleanup goals.
        ii. Second, the current list of PFAS added to the TRI in 2020 does not provide full coverage for all PFAS covered by the UCMR 5 proposal. While the proposed UCMR 5 includes monitoring of 29 individual PFAS, only 9 of these PFAS are listed in the TRI. Under NDAA 2020, EPA is required to consider whether any PFAS that can be detected with an EPA drinking water method meets the criteria for inclusion in the TRI. EPA should expedite this process to ensure data collection to support the UCMR 5 monitoring efforts and PFAS source identification efforts.

Individual Response: Please see Discussion on Potential PFAS Sources.

Comment Excerpt from Commenter 107

Louisville Water is concerned about the cost and burden of this exercise for utilities, and that the effort would not result in data of value to the agency. Louisville Water alternately proposes an effort to gather ancillary PFAS data would be more appropriately conducted by and under the authority of EPA and its offices, including ORD, OCSP, OLEM, and EPA's delegated state Clean Water Act programs.

Individual Response: Please see Discussion on Potential PFAS Sources.

Comment Excerpt from Commenter 109

Potential PFAS Sources

American Water does not support the inclusion of questions related to identification of potential sources of PFAS contamination. In the absence of clear guidance on how to determine such sources (including historic sources that may no longer be active), there will be inconsistency in how water systems identify potential sources, which may lead to inaccurate conclusions and correlations between source and occurrence.

Individual Response: Please see Discussion on Potential PFAS Sources.

Agency Discussion on Reporting Timeframe (PWSs and Laboratories)

Agency Topic Discussion: EPA received many comments regarding the revised reporting timeframes for PWSs and laboratories under UCMR 5. Commenters generally agreed with the revised timeframes. The Agency is finalizing the revised reporting timeframes for laboratories and PWSs as proposed. For UCMR 5, laboratories have 90 days (versus 120 days in prior UCMR cycles) from the sample collection date to post and approve analytical results in SDWARS, and large PWSs wishing to take action on their results have 30 days (versus 60 days in prior UCMR cycles) to review and approve the analytical results laboratories posted in SDWARS. After that 30 day optional review period, any results not acted on by the PWS will be considered approved and available for State and EPA review, consistent with the "default approval" approach used in prior UCMR cycles.

Agency Discussion on Reporting Timeframe (PWSs and Laboratories)

Some commenters supported the timely reporting of data by laboratories to ensure that PWSs have earlier access to data to reconcile QC issues, especially those that may require a PWS to resample. Others expressed concerns that the revised timeframe could be challenging for laboratories and suggested that the shorter timeframe be conditioned on consistent functionality and availability of SDWARS. In the proposed rule, EPA noted that multiple States have expressed an interest in earlier access to UCMR data. EPA believes that the shorter timeframes for posting and approving data are feasible and reasonable based on our experience with UCMR reporting to-date.

Commenters generally agreed with the changes in the timeframes for large PWSs to review and approve analytical results posted to SDWARS, though some requested that EPA maintain the 60-day review period.

EPA has observed that many laboratories are routinely posting data to SDWARS within 90 days of sample collection, and that many large PWSs are approving and submitting data within 30 days of their laboratory posting the data (see Appendix 5 for more information on PWS and laboratory response times). Judging by reporting for calendar year 2020 monitoring under UCMR 4 (81 FR 92666, December 20, 2016; USEPA, 2016a), more than 75% of laboratories posted and approved data within 90 days, and more than 85% of large PWSs who chose to act on their data did so within 30 days of the laboratory posting it. During UCMR 3 and UCMR 4, less than half of large PWSs chose to actively review and approve their data, as opposed to letting the results default to "approved" status after the review period. The many large PWSs that have routinely chosen to not review and approve their data will not be impacted by the revised timeframe for PWS data review for UCMR 5. EPA does not anticipate functionality or availability issues with SDWARS during UCMR 5 but is prepared to make case-by-case exceptions for reporting timeframes should significant issues occur with the reporting system.

Comments Received on Reporting Timeframe (PWSs and Laboratories)

Comment Excerpt from Commenter 81

AMWA also supports EPA's proposal to reduce the number of days a lab has to post UCMR monitoring results from 120 days to 90 days. The association believes this could be an improvement towards helping to keep the quarterly sample timeline on track, specifically in situations where there are QA/QC issues that would require the system to resample. AMWA members have reported difficulties reconciling QA/QC issues with labs that routinely wait until the end of a 120-day period to post their results. A 90-day timeline for labs would better allow utilities to address the issue before the end of the quarterly monitoring period.

However, with regard to EPA's proposal for a reduction of the utility reporting timeline from 60 days to 30 days, AMWA does not believe that EPA's observation "many large PWSs are approving and submitting data within 30 days of their laboratory posting the data" warrants the proposed decrease in the time allowed for utilities to review data. AMWA feels this shortened period could be burdensome to utilities. While it is likely that many utilities may be able to review data within this time frame, there are events where utilities need sufficient time to work with the labs to rectify potential QA/QC issues before they approve data in the Safe Drinking Water Accession and Review System (SDWARS).

This is especially important given that both laboratories and utilities are not familiar with the new PFAS method and many potential sampling and QA/QC issues may arise. Under a reduced timeline, scenarios such as this would be counted against utilities for no fault of their own. Reducing the utility timeline from 60 days to 30 days does not provide significant public health benefit and may hinder water systems' ability to ascertain the quality of data. AMWA therefore requests that EPA remove this change from the final rule.

Comments Received on Reporting Timeframe (PWSs and Laboratories)

If EPA decides to keep this change, AMWA requests that EPA take measures to ensure that SDWARS is up and running without significant issues. AMWA members have reported difficulties in using the system, which can cause significant delays. AMWA also requests that EPA include options for extensions to these timelines should issues with SDWARS arise.

Individual Response: Please see Discussion on Reporting Timeframe (PWSs and Laboratories).

Comment Excerpt from Commenter 98

Retain Adequate Time of Public Water System Quality Assurance and Quality Control
MWRA does not support EPA's proposed shortening of the laboratory reporting, PWS review, and approval periods for UCMR5. Given the complexities of sampling and testing for parameters in nanogram per liter concentrations, MWRA believes EPA should continue with the review and approval periods used in past UCMR monitoring. PWS staff need time to review laboratory reports, perform challenge sampling if needed, and investigate erroneous detections before data is uploaded to EPA's databases.

Individual Response: Please see Discussion on Reporting Timeframe (PWSs and Laboratories).

Comment Excerpt from Commenter 103

8. Quality assurance and quality control is a critical aspect of the UCMR program. The current proposal will expand the number of the systems that participate, require analysis using methods with nanogram per liter detection limits and complex sampling handling protocols. Consequently, adequate time is needed not just for the majority of samples that are processed smoothly, but for those where challenges arise.

Individual Response: Please see Discussion on Reporting Timeframe (PWSs and Laboratories).

Comment Excerpt from Commenter 103

Adequate Time for Quality Assurance and Quality Control
EPA has requested comment previously on the appropriateness and practicality of reducing the review periods afforded water systems and states for UCMR data entered into SDWARS. As AWWA has responded previously, AWWA does not support reducing the time available to report data as speeding up the reporting process does not better inform regulatory decision-making [FN24: AWWA, 2011, Comments Revisions to the Unregulated Contaminant Monitoring Regulation (UCMR 3) for Public Water Systems, Docket ID No. OW–2009–0090]. The current proposal will expand the UCMR monitoring program to many more systems than have participated previously, reporting sample observations at nanogram per liter concentrations, requiring monitoring from multiple sampling points, and using analytical methods (and sample handling protocols) that are not in routine use. These are all new challenges for UCMR5 implementation. Consequently, adequate time is needed not just for the majority of samples that are processed smoothly, but for those where challenges arise.

Shorter reporting and quality assurance timeframes are a source of concern particularly if the data will be immediately uploaded to NCOD. Participating in UCMR is an ancillary task to operating a water system 24 hours a day, 365 days a year. Review of observations recorded by the laboratory requires coordination between the laboratory and the water system and that coordination will be variable given utility and laboratory workloads. Together, these factors necessitate maintaining the current review window so that not only can the time be set aside for necessary and appropriate QA/QC but also to allow for adequate time for information exchange with the laboratory and a buffer in the time window for instances when information exchange does not occur expeditiously.

Comments Received on Reporting Timeframe (PWSs and Laboratories)

The need for an adequate review period is compounded by the fact that to-date in UCMR monitoring, water systems have not been allowed to correct data once it was uploaded at the end of the current review window. The absence of adequate review by water systems and this feature of the data system would be a likely contributor to errors in the UCMR data that EPA may not subsequently realize. With these issues in mind, EPA should:

1. Retain the current 120-day window for laboratory reporting and 60-day window for systems to review, approve, and report data,
2. Revisit and change its policies regarding water system access to uploaded data for purposes of correction after the initial review period,
3. Retain 60-day state review period. Given current state staffing challenges, a shorter review period is an unnecessary burden on state programs.
4.

Individual Response: Please see Discussion on Reporting Timeframe (PWSs and Laboratories).

Comment Excerpt from Commenter 104

- At 86 FR 13858, under Reporting Times, the supplementary information for the proposed rule states that EPA is proposing to shorten the timeframes for laboratories to report results (90 days) and for large water systems to review and approve the data (30 days). While PA DEP generally agrees with the intent of this proposed change, it should be noted that the 90-day reporting timeframe may be a burden for laboratories without sufficient capacity and capabilities for EPA Methods 533 and 537.1 analysis and data management workloads.

Individual Response: Please see Discussion on Reporting Timeframe (PWSs and Laboratories).

Comment Excerpt from Commenter 106

Introduction

The Los Angeles Department of Water and Power (LADWP) appreciates the opportunity to provide comments on the United States Environmental Protection Agency's (USEPA) proposed revisions to the Unregulated Contaminant Monitoring Rule (UCMR). LADWP shares the USEPA's goal of tracking and ultimately eliminating exposure to these contaminants in drinking water. LADWP supports the USEPA's efforts to address the issue of unregulated contaminants and acknowledges the work done in developing the UCMR 5. LADWP has reviewed the proposed rule for UCMR 5 and has identified areas of significant concern. These concerns relate to the rule's reporting requirements and the logistical burdens it will place on LADWP's water system. The UCMR 5 has several new regulatory monitoring and reporting requirements. These requirements would increase the burden on Community Water Systems (CWS) and increase the chance of falling out of compliance. LADWP offers recommendations and comments on the UCMR 5 below.

LADWP

LADWP is the nation's second-largest municipal water utility, serving a population of 4 million people within 472 square miles. Our distribution system covers 7,333 miles of trunk lines and mains and consists of 115 tanks and reservoirs, 84 pump stations, nine ammoniation stations, and 22 chlorination stations. We also operate 329 regulator and relief stations spread across 111 system pressure zones; and have a total storage capacity of 331,000 acre-feet. These vast infrastructure networks enable LADWP to supply approximately 143 billion gallons of water annually – an average of 486 million gallons per day, using 733,000 active water service connections. In ensuring safe, high quality water, LADWP collects over 37,000 water samples throughout the city and conducts more than 112,000 water quality tests for compliance with safe drinking water standards annually. We have invested more than $1.3 billion in 26 major infrastructure projects to safeguard the city's drinking water and meet all state and federal drinking water regulations.

Comments Received on Reporting Timeframe (PWSs and Laboratories)

Comments and Recommendations
EPA proposed to change the laboratories' data approval and posting time to 90 days from the sample collection date and 120 days for the Public Water Systems from when the laboratory posts the data to the Safe Drinking Water Information System. It would be challenging to approve and submit the data within the proposed shorter allotted time because LADWP is not yet certified to perform the necessary analytical methods for these 29 PFAS compounds. LADWP and many surrounding CWS are reliant on a small number of contract laboratories certified to perform these analyses. This reliance has the potential to create a bottleneck problem and could lead to lapses in regulatory compliance. LADWP is working to gain accreditation for these analytical methods.

LADWP recommends retaining the existing data approving and posting time to 120 days for the laboratories and data approval time to 90 days for PWSs.

Individual Response: Please see Discussion on Reporting Timeframe (PWSs and Laboratories).

Comment Excerpt from Commenter 107
Louisville Water recognizes that there are scenarios where a utility may not be able to meet the proposed shorter review timeframes. Louisville Water requests that EPA take measures to ensure that the Central Data Exchange (CDX) and the Safe Drinking Water Accession and Review System (SDWARS) are operating without consequential issues. Labs and utilities may experience difficulties in using CDX/SDWARS, which may cause delays in reporting and reviewing data. This is especially the case as AWIA expanded the number of public water systems under the UCMR. Louisville Water requests that EPA's UCMR Coordinator work with utilities to resolve technical issues and employ flexibility regarding reporting and review timeframe extensions should significant training or operational issues with CDX/SDWARS come about.

Individual Response: Please see Discussion on Reporting Timeframe (PWSs and Laboratories).

Comment Excerpt from Commenter 108
D. The Coalition Urges EPA to Provide PWS with Adequate Time to Implement UCMR5 Obligations.
The Coalition also urges EPA to ensure that PWS have adequate time enabling them to successfully comply with the UCMR5 proposal's requirements. The Coalition notes that EPA's proposal to shorten the reporting schedule places additional burdens on PWS. In finalizing a reporting timeline, the Coalition urges EPA to consider the availability and capacity of laboratories across the United States that can reliably test for PFAS. There is limited capacity nationally to perform all of the analytical laboratory work reliably and within the timeframe proposed.

Individual Response: Please see Discussion on Reporting Timeframe (PWSs and Laboratories).

Comment Excerpt from Commenter 109
Reporting
American Water does not oppose the new requirement where laboratories would be given 90 days (versus the current 120 days) from the sample collection date to post and approve analytical results in SDWARS for PWS review, provided, the SDWARS intake portal (CDX) sustains >/= 95% online status and sufficient performance to accept bundled data uploads from laboratories. Bundled is defined as, at a minimum, all Method results for 20 Field Samples and associated QC in a single file / upload session.

Individual Response: Please see Discussion on Reporting Timeframe (PWSs and Laboratories).

Agency Discussion on Reporting Below the MRL

Agency Topic Discussion: EPA received a comment requesting that laboratories report all measured concentrations that fall above laboratory Method Detection Limits (MDLs) for UCMR 5 sample analyses, regardless of whether they are lower than the UCMR 5 MRL for the analyte. The Agency has chosen to maintain the proposed approach for UCMR 5 requiring laboratories to only report UCMR sample results greater than or equal to the MRL defined in final rule (USEPA, 2021o) and the "UCMR 5 Laboratory Approval Manual" (USEPA, 2021m).

The EPA's UCMR MRL is a quantitation limit that accounts for both precision and accuracy of the measurement and the ability of most labs to be able to report valid data at the MRL concentration. Each laboratory's capabilities are unique, and laboratory reporting limits can vary significantly due to factors such as analyst ability and experience, age of technology and instrumentation, and matrix effects. Therefore, EPA has chosen to establish an MRL that, with 95% confidence, can be achieved by 75% of laboratories. EPA also requires laboratories participating in the UCMR program to confirm their ability to meet the UCMR MRL requirement.

Accommodating reporting of UCMR results based on different, laboratory-specific detection limits or quantitation limits would introduce significant reporting-system (SDWARS) complexity and cost, and the resulting national data set would reflect a mix of measurement sensitivity, making interpretation of results more challenging. Measuring at lower levels, and providing appropriate QC documentation, could introduce additional cost, which would either be borne by the laboratories or passed on to their PWS- or EPA customers. Allowing flexibility to report data based on laboratory limits lower than EPA's MRL could also lead to disparate reporting of low-level negative results (i.e., less than that laboratory's limit) and low-level positive results (i.e., between the laboratory's limit and EPA's MRL), which could bias the national data set. Further, EPA notes the potential for data "flags" (to highlight imprecise or semiquantitative results) to be overlooked when data are aggregated/assessed.

Comments Received on Reporting Below the MRL

Comment Excerpt from Commenter 61

The following appears under item 2 of section LC (Economic Analysis / Summary Information): "The public benefits from the information about whether or not unregulated contaminants are present in their drinking water. If contaminants are not found, consumer confidence in their drinking water should improve. If contaminants are found, related health effects may be avoided when subsequent actions, such as regulations, reduce or eliminate those contaminants."

Each of these three sentences correctly stresses the importance of contaminant detection, yet the practice of UCMR-5, like earlier UCMRs, is to hide the many detections that fall below Minimum Reporting Levels (MRLs) by reporting simply that they fall below the MRLs. As a result, only detections that exceed MRLs are reported numerically. The public does not learn about the great majority of detections that fall below MRLs. Agency decision-making suffers because this practice causes valuable information loss. Error in national occurrence estimates may lead to over or under-regulation because national estimates have greater-than-necessary uncertainty. Public trust suffers because consumers are led to believe contaminants are not detected, when in fact they are.

To provide the public high quality "information on whether unregulated contaminants are present in their drinking water" and to provide the Agency with data to support defensible estimates of national contaminant occurrence, this reviewer recommends a simple change in reporting practice: Report all measured

Comments Received on Reporting Below the MRL

concentrations that fall above Method Detection Limits. Continue to flag values that are imprecise because they fall below MRLs, but do not hide those measured values from the public, the regulated utilities, or EPA decision-makers.

Individual Response: Please see Discussion on Reporting Below the MRL.

Data Accessibility, CCR, and Public Notification

Agency Discussion on Data Accessibility, CCR, and Public Notification

Agency Topic Discussion: The Agency received many comments related to the accessibility of UCMR 5 data and PWS requirements under the Consumer Confidence Report (CCR) Rule and Public Notification (PN) Rule. EPA provides data transparency by publicly posting all UCMR data to the NCOD and by providing data summaries, updated quarterly (posted on the UCMR website). Data must be reviewed and approved by laboratories and PWSs, as well as reviewed by EPA, before it can reliably be made available to the public. EPA's quarterly data summaries and quarterly data postings represent the most current approved data.

CCRs, also known as annual drinking water quality reports, provide information about the drinking water quality. CWSs that are subject to UCMR are subject to the CCR rule (40 CFR 141.153), which requires CWSs to report monitoring results in their annual CCRs when unregulated contaminants are detected (i.e., any measurement at or above the MRL). CWSs must report the average of the year's monitoring results and the range of detections and can also explain why the PWS is monitoring for unregulated contaminants. EPA suggests that CWSs state that they are monitoring for unregulated contaminants (i.e., those that don't yet have a drinking water standard set by EPA), and that the purpose of monitoring is to help EPA decide whether the contaminants should have a drinking water standard. The CCR rule is a federal rule, but States with primacy oversee and implement the rule. CCR requirements are established in the CCR rule. Under UCMR 5, EPA expects to collect occurrence data from approximately 5,000 more small PWSs than in prior UCMR cycles, nearly doubling the total number of PWSs previously included in UCMR monitoring. The inclusion of thousands more PWSs in UCMR monitoring further increases public awareness (via EPA's NCOD updates and PWS's CCRs).

PWSs participating in the UCMR program must also meet PN requirements. The PN rule applies to all types of PWSs, including the CWSs and NTNCWSs subject to UCMR monitoring, and ensures that consumers are informed if there is a drinking water issue that presents a risk to public health. The PN rule requires PWSs to provide special notices for certain situations, including the availability of UCMR data (40 CFR 141.207). Under PN, PWSs that monitor need only notify customers that the UCMR results are available and provide a phone number or contact where the results can be obtained in the form and manner of delivery for Tier 3 (annual notice) PN. EPA encourages PWSs to use PN to describe why they are monitoring for the contaminants, explain health effects information and health risks, and provide context for the results. PN must be made within 12 months after the results are known; PWSs can use their CCR to provide the required PN if all timing and delivery requirements are met. PN is also required when a PWS fails to meet UCMR monitoring requirements (40 CFR Appendix A to Subpart Q of Part 141).

Comments Received on Data Accessibility, CCR, and Public Notification

Comment Excerpt from Commenter 58

We will submit more detailed technical comments supporting these recommendations in May. The goal of the changes we are proposing is to assure more comprehensive testing for hazardous and likely widespread contaminants. If such testing is not done, we are concerned that the public and often the water utilities themselves will not be aware of contamination of their water supplies. They will not be made aware of the need for treatment, source water protection, and other measures to address the threats posed. Moreover, a lack of more comprehensive data may hinder EPA's and states' ability to adopt effective regulatory measures to protect the public. Therefore, we respectfully request that you make the changes recommended above.

Individual Response: Please see Discussion on Data Accessibility, CCR, and Public Notification.

Comment Excerpt from Commenter 69

Please accept these comments on the Environmental Protection Agency's ("Agency") proposed rulemaking regarding the fifth Unregulated Contaminant Monitoring Rule ("UCMR 5") under the Safe Drinking Water Act ("SDWA"). As a first-year law student, I am developing my interest in environmental regulation and public health. I write to support the Agency's proposal to collect data for 29 per and polyfluoroalkyl substances ("PFAS") and lithium in public water systems ("PWS"), and I urge the Agency to strengthen its initiative to further benefit the public health by focusing on environmental justice and children's environmental health.

INTRODUCTION

The Agency's proposal implements § 1445(a)(2) of the SDWA, which requires the Agency to issue a list of not more than thirty unregulated contaminants to be monitored by PWSs every five years. The proposal for UCMR 5 requires all community and non- transient non community water systems serving 3,300 people or more (and a representative sample of smaller water systems) to monitor levels of PFAS and lithium.

The Agency claims the proposed rule benefits the public by better informing the Agency's decision-making process: "If contaminants are not found, consumer confidence in their drinking water will improve. If contaminants are found, related health effects may be avoided when subsequent actions, such as regulations, reduce or eliminate those contaminants." [FN1: https://www.regulations.gov/document/EPA-HQ-OW-2020-0530-0001] Better informed decision-making by the Agency does indeed benefit the public; however, the Agency can do more to support consumer confidence. The Agency can give the public greater access to the current data regarding the presence of PFAS, and it can also be more transparent in reporting results from UCMR 5 reports. Additionally, the Agency can better support higher need communities and children's health by providing the public with access to a resource that readily displays PFAS reports and steps to mitigate PFAS in drinking water.

Individual Response: Please see Discussion on Data Accessibility, CCR, and Public Notification, Risk Communication, EO 13045: Protection of Children from Environmental Health Risks and Safety Risks, and EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 69

I. DATA TRANSPARENCY AND MODES OF ACCESSIBILITY

a. The Agency's Current Public Notice Methods Should Be More Direct And Thorough.

Although the Agency provides background information on how it has been addressing PFAS for the past two years on its website, the information available to the public is relatively vague [FN2: https://www.epa.gov/sites/default/files/2021-01/documents/pfas_factsheet_jan2021-v5.pdf]. It is unclear where PFAS have been detected in drinking water throughout the United States and which populations might

Comments Received on Data Accessibility, CCR, and Public Notification

be at higher risk.

Prior cycles of UCMR reports exemplify the lack of clarity in reporting unregulated contaminants. UCMR 3, which required monitoring for twenty-eight chemicals and two viruses, was published in the Federal Register on May 2, 2012 [FN3: https://www.epa.gov/monitoring-unregulated-drinking-water-contaminants/occurrence-data-unregulated-contaminant]. Accessing the occurrence data of contaminants from UCMR 3 requires the viewer to follow a three-page instruction sheet to see the UCMR's results in Excel [FN4: https://www.epa.gov/sites/default/files/2018-10/documents/instructions-for-using-microsoft-excel-to-access-ucmr4-results.pdf]. The instructions are the same for UCMR 4, published on December 20, 2016. Though the data summary sheet has been updated since April 2021 and remains subject to change, there is no direct indication of the current results [FN5: https://www.epa.gov/sites/default/files/2018-10/documents/ucmr4-data-summary.pdf?VersionId=rA99iuZD13h1MJLsNEBYOE25XKC1k9.y].

These routes to view the Agency's collected data from prior UCMR cycles are significantly more complicated than the Agency's route to accessing its own Safe Drinking Water Information System (SDWIS) Federal Reports Search [FN6: https://ordspub.epa.gov/ords/sfdw/f?p=108:200]. This system allows any viewer to find various information about any PWS, including the primary source, activity status, population served count, rule violated, contaminant, and violation report date. The viewer must begin the search by entering the water system name, PWS identification, City, and County. Here, the Agency might consider allowing the viewer to also search for a particular contaminant. Although the Agency may not have current datapoints for PFAS detections in PWS, the Agency could collect temporary datapoints by incorporating states' findings to the Federal Reports Search.

Individual Response: Please see Discussion on Data Accessibility, CCR, and Public Notification.

Comment Excerpt from Commenter 69

CONCLUSION

UCMR 5 as it stands will benefit the public; however, the Agency can do more to further its initiative to address environmental justice and children's environmental health. The Agency should: (1) improve transparency of PFAS data and other relevant information (MassDEP's website is instructive); (2) disclose its intentions upon detecting PFAS levels above the minimum reporting level; and (3) inform consumers how to access water treatment processes at home. These measures will strengthen UCMR 5's connection to public health.

Individual Response: Please see Discussion on Data Accessibility, CCR, and Public Notification, Risk Communication, EO 13045: Protection of Children from Environmental Health Risks and Safety Risks, and EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comments Received on Data Accessibility, CCR, and Public Notification

Comment Excerpt from Commenter 90

2. The Agency should reconsider the type of Consumer Confidence Reports reporting required under UCMR testing. UCMR "contaminants" are, by definition, unregulated substances potentially found in drinking water samples. However, the term "contaminant" has a negative connotation for customers while another, less alarming, and more accurate term could be used in its place if a utility is to be required to report findings. The terminology regarding the concentration of substances that may cause some detrimental public health effects is unclear and apparently undefined. As such, it seems that mandated reporting of these substances using the term "contaminant" without determining what levels are considered unsafe concentrations is premature and unwarranted. It also leaves the public without the information they most want to know - what levels of these substances are safe or not safe. Utilities are neither informed about how to address customer questions regarding any of these elements or compounds nor told what, if any, detrimental health consequences might result from positive test results at various concentrations.

Individual Response: Please see Discussion on Data Accessibility, CCR, and Public Notification and Risk Communication.

Comment Excerpt from Commenter 104

- Because a lifetime health advisory level (HAL) has been established for PFOS and PFOA combined, PA DEP suggests including a requirement for laboratories conducting UCMR 5 analysis to notify the public water system and the state when the HAL is exceeded. Exceedance of the HAL must be addressed promptly, which depends on prompt laboratory notification.

Individual Response: Please see Discussion on Data Accessibility, CCR, and Public Notification. Large PWSs have the opportunity to request analytical results for UCMR 5 contaminants early (i.e., before their laboratory posts the results to the UCMR web-based reporting system) so that these PWSs can inform their consumers or their State in a timely manner. EPA manages the laboratory analysis for small PWSs and will work to communicate results in a timely manner.

Comment Excerpt from Commenter 116

These proposed changes, if methods are validated and detection limits are improved, will yield more informative, credible, and publicly reliable test results for these pervasive contaminants. Without enhanced and validated testing, water systems such as Little Hocking will not have a more comprehensive understanding of the content of their water supplies and their Consumer Confidence Reports will reflect only a portion of the truth about drinking water. Worse yet, water suppliers will not be made aware of the need for additional treatment.

Individual Response: Please see Discussion on Data Accessibility, CCR, and Public Notification.

Comment Excerpt from Commenter 120

The goal of the changes we are proposing is to assure more comprehensive testing for hazardous and likely widespread contaminants. If such testing is not done, we are concerned that the public and often the water utilities themselves will not be aware of contamination of their water supplies. They will not be made aware of the need for treatment, source water protection, and other measures to address the threats posed. Moreover, a lack of more comprehensive data may hinder EPA's and states' ability to adopt effective regulatory measures to protect the public. Therefore, we respectfully request that you make the changes recommended above.

Individual Response: Please see Discussion on Data Accessibility, CCR, and Public Notification.

Laboratory Approval Program

Agency Discussion on Laboratory Approval Program

Agency Topic Discussion: EPA received multiple comments on the nature and requirements of the UCMR Laboratory Approval Program. Consistent with prior UCMRs, this final action maintains the requirement that PWSs use specified laboratories approved by EPA to analyze UCMR 5 samples. UCMR monitoring includes unregulated contaminants that are not included under State laboratory certification for SDWA regulated contaminant analysis. Since these contaminants are not included in a State laboratory certification program, EPA evaluates each laboratory that wishes to analyze samples for the UCMR to ensure they can produce data of known and acceptable accuracy and precision through the UCMR Laboratory Approval Program.

The UCMR 5 Laboratory Approval Process, which began with the publication of the UCMR 5 proposal, is similar to that employed in previous UCMRs and is designed to assess whether laboratories possess the required equipment and can meet laboratory-performance criteria (i.e., the established MRLs for UCMR 5 contaminants and analytical method QC requirements) and data-reporting criteria. Demonstration of the ability to reliably make quality measurements at or below the MRL is intended to maintain uniformity across sample analysis and ensure that the data collected to assess national occurrence are as reliable as possible. Laboratories may only use the approved analytical methods for UCMR 5 listed in 40 CFR 141.40(a)(3), Table 1. EPA will require laboratories seeking approval to: (1) provide EPA with data documenting an initial demonstration of capability (IDC) as outlined in each method; (2) verify successful performance at or below the MRLs as specified in this action; (3) provide information about laboratory standard operating procedures (SOPs); and (4) participate in and pass two EPA proficiency testing (PT) studies for the analytes of interest. Audits of laboratories may be conducted by EPA prior to and/or following approval, and maintaining approval is contingent on timely and accurate reporting. By conducting ongoing laboratory audits EPA will be able to evaluate laboratory's analytical processes for all aspects of sample receipt, storage, processing, analysis, and reporting of routine samples. This will provide a complementary mechanism along with the original PT study for uncovering any potential data issues and ensuring that laboratories meet the quality requirements. The "UCMR 5 Laboratory Approval Manual" (USEPA, 2021m), available in the UCMR 5 public docket, helps explain the requirements and acceptance criteria for EPA Methods 200.7 (USEPA, 2004), 533 (USEPA, 2019a), and 537.1 (Version 2.0; USEPA, 2020a), and provides more specific guidance on the steps of laboratory approval. EPA also helps ensure the integrity of the data by defining and maintaining strict criteria for sample collection and handling, as well as overseeing and providing technical support to approved laboratories and conducting outreach to the PWSs that will be collecting samples.

Laboratory participation in the UCMR 5 Laboratory Approval Program is voluntary, although EPA does require PWSs to exclusively use laboratories that have been approved under the program. EPA expects demand for laboratory support to increase significantly based on the greater number of PWSs participating in UCMR 5. EPA estimates that the number of participating small water systems will increase from the typical 800 to approximately 6,000. In preparation for this increase, EPA will solicit proposals and award contracts to laboratories to support small-system monitoring prior to the end of the PT program. As in previous UCMR programs, EPA expects that laboratories awarded contracts by EPA will be required to first be approved to perform all methods. The Agency encourages all laboratories to request to participate in the program and apply as early as possible to increase the options for PWS sample analysis. EPA will post a list of approved UCMR 5 laboratories to https://www.epa.gov/dwucmr and will bring this to the attention of the PWSs in our outreach.

Comments Received on Laboratory Approval Program

Comment Excerpt from Commenter 104

- Laboratories will be required to post monitoring results and quality control data to the electronic data reporting system. One of the goals of the UCMR program, as stated at 86 FR 13848 in the summary section of the supplementary information for the proposed rule, is to "provide EPA, states, and communities with scientifically valid data on the national occurrence of these contaminants in drinking water." In order to ensure the validity and accuracy of the data collected, PA DEP requests that EPA address several questions related to quality control for PFAS results reported via EPA Methods 533 and 537.1. For example:
    - Will laboratories be expected to strictly adhere to all quality control requirements outlined in each of the methods?
    - Will EPA be reviewing the quality control data reported by laboratories on an ongoing basis to ensure compliance with method requirements?
    - Will laboratories be permitted to report results with qualifiers if quality control requirements are not met? How will results with qualifiers be handled? Will qualified results be accepted, or will they be invalidated?
    - If qualified results are invalidated, what will be the required timeframe and process for collection of replacement samples?
    - Will there be a process by which a laboratory can request to report qualified data, and a corresponding approval process?

Individual Response: Please see Discussion on Laboratory Approval Program.

Comment Excerpt from Commenter 114

3. Analytical Methods/Lab Capacity/Quality Assurance Concerns and Recommendations
Laboratory sample review and processing is a key component to the UCMR. As part of the UCMR, labs must successfully complete the EPA's lab approval program, demonstrating their ability to meet UCMR5 methods and guidelines. However, following the lab approval, states have expressed concern about the data reporting process. EPA needs to inform states on how data submitted by laboratories is being adequately reviewed and provide clarity on laboratory expectations for data accuracy and quality beyond the initial laboratory approval process.

ASDWA requests transparency from EPA on the quality assurance and quality control of the UCMR data collection process. Specifically, what data can be used and how it will be used. For example, will qualified lab data that may not meet the quality control process be accepted?

Individual Response: Please see Discussion on Laboratory Approval Program and SDWARS Functionality/Improvements.

Agency Discussion on Laboratory Capacity

Agency Topic Discussion: EPA received many comments regarding laboratory capacity for UCMR 5 sample analysis. EPA estimates that the agency will need approximately 10 laboratories solely for the analysis of UCMR 5 samples from small PWSs; laboratory capacity to support large PWSs should be consistent with that for prior cycles since the number of large PWSs participating in UCMR 5 is consistent with prior UCMR cycles. Based on the Agency's experience over the first four cycles of UCMR implementation, and the number of laboratories participating in the UCMR 5 laboratory approval program, EPA anticipates that sufficient laboratory capacity will exist to support the expanded UCMR scope. As noted by a commenter, three of the nation's major commercial labs conducted a significant portion of the national PFAS testing under UCMR 3

Agency Discussion on Laboratory Capacity

and have established MRLs on par with the UCMR 5 MRLs for Methods 533 and 537.1. Additionally, EPA is aware of PFAS monitoring efforts by States and local communities across the country to better understand PFAS occurrence in drinking water, including both statewide drinking water monitoring actions, and targeted sampling at locations that have potentially been impacted by releases or where PFAS-containing materials are known to have been used. These ongoing efforts have contributed to an even more robust national network of laboratories experienced in PFAS drinking water analysis and capable of meeting the requirements of the UCMR 5 Laboratory Approval Program.

Comments Received on Laboratory Capacity

Comment Excerpt from Commenter 104

- At 86 FR 13849, the supplementary information for proposed rule states that "EPA anticipates that sufficient laboratory capacity will exist to support the expanded UCMR scope." This statement refers to the inclusion of all systems serving 3,300 to 10,000 persons for monitoring. PA DEP requests that EPA address specifically how it came to the determination that "sufficient laboratory capacity will exist" for analysis of PFAS using EPA Methods 533 and 537.1. It is PA DEP's experience that lab capacity is already being challenged by an increased demand for sampling in response to efforts from multiple states to conduct PFAS sampling plans, set MCLs, and investigate and address PFAS contamination and clean-up. PA DEP also encourages EPA to carefully consider not just laboratory capacity, but also laboratory capabilities, before expanding the scope of UCMR 5 as noted. It is PA DEP's experience that quality control issues with EPA Method 537.1 and qualified data for PFAS results can significantly hamper a laboratory's ability to manage increased workload. It is imperative for laboratories to be prepared not just to handle the increased analytical workload, but also the data management workload, including review and approval of quality control data and sample results, as well as how to handle qualified results. Laboratories will also be faced with even greater analytical workload as a result of subsequent replacement samples if data qualifiers prevent results from being reportable. Therefore, it is imperative that EPA carefully evaluate whether sufficient laboratory capacity truly exists before requiring monitoring under UCMR 5 for all systems serving ≥ 3,300 persons.
- Insufficient laboratory capacity would likely have negative impacts on the quality of data, timeliness of reporting, and overall cost. The proposed rule describes two possible scenarios for deciding which systems are included in UCMR 5: (1) monitoring at all systems with populations ≥ 3,300 and at a representative sample of 800 systems with populations < 3,300; or (2) monitoring at all systems with populations > 10,000 and at a representative sample of 800 systems with populations ≤ 10,000.
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Individual Response: Please see Discussion on Laboratory Capacity.

Comment Excerpt from Commenter 108

The Coalition supports EPA's proposal to require each laboratory interested in supporting UCMR analyses to demonstrate that they can reliably make quality measurements at or below the established minimum reporting levels (MRLs). This requirement, however, will limit the availability of qualified laboratories across the United States. Therefore, EPA should ensure that the reporting schedule accounts for the limited availability of qualified laboratory testing. Additionally, the selection of only one method for use in the UCMR5, as recommended above, will help streamline the monitoring process, thereby increasing laboratory capacity and enabling PWS to fulfill their monitoring obligations in accordance with the reporting schedule.

Individual Response: Please see Discussion on Laboratory Capacity.

Comments Received on Laboratory Capacity

Comment Excerpt from Commenter 109

Applicability

American Water acknowledges the American Water Infrastructure Act provision that allows extension of the UCMR requirements to all water systems serving 3,300 or more persons. In the event that Congress allocates the necessary funding, it would be incumbent on USEPA to ensure adequate lab capacity to support the effort. We note that in the notice USEPA indicated that it anticipates adequate lab capacity, but that assumption would need to be confirmed prior to finalizing the rule.

Individual Response: Please see Discussion on Laboratory Capacity.

Agency Discussion on Minimum Reporting Level Determination

Agency Topic Discussion: The Agency received many comments regarding the proposed MRLs for PFAS analytes in UCMR 5; EPA is maintaining these MRLs for the final rule. Agency experience with prior UCMR cycles lends confidence that the UCMR 5 MRLs can be met by capable analysts and laboratories with the instrumentation specified in the UCMR 5 methods.

EPA establishes MRLs to ensure consistency in the quality of the information reported to the Agency. The MRLs used for the UCMR program are based on calculations that account for the ability of laboratories to report accurate and precise measurements with a specific statistical confidence. As defined in 40 CFR 141.40(a)(5)(iii), a UCMR MRL is the minimum quantitation level that, with 95% confidence, can be achieved by capable analysts at 75% or more of the laboratories using a specified analytical method (USEPA, 2010). EPA considers these to be the lowest reporting levels that can practically and consistently be achieved on a national basis (recognizing that individual laboratories may be able to measure at lower levels).

Commenters recommended that EPA establish lower MRLs for the 29 PFAS in UCMR 5. Based on the results from multiple laboratories that participated in MRL-setting studies, EPA concluded that the proposed MRLs represent the lowest feasible levels for a national MRL measure. Reducing these MRLs arbitrarily (e.g., setting all PFAS MRLs at 1 ng/L, as suggested by a commenter) would reduce the statistical confidence associated with the data (USEPA, 2010). The systematically-determined MRLs in 40 CFR 141.40(a)(3), Table 1, for each analyte were established by obtaining data from at least three laboratories that performed LCMRL studies. The LCMRL is the estimate of lowest concentration of a contaminant at which measurements of specified quality can be repeatedly made, and entails a simultaneous application of precision and accuracy (USEPA, 2010). The multiple laboratory LCMRLs were then processed through a statistical routine to derive an MRL. The statistical justifications used for the multi-laboratory MRL estimation are available in "Technical Basis for the Lowest Concentration Minimum Reporting level (LCMRL) Calculator," with the computation of the MRL explained in Appendix A (USEPA, 2010). While it is true some of the single LCMRL values from laboratory LCMRL studies, available in the "UCMR 5 Laboratory Approval Manual" (USEPA, 2021m), exceed the UCMR MRLs, the calculation of the MRL considers the entire LCMRL data set for each laboratory, produces 200 Bayesian bootstrap LCMRL replicates for each data set, builds a predicted distribution, and determines the MRL based on a 95-75 upper tolerance limit. This specific constraint is based on the rationale that not all laboratories participating in the entire UCMR study can achieve reliable analytical results at the same levels. Quantitation limits may improve with time, experience, and instrumentation advances. Such advances not only imply scientific advances in instrumentation technology but also the availability of more sensitive instrumentation for laboratories. EPA's MRL-setting process relied on data from different laboratories of varying capabilities; laboratories that can achieve lower MRLs do not collectively provide enough capacity to analyze all UCMR 5 samples, particularly given that substantially more PWSs are subject to UCMR 5 relative to

Agency Discussion on Minimum Reporting Level Determination

earlier cycles. It is also important to highlight that MRLs for six PFAS analytes in UCMR 5 using EPA Method 533 are significantly lower (e.g., by an order of magnitude, from 0.04 µg/L to 0.004 µg/l for PFOS) than the MRLs for those same six PFAS under UCMR 3 using EPA Method 537.

EPA requires each laboratory interested in supporting UCMR analyses to demonstrate that they can reliably make quality measurements at or below the established MRL to ensure that high quality results are being reported by participating laboratories. EPA will reconsider the MRLs if it is found that a large number of laboratories are unable to meet them. As noted in 40 CFR 141.40(a)(3) Table 1, Footnote 4, "If EPA determines, after the first six months of monitoring that the specified MRLs result in excessive resampling, EPA will establish alternate MRLs and will notify affected PWSs and laboratories of the new MRLs." This is unlikely to be necessary because the MRL is specifically derived to be a minimum concentration by which 75% of laboratories with capable analysts are predicted to be able to meet.

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Comment Excerpt from Commenter 58

2. Set stricter Minimum Reporting Limits (MRLs) so that low-level PFAS contamination is reported to EPA and the public. Three of the nation's major commercial labs have MRLs lower in many cases than EPA's proposed MRLs; in the past, these labs conducted a significant portion of the national PFAS testing for UCMR 3, so there would be lab capacity to do this testing to these levels.

Individual Response: Please see Discussion on Minimum Reporting Level Determination.

Comment Excerpt from Commenter 66

I'm Andy Eaton, owner of Eaton Environmental Water Quality Consulting LLC (EEWQC) and retired Technical Director of Eurofins Eaton Analytical, LLC, (EEA), the nation's largest potable water testing laboratory, after 40 years. EEA has nearly 25 years of experience testing PFAS compounds in potable water, so I am quite familiar with PFAS testing.

These comments relate to the proposed reporting levels for PFAS compounds for UCMR 5. Although the proposed reporting levels are appropriately much lower than those used in UCMR 3, I believe they are still higher than they ought to be resulting in a loss of potential valuable data on occurrence. There are three separate reasons for this view.

1) I surveyed five of the nation's largest commercial potable water testing labs, including several EPA UCMR contract labs for information on their routine reporting limits (MRLs) for PFAS compounds by methods 533 and 537.1. I received replies from four of those labs and all had MRLs that were at 2 ng/L or lower for nearly all compounds for both methods. (Table 1). [Table 1: See Document ID EPA-HQ-OW-2020-0530-0066] Based on this survey it is clear that labs are capable of going below the proposed UCMR 5 MRLs in 2021, and one would expect that these would improve by 2023. I recommend that before EPA finalizes the MRLs for UCMR 5 that they conduct a similar survey to confirm that these MRLs meet the QC requirements of the UCMR program (blanks meeting 1/3 of MRL, etc.).

Individual Response: Please see Discussion on Minimum Reporting Level Determination.

Comment Excerpt from Commenter 66

3) USEPA has proposed Minimum Reporting Limits generally in the range of 3-5 ng/L (0.003-0.005 ug/L) for PFAS compounds measured by method 533 and 5-8 ng/L for the four compounds measured by method 537.1. While these are substantially lower than the MRLs used in UCMR 3 and represent a significant improvement

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in the ability to measure PFAS compounds at levels below any standards currently established by individual states, the LCMRL data included in the Laboratory Approval Manual would suggest that the MRLs could be set somewhat lower, which would ensure that low levels of PFAS measurements were meaningful. EPA has stated in the past that the UCMR MRL should be based on a level achievable by 75% of laboratories. It is still not clear how EPA determined the multilab calculated MRL included in tables 19 and 20 of the Laboratory Approval Manual, but a simple approach is to just take the 75th percentile of all the data presented in these tables. It is also worth noting that for method 533 specifically, EPA's internal LCMRL data are generally the highest of the 8 laboratories which participated in the LCMRL studies, even though none of these labs had the methods development experience that EPA did. With that observation, another possible approach is to take the 75th percentile of the 7 additional labs only, excluding EPA. With either approach the best estimate of a reliable MRL is in most cases 0.002 ug/L in lieu of 0.003 ug/L. While this may seem like a trivial difference, the trend in many states to consider very low potential standards for PFAS compounds makes obtaining quantitative data as low as possible an important consideration. Table 2 shows the suggested changes to the MRLs for PFAS compounds by method 533. [Table 2: See Document ID EPA-HQ-OW-2020-0530-0066]

Based on these three lines of evidence we propose that EPA reconsider the MRLs for UCMR 5 for the PFAS compounds and reduce them to 2 ng/L for all compounds.

Individual Response: Please see Discussion on Minimum Reporting Level Determination.

Comment Excerpt from Commenter 76

The EPA should set stricter Minimum Reporting Limits (MRLs) so that low-level PFAS contamination is reported to EPA and the public.

Individual Response: Please see Discussion on Minimum Reporting Level Determination.

Comment Excerpt from Commenter 96

We write to comment on EPA's proposed Fifth Unregulated Contaminant Monitoring Rule (UCMR 5). We raise two issues about the proposed analytical plan for per and polyfluoroalkyl substance (PFAS) analysis for UCMR 5:

1) High PFAS method reporting levels prevent assessment of the safety of drinking water;
2) Exclusion of the perfluoroalkyl sulfonamides overlooks important and widespread precursors to the perfluoroalkyl sulfonates.

Minimum reporting levels.

The minimum reporting levels (MRLs) for the 29 PFAS proposed in UCMR 5 range from 2 ng/L to 20 ng/L. While these levels represent a significant improvement from the UCMR 3 dataset, even lower MRLs are needed to ensure data generated by UCMR 5 are sufficient to assess the safety of our nation's drinking water. Several state minimum contaminant levels (MCLs) are already near the proposed MRLs (ITRC PFAS Fact Sheet 2019), and UCMR 5 data will become obsolete if states continue to lower their drinking water standards as they have done over the past decade.

Several states already acknowledge drinking water hazards for PFAS concentrations below the proposed MRLs in UCMR 5. EPA has proposed MRLs of 4 ng L^{-1} for perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS). However, California derived reference levels of 0.1 ng L^{-1} for PFOA and 0.4 ng L^{-1} for PFOS based on lifetime risk to pancreatic and liver cancers (OEHHA 2019). While the reference levels are not regulatory, they are "candidates for the establishment of maximum contaminant levels" (OEHHA 2019). New Jersey proposed

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a MCL of 0.77 ng L^{-1} for PFOA based on mammary gland development during fetal and neonatal life (Cordner et al. 2019). **Individual Response:** Please see Discussion on Minimum Reporting Level Determination.
Comment Excerpt from Commenter 96 While the MCL was not adopted due to the lack of precedent for regulation based on mammary gland development, it underscores the sensitivity of children and fetuses to PFAS exposure and suggests these subpopulations may not be protected by current state MCLs. The EPA must give special consideration to the hazards of PFAS exposure to children in UCMR 5 under the Evaluating Health Risks to Children policy (E.O. 13045) (62 FR 19885). Children may be exposed directly to PFAS in drinking water and indirectly through transplacental transfer and breast milk (Fenton et al. 2021). The deleterious effects of PFAS exposure, which include decreased vaccine antibody production, increased risk of infections, hypothyroidism, increased low-density cholesterol, and chronic kidney and renal disease, disproportionately affect children (Fenton et al. 2021). Under E.O. 13045, EPA must explain why the proposed MRLs are preferable to potentially effective and reasonably feasible alternatives. Currently, the proposed MRLs are ineffective to assess the risks of PFAS exposure to children. MRLs equal to 1 ng L^{-1}, while still higher than proposed state MCLs, would give a better sense of the risks of PFAS exposure to children and have already been implemented for large-scale testing of drinking water in North Carolina as part of the North Carolina PFAS Testing Network. Therefore, MRLs of 1 ng L^{-1} are both reasonably feasible and more effective for the evaluation of PFAS exposure risks to children than the proposed MRLs. They should be adopted by UCMR 5. **Individual Response:** Please see Discussion on Minimum Reporting Level Determination, PFAS Contaminants – Miscellaneous Comments, and EO 13045: Protection of Children from Environmental Health Risks and Safety Risks.
Comment Excerpt from Commenter 103 [5. EPA's proposal appropriately includes 29 PFAS based on the NDAA 2020 requirements. AWWA offers the following recommendations for PFAS monitoring under UCMR 5:] c. EPA's proposed minimum reporting levels (MRLs) should be reviewed to ensure that they are appropriate and consistent with current laboratory capabilities. **Individual Response:** Please see Discussion on Minimum Reporting Level Determination.
Comment Excerpt from Commenter 103 EPA must revisit the Method Minimum Reporting Levels (MRLs) in the proposed UCMR 5. The EPA Method 533 and Method 537.1 MRLs were previously validated and published for monitoring of drinking water [FN14: EPA, 2020, Method 537.1 Determination of Selected Per and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS), https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=348508&Lab=CESER&simpleSearch=0&showCriteria=2&searchAll=537.1&TIMSType=&dateBeginPublishedPresented=03%2F24%2F20 18][FN15: EPA, 2019, Method 533: Determination of Per and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry, https://www.epa.gov/dwanalyticalmethods/method-533-determination-and-polyfluoroalkyl-substances-drinking-water-isotope]. In the UCMR program, it is critical that the MRLs applied balance data resolution,

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costs, and quality. Monitoring a contaminant with an MRL higher than the relevant health risk level may result in data that does not adequately characterize the potential human health risks of the contaminant's prevalence in drinking water. Conversely, unnecessarily low MRLs may result in quality control challenges, increased probability of cross-contamination and false-detects, and lead to higher costs for analysis and sampling. These factors must be balanced to implement a program that provides reliable and affordable data. EPA reports in the proposal that UCMR 5 MRLs were developed based on data from 8 laboratories, including data from the EPA's original published data for Method 533. In review of this data, 6 of the 8 laboratories achieved lowest concentration minimum reporting levels (LCMRLs) substantially below the proposed UCMR 5 MRLs. Additionally, in most cases the highest reported LCMRL was the original EPA data. EPA should consider whether the inclusion of the original Method 533 data is appropriate. Table 1 highlights the differences between the original EPA data and the remaining laboratory data, as well as the effect of excluding EPA data from the calculation of the UCMR 5 MRLs, based on just using the 75th percentile LCMRL of the remaining 7 labs, which is a more realistic approach to assessing the MRL that can be achieved by 75% of labs [Table 1: See Document ID EPA-HQ-OW-2020-0530-0103]. It is also worth noting that numerous states typically already require MRLs of 2 ng/L for compliance monitoring of PFAS compounds, reflecting the demonstrated capabilities of most commercial labs. **Individual Response:** Please see Discussion on Minimum Reporting Level Determination. The multi-laboratory MRL calculation tool simulates LCMRL data for 200 hypothetical laboratories based on the eight laboratories that submitted actual LCMRL data, so the impact of any one lab on the determination of the MRL should not be that significant.
Comment Excerpt from Commenter 105 There needs to be stricter MLR's so that low-level PFAS contamination is reported to the EPA and the public. **Individual Response:** Please see Discussion on Minimum Reporting Level Determination.
Comment Excerpt from Commenter 111 STATES' RECOMMENDATIONS The States support EPA's proposal to include 29 PFAS in UCMR 5 and urge EPA to strengthen this proposed rule. We ask EPA to: (1) require monitoring for total PFAS in the UCMR 5; (2) promptly validate an analytical method to analyze total PFAS in drinking water; (3) lower the minimum reporting levels in UCMR 5 [FN51: The Oregon Health Authority (OHA) is currently evaluating its regulatory approach to address PFAS issues. Oregon joins these comments and recommendations generally in that they discuss the public health concerns presented by PFAS, highlight the states' interest in protecting our residents from the adverse health effects of PFAS exposure, argue for the importance of proper regulation of these chemicals by EPA, and urge EPA to move as expeditiously as possible to develop appropriate regulatory standards. However, Oregon does not join the recommendation that the UCMR use a lower minimum reporting level for PFAS out of concern that such levels may produce technical issues for laboratories and may not result in significant safety benefits.]; and (4) advance environmental justice with PFAS monitoring [FN52: The Colorado Department of Public Health and Environment (CDPHE) is currently evaluating the best regulatory approach to address PFAS issues. For that reason, Colorado joins these comments only to the extent that they discuss the public health concerns presented by PFAS, highlight the states' interest in protecting our residents from the adverse health effects of PFAS exposure, argue for the importance of proper regulation of these chemicals by EPA, and urge EPA to move as expeditiously as possible to develop appropriate regulatory standards. Given CDPHE's ongoing evaluations, Colorado takes no position on specific recommendations, scientific conclusions, or the validity of any of the scientific sources referenced herein.].

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Individual Response: Please see Discussion on Minimum Reporting Level Determination, Regulatory Development, New PFAS Methods, and EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 111

C. EPA Should Lower the Minimum Reporting Levels in the UCMR 5.
Setting minimum reporting levels (MRLs) at the lowest achievable quantification level for PFAS is both necessary and attainable. In the proposed rule, EPA states that it established MRLs for the UCMR 5 to ensure consistency in the quality of the information reported to the Agency [FN81: Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems and Announcement of Public Meeting, 86 Fed. Reg. 13,846, 13,858 (proposed Mar. 11, 2021) (to be codified at 40 C.F.R. pt. 141)]. As defined in 40 C.F.R. § 141.40(a)(5)(iii), the MRL is the minimum quantitation level that, with 95 percent confidence, can be achieved by capable analysis at 75 percent or more of the laboratories using a specified analytical method. EPA calculates the MRLs for this UCMR by obtaining data from three laboratories that performed "lowest concentration minimum reporting level" studies [FN82: 86 Fed. Reg. 13,859]. In the UCMR 5, EPA proposes MRLs for each of the 29 PFAS. For example, EPA proposes an MRL for PFOS of 4 ng/l.

But, as the Natural Resources Defense Council (NRDC) recently found following a laboratory survey, a lower MRL is attainable and practicable [FN83: See NRDC comments in the UCMR 5 docket.]. In NRDC's survey, Vista Labs, an accredited commercial laboratory, reports an MRL for PFOS of 2 ng/l – lower than EPA's proposal of 4 ng/l. Also, in NRDC's survey, another accredited commercial laboratory, Eurofins, has an MRL of 2 ng/l for PFOS as does Pace Analytical [FN84: This information is also available by contacting each of the commercial laboratories through their webpages]. We urge EPA to reconsider the proposed MRLs and take into consideration the current abilities of commercial laboratories to attain a lower MRL.

Using the lowest attainable MRLs is also necessary given past experience with other UCMR sampling efforts. The UCMR 3 survey used a minimum reporting level of 20 ppt for PFOA [FN85: U.S. Envtl. Prot. Agency, Regulatory Determination 4 Support Document 4-16 (Dec. 2019), https://www.regulations.gov/document/EPA-HQ-OW-2019-0583-0004] and 40 ppt for PFOS [FN86: Id. at 3–15. Minimum reporting levels for other types of PFAS may also underrepresent the occurrence of these PFAS at concentrations of public health concern. For example, UCMR 3 minimum reporting levels were 90 ppt for perfluorobutanesulfonic acid (PFBS), 10 ppt for perfluoroheptanoic acid (PFHpA), 30 ppt for perfluorohexanesulfonic acid (PFHxS), and 20 ppt for perfluorononanoic acid (PFNA). U.S. Envtl. Prot. Agency, Third Unregulated Contaminant Monitoring Rule (UCMR 3): Data Summary (Jan. 2017), https://www.epa.gov/sites/default/files/2017-02/documents/ucmr3-data-summary-january-2017.pdf]. Contamination below these levels may be harmful to human health but was not reported in the UCMR 3 data. State sampling efforts conducted with much lower MRLs have detected more widespread PFAS contamination than the UCMR 3 data showed [FN87: Regulatory Determination 4 Support Document at 3-20-22, 3-22-24, 4-21-23, 4-24-25; Post GB, Louis JB, Lippincott RL, Procopio NA. Occurrence of Perfluorinated Compounds in Raw Water from New Jersey Public Drinking Water Systems. Environ. Sci. Technol. 2013 Nov 4;47, 23:13266–13275. https://doi.org/10.1021/es402884x; Post GB, Louis JB, Cooper KR, Boros-Russo J, Lippincott RL. Occurrence and potential significance of perfluorooctanoic acid (PFOA) detected in New Jersey public drinking water systems. Environ. Sci, Technol.2009;43:4547–4554. https://doi.org/10.1021/es900301s]. Additionally, PFAS were detected much more frequently than was reported in the UCMR 3 data when a large subset of the UCMR 3 analytical results were reevaluated using lower reporting levels by a laboratory that analyzed about 30 percent of all UCMR 3 PFAS samples [FN88: Post GB, Gleason JA, Cooper KR. Key scientific issues in

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developing drinking water guidelines for perfluoroalkyl acids: Contaminants of emerging concern. PLoS Biol. 2017 Dec 20;15(12):e2002855. https://doi.org/10.1371/journal.pbio.2002855]. Thus, we urge EPA to set the lowest attainable MRLs in the UCMR 5 to ensure that the results accurately reflect the occurrence of PFAS in our public water supplies. **Individual Response:** Please see Discussion on Minimum Reporting Level Determination
Comment Excerpt from Commenter 113 EPA's Minimum Reporting Levels are too high. EPA's Minimum Reporting Levels (MRLs) for the 29 PFAS are far too high. Private laboratories can test for PFAS in the tenths of parts per trillion. And yet, EPA is asking for MRLs of 2 to 20 ppt (see Figure 1). [Attachment: See Document ID EPA-HQ-OW-2020-0530-0113] In fact, given the MRLs listed in today's proposal, a public water system could have levels of 130 ppt of these PFAS, and show up as non-detect. This will render these test results meaningless, especially given that many states regulate PFAS at much lower levels. For example, Massachusetts regulates the following six PFAS: PFOA, PFOS, PFDA, PFHpA, PFHxS, and PFNA at 20 ppt, combined. Under EPA's proposed UCMR5, anything under 21 ppt will show up as non-detect. This test will therefore not be helpful for the Commonwealth of Massachusetts, or for EPA in determining the extent of contamination. Conclusion. Unless EPA requires a broader spectrum test for PFAS, and lowers the MRLs, PFAS contamination will go undetected, and the extent of true PFAS contamination will remain unknown. PEER urges EPA to include a TOF test, and to reduce the MRLs. **Individual Response:** Please see Discussion on Minimum Reporting Level Determination.
Comment Excerpt from Commenter 116 Little Hocking also supports setting stricter Minimum Reporting Limits (MRLs) so that low-level PFAS contamination is reported to EPA and the public. According to NRDC, "three of the nation's major commercial labs have MRLs lower in most cases than EPA's proposed MRLs; in the past, these labs conducted a significant portion of the national PFAS testing for UCMR 3, so there would be lab capacity to do testing to these levels." **Individual Response:** Please see Discussion on Minimum Reporting Level Determination and Laboratory Capacity.
Comment Excerpt from Commenter 119 2. Set stricter Minimum Reporting Limits (MRLs) so that low-level PFAS contamination is reported to EPA and the public. Three of the nation's major commercial labs have MRLs lower in most cases than EPA's proposed MRLs (see table later in these comments). In the past, these labs conducted a significant portion of the national PFAS testing for UCMR 3, so there would be lab capacity to do this testing to these levels. [Table 1: See Document ID EPA-HQ-OW-2020-0530-0119] **Individual Response:** Please see Discussion on Minimum Reporting Level Determination and Laboratory Capacity.
Comment Excerpt from Commenter 119 B. Set stricter Minimum Reporting Limits (MRLs) so that low-level PFAS contamination is reported to EPA and the public. As shown in the Table below, three of the nation's major commercial labs have MRLs lower in most cases than EPA's proposed MRLs - in fact, all but two UCMR 5 MRLs are higher than what the majority of these labs can

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achieve (see Table below). In the past, these labs conducted a significant portion of the national PFAS testing for UCMR 3, so there would be lab capacity to do this testing with lower reporting levels. The table below compares the MRLs from EPA's proposal and the three large labs. Yellow highlights the PFAS that EPA's methods and all 3 major commercial labs can quantify, and the relative MRLs (nearly all lower than EPA's). Orange highlights PFAS quantified by all 3 labs that are not included in EPA's methods and their MRLs. White represents PFAS that Eurofins and in some cases the two other labs quantify and their MRLs. [Attachments and Table 1: See Document ID EPA-HQ-OW-2020-0530-0119] III. CONCLUSION The goal of the changes we are proposing is to assure more comprehensive testing for hazardous and likely widespread contaminants. If such testing is not done, we are concerned that the public and often the water utilities themselves will not be aware of contamination of their water supplies. They will not be made aware of the need for treatment, source water protection, and other measures to address the threats posed. Moreover, a lack of more comprehensive data may hinder EPA's and states' ability to adopt effective regulatory measures to protect the public. Thank you for your attention to our comments and to these important issues. **Individual Response:** Please see Discussion on Minimum Reporting Level Determination and Laboratory Capacity.
Comment Excerpt from Commenter 120 2. Set stricter Minimum Reporting Limits (MRLs) so that low-level PFAS contamination is reported to EPA and the public. Three of the nation's major commercial labs have MRLs lower in most cases than EPA's proposed MRLs; in the past, these labs conducted a significant portion of the national PFAS testing for UCMR 3, so there would be lab capacity to do this testing to these levels. **Individual Response:** Please see Discussion on Minimum Reporting Level Determination and Laboratory Capacity.
Comment Excerpt from Commenter 122 NJDEP also supports the relatively low Minimum Reporting Levels for PFAS (< 5 ng/L for almost all of the 29 PFAS listed) listed in the proposed UCMR 5. The much higher Minimum Reporting Levels for the six PFAS included in UCMR 3 (e.g., 20 ng/L for perfluorooctanoic acid [PFOA] and perfluorononanoic acid [PFNA]; 40 ng/L for perfluorooctane sulfonate [PFOS]) were above the drinking water standards and/or guidelines for these PFAS established numerous states, including New Jersey (Post, 2021). Even some exceedances of the EPA Health Advisory of 70 ng/L for the total concentration of PFOA and PFOS would not have been detected in UCMR 3. [FN1: For example, if 60 ng/L of PFOA and 30 ng/L of PFOS were present, the total of 90 ng/L would exceed the Health Advisory of 70 ng/L. In this case, the PFOA exceeds the MRL of 20 ng/L and would have been reported, while PFOS is below the MRL of 40 ng/L and would not have been reported. Based on the detection of PFOA at 60 ng/L and non- detectable levels of PFOS, it would have incorrectly been determined that the Health Advisory of 70 ng/L for the total of PFOA and PFOS was not exceeded.] Relevant to this point, PFOA and PFOS were detected much more frequently in New Jersey public water systems in two NJDEP studies (NJDEP, 2007; NJDEP, 2014) with MRLs of 4 – 5 ng/L than in New Jersey UCMR 3 data, and PFAS were detected much more frequently than in national UCMR 3 data in a large subset of the UCMR 3 analytical results that were reevaluated using lower reporting levels (Hartz, 2017; Post et al., 2017). Because it will use much lower MRLs, UCMR 5 is anticipated to detect the six PFAS included in UCMR 3 in many locations where

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they were missed in UCMR 3.

Individual Response: Please see Discussion on Minimum Reporting Level Determination.

Agency Discussion on Centralized Laboratory

Agency Topic Discussion: EPA received multiple comments requesting the "centralization" of UCMR 5 sample analysis, such as through having only one approved laboratory. For UCMR 5, per the provisions of AWIA, more than 10,000 PWSs will be subject to monitoring. No individual lab would have the capacity or capability to conduct all analyses for a UCMR cycle. Hence, EPA relies on a network of multiple, geographically-dispersed commercial laboratories that have been approved to conduct UCMR analyses.

Comments Received on Centralized Laboratory

Comment Excerpt from Commenter 51

The UCMR 5 proposed revision is a crucial step in assessing the health and safety of both the environment and the population. However, the proposed rule could be more efficient and include screening for a greater number of harmful substances that may be present in drinking water. Considering how easily and inexpensive it is to collect one sample per a given water source and send that sample to a lab, the rule could include screening for a larger number of PFAS and a larger number of harmful substances. This could be done through a more efficient collection process and a central lab which conducted more thorough testing on the samples instead of requiring each PWS to analyze for the substances themselves using differing methods or procedures. In addition, this scheme would yield more uniform results given that one or a much smaller number of labs would be doing the analysis. The proposed rule would give some raw data for future water systems improvement, but it could do more to specifically assess more kinds of contaminants and with more specific data.

Individual Response: Please see Discussion on Centralized Laboratory. For large PWSs, the PWS is required to coordinate sample analyses with an approved UCMR 5 laboratory (i.e., one using specific, validated methods and procedures) and later review and approve data submitted by the laboratory in SDWARS. For small PWSs, EPA coordinates sample analyses with UCMR 5 contract laboratories and approves the laboratory data in SDWARS. Regardless of size, PWSs are not required to analyze samples themselves using differing methods or procedures.

Comment Excerpt from Commenter 51

With a central lab doing all of the testing, and local public water systems simply sending in samples, the proposed rule would provide much more data and much more consistency and reliability in the results of the testing. Additionally, the proposed rule only requires PWS to monitor for the "presence" of the listed contaminants and not the level of contamination. Again, this is a low standard that could easily be raised at little increased cost while providing much more valuable information to researchers and water system planners. The burden to test the samples in on the local water systems themselves, which are likely short on resources given the effects of the Covid-19 pandemic, and would be better served by sending in samples to a more efficient, centralized EPA lab.

The EPA estimates the cost to be $21 million per year over five years, falling upon the local PWS themselves. This number would potentially be smaller if the PWS only had to send in samples, and the cost would be easier to manage for the federal government agency that is proposing the rule. The EPA estimates the cost per test to be $950.00 based on average laboratory cost, but that could vary widely by location and available equipment. Additionally, it would incentivize increased compliance with the rule if PWS only had to submit

Comments Received on Centralized Laboratory

samples to the EPA instead of having them tested themselves. As well, the EPA would have a more uniform data set from its own testing instead of compiling varying results from every different PWS that submits data from their own tests. If the EPA provided the laboratory testing services, local PWS would only incur the cost of labor in collecting samples, which is estimated to be much lower. If there were a more uniform test and a central testing laboratory, the EPA could also collect samples from PWS with less than 3,300 people or of any size, for that matter, and further assess that specific region for why it contains specific contaminants and learn more about how a certain water system becomes contaminated with a certain pollutant. The current rule proposes a much slower, less efficient, and less effective measure than what is possible. "Occurrence Data" that the rule seeks to increase is helpful, but the population would be better served with data concerning the level of the contaminant, potential geographical causes for the occurrence and level, and more uniform testing to ensure greater reliability of the data. Without an extreme increase in cost or burden, the new rule could be implemented in a much more effective way that would allow the data to become more reliable and ultimately more useful in a more expedient fashion. With centralized, reliable data, researchers could begin comparing public health statistics in a given region to the level of contaminants in the water supply. They could possibly make causal links to birth defects and drinking water contaminates as the data comes in. Or, as another example, link the presence of lithium to an increase in battery consumption or population characteristics. The "information compendium" cited in the rule would be more reliable and reach a greater mass of data more quickly if the above tweaks to the rule were made.

Individual Response: Please see Discussion on Centralized Laboratory and Proposed Rule Cost Estimate. UCMR 5 does not only require PWSs to monitor for the presence of the listed contaminants; PWSs must also report all levels of contamination above the MRL. EPA considers the MRL for each UCMR 5 analyte to be the lowest reporting levels that can practically and consistently be achieved on a national basis.

Agency Discussion on Field Blank Analysis

Agency Topic Discussion: The Agency received multiple comments regarding field reagent blanks (FRBs) for UCMR 5 PFAS samples, including a request that the Agency not require analysis of every FRB sample collected. An FRB is an aliquot of reagent water that is placed in a sample container in the laboratory and treated just like a sample in all respects, including shipment to the sampling site, exposure to sampling site conditions, storage, preservation, and all analytical procedures. The purpose of the FRB is to determine if method analytes or other interferences are present in the field environment and is designed to account for potential contamination that occurs during sample collection. EPA Method 537.1 (Version 2.0) and Method 533, used for PFAS analysis, require *collection* of a corresponding FRB sample from each unique sampling location for each sampling event. The methods require that the FRB be *analyzed* if there is a positive result for a PFAS analyte in a corresponding field sample. An FRB having a contaminant concentration that is greater than one third the MRL is indicative of a problem with either the sampling procedures or analytical procedures (or both); in this case, EPA believes that the best course of action is to resample.

For UCMR 5, the Agency initially proposed that laboratories analyze all FRB samples, along with the corresponding field samples, to reduce the possibility of invalidating a positive field sample result (i.e., a field sample result at or above the MRL) because of FRB hold times being exceeded. (The concern was that the FRB sample could be near, or beyond, the hold-time limit by the time the field sample result became available.) Based on further consideration, EPA is now providing laboratories with discretion as to whether they analyze every FRB sample proactively or only those associated with positive field sample results. This is with the understanding that laboratories must analyze field samples promptly enough such that the corresponding FRB analyses, if needed, may be completed within the prescribed hold time. Compliance with the method hold-

Agency Discussion on Field Blank Analysis

time requirements, and other provisions of the methods, is a condition of maintaining laboratory approval. EPA is studying the possibility of extending the FRB hold times for EPA Methods 537.1 (Version 2.0) and 533 and will communicate the results of the studies with the approved laboratories.

Comments Received on Field Blank Analysis

Comment Excerpt from Commenter 83

2. The field reagent blank (FRB) requirement in EPA Method 533 to collect one FRB per PFAS sample and analyze the FRB whenever there are any PFAS detections in the sample presents a significant challenge for laboratories, since this doubles the analysis demand. Our state's Public Health Laboratory recently developed analysis based on EPA Method 533, and they addressed this issue by only requiring one FRB to be collected per sampling submission regardless of the number of sites collected for the submission. A submission is defined as all samples listed on the same chain of custody (COC). The submission can include any number of samples from a PWS, dwelling, or business. See attached memo from the Minnesota Public Health Laboratory for more details. MDH suggests that FRB requirements for UCMR5 be re-evaluated to ease the burden on laboratories. [Attachment: See Document ID EPA-HQ-OW-2020-0530-0083]

We look forward to working with the Agency to ensure the final UCMR5 Rule and its implementation maintain and improve public health.

Individual Response: Please see Discussion on Field Blank Analysis. Only collecting an FRB for a set of samples from the same PWS, regardless of timing and sampling location, would defeat the purpose of an FRB.

Comment Excerpt from Commenter 98

Challenging PFAS Sampling Events Should Be Permissible

MWRA recommends that EPA include a mechanism for repeat challenge sampling events should EPA implement the current UCMR5 proposal. MWRA recognizes there can be inadvertent contamination at testing laboratories or during sampling itself. For instance, MWRA was recently notified of a required recollection due to unexpected PFAS detects in a field blank sample greater than the method reporting limit. The laboratory speculated that the contamination was most likely due to its extraction after a prior sample from a different PWS with high PFAS levels. Challenge events would allow systems to investigate possible lab testing contamination, issues with sampling technique or issues with building plumbing or the sampling tap to ensure that both local and national data is accurate. Additionally, MWRA recommends inclusion of challenge sampling data into EPA's SDWARS database.

Individual Response: Please see Discussion on Field Blank Analysis.

Comment Excerpt from Commenter 109

Analytical Methods

American Water recommends that USEPA remove the requirement to analyze Field Reagent Blanks (FRBs) when the associated Field Sample is non-detect. The FBR analysis is unnecessary as it will not provide any additional data of value. Analysis of the FBR should only be required if there is a detection in the Field Sample.

Individual Response: Please see Discussion on Field Blank Analysis.

UCMR 5 Cost/Burden

Agency Discussion on Proposed Rule Cost Estimate

Agency Topic Discussion: The Agency received multiple comments regarding the cost estimates and general assumptions used to determine burden for this rule. EPA estimates the total average national cost of this action will be $21 million per year over the 5-year effective period of the final rule (2022-2026). Costs are incurred by large PWSs (for sampling and analysis); small PWSs (for sampling); State regulatory agencies (i.e., those who volunteer to assist EPA with oversight and implementation support); and EPA (for regulatory support and oversight activities, and analytical and shipping costs for samples from small PWSs).

EPA is committed to accurately characterizing the burden and costs of rules it promulgates. In the development of various drinking water rule Information Collection Requests (ICRs), EPA developed a consistent set of assumptions to use in burden and cost estimates. The "Information Collection Request for the Unregulated Contaminant Monitoring Rule (UCMR 5)" (USEPA, 2021n), available in the UCMR 5 public docket, details the assumptions and data sources. Pertinent to the UCMR ICR are the standard assumptions for labor rates, PWS inventory numbers (the number of PWSs in the various size categories by primary water source), the number of sampling points for each PWS, and analytical services. In order to provide the most accurate and updated cost estimate, EPA re-examined labor burden estimates for States, EPA, and PWS activities and updated costs of laboratory services for sample analysis based on consultations with national drinking water laboratories. In all aspects of burden assumptions (e.g., time allotted for reading rule requirements, sampling reporting, etc.), UCMR estimates were on par with or more conservative (higher) than estimates made for other drinking water regulations.

The PWS labor burden consists of three primary activities: (1) reading the Code of Federal Regulations (CFR), State guidance letter, and/or other guidance materials; (2) monitoring or monitoring assistance; and (3) reporting and record keeping. EPA estimated burden for water systems using the same assumptions in previous UCMRs. All PWS burden estimates represent average burden hours, which include SW and GWUDI PWSs that may have very few sampling points, and thus lower sampling burden, as well as those PWSs with higher numbers of sampling points that would therefore have greater sampling activity labor burden. The assumptions as described in section 6(a)(i) of the ICR (Page 32) include, "For UCMR 5, EPA re-examined all cost estimates and assumptions to ensure that the most recently available data were used. . . . A PWS's burden is primarily incurred during its one year of required UCMR sample collection. However, in compliance with the requirements of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.), these cost and burden estimates are presented as an average over the applicable 3-year ICR period." EPA assumes that one-third of the systems will collect samples during each of the three sample-collection years from January 2023 through December 2025.

The PWS monitoring burden includes receipt of monitoring kit, reading laboratory instructions, travel time to collect samples, and collection and shipping of samples. It is calculated by: (hour burden per sampling point) times (number of sampling points) times (number of PWSs) times (number of sample events per year). In general, since PWSs may collect some samples at the same time, the burden estimate may overestimate the time needed for some PWSs and therefore, EPA is providing a conservative cost estimate. The burden associated with collecting this type of information is captured in the ICR under monitoring burden (section 6(a)(i)(b)) and reporting/record keeping burden (section 6(a)(i)(c)) for large and small PWSs.

The labor burden associated with reporting the data elements was calculated by taking into account that EPA has increased the functionality of SDWARS, updated database instructions, and will conduct additional outreach and education. These improvements in the reporting process are expected to reduce the burden on

Agency Discussion on Proposed Rule Cost Estimate

PWSs. Additionally, large GW sourced PWSs or those that purchase all of their water from a single wholesaler (and that have more than one connection to that wholesaler) may elect to sample at representative EPTDS, with EPA approval, rather than every EPTDS. Because this cost savings has not been factored into UCMR 5 cost estimates, the sampling costs are conservative.

EPA pays for the shipping fees and sample analysis for small PWSs, and large PWS pay for all costs associated with their monitoring. As noted in the ICR in section 6(a), large PWSs are given more time than small PWSs for monitoring and reporting activities (USEPA, 2021n). Large PWSs are given two hours per sampling period to review, approve, and report results to SDWARS. This burden was accounted for in EPA's cost estimates even though EPA understands that laboratories will most likely report the results to SDWARS for the PWS. Accordingly, EPA's labor burden projections likely overestimate the time that will be required.

EPA expects that States will incur modest labor costs associated with voluntary assistance with the implementation of UCMR 5. EPA estimated State costs using the relevant assumptions from the State Resource Model developed by the Association of State Drinking Water Administrators (ASDWA) (ASDWA, 2013) to help States forecast resource needs. Model estimates were adjusted to account for actual levels of State participation under UCMR 4. State assistance with EPA's implementation of UCMR 5 is voluntary; thus, the level of effort is expected to vary among States and will depend on their individual agreements with EPA.

Laboratory analysis and sample shipping account for approximately 65 percent of the estimated total national cost for the implementation of UCMR 5. EPA estimated laboratory costs based on consultations with multiple commercial drinking water testing laboratories. EPA's cost estimates for the laboratory methods include shipping and analysis.

The costs for a particular UCMR cycle are heavily influenced by the selection of contaminants and associated analytical methods. EPA identified three EPA-developed analytical methods (and, in the case of lithium, multiple optional alternative methods) to analyze samples for UCMR 5 contaminants. EPA's estimate of the UCMR 5 analytical cost is $740 per sample set (i.e., $740 to analyze a set of samples from one sample point and one sample event for the 30 UCMR 5 contaminants).

Inclusion of additional contaminants, along with lithium and the 29 PFAS, would have added significant cost and complexity to the UCMR 5 design and implementation. This cost would have depended on the chemical characteristics of and the number of methods required for the additional contaminants.

Comments Received on Proposed Rule Cost Estimate

Comment Excerpt from Commenter 68

4. The draft ICR does not appropriately capture the burden or cost on water systems for collection of ancillary data in EPA's current UCMR proposal related to PFAS. EPA should eliminate the collection of these ancillary data elements (e.g., historical Information for contaminant detections and treatment and potential PFAS sources). The draft ICR does not support the collection of data for these ancillary data that is of sufficient quality to support EPA decision-making regarding the occurrence of any PFAS at a sufficient frequency to warrant development of a primary drinking water standard. The purpose of UCMR is to collect finished water occurrence data. It is not intended to require the level of investigation needed to properly characterize source water PFAS sources.

Individual Response: Please see Discussion on Proposed Rule Cost Estimate and New Data Elements.

Comments Received on Proposed Rule Cost Estimate

Comment Excerpt from Commenter 68

Burden of Ancillary Data Collection Is Not Appropriately Reflected

The proposed UCMR 5 ancillary data collection includes the identification of potential current and/or historical sources of PFAS that may have impacted drinking water sources for the water system. There are several underlying challenges with this request as presently framed in the proposal. Under 5 CFR 1320.9 (b)(3), EPA is required to indicate why information is being collected, how this information will be used, and the burden estimate. The proposal and draft ICR for UCMR 5 to not adequately meet these requirements.

According to the proposal, the benefits of the proposed action are limited to providing "information about whether or not unregulated contaminants are present in their drinking water". While the draft ICR for UCMR 5 includes a note that the "data can guide future source water protection efforts", the purpose of the data collection and the intended planned use of the data is not clearly and is not directly described in either documentation. Specifically, EPA has not described how such an effort would be initiated or would be accomplished. Transparency with stakeholders requires that EPA provide a clear line of communication regarding the purposes and intent for each aspect of a proposed rule. Without this clear communication, stakeholders' recommendations are limited by the assumptions they must derive.

A core requirement of 5 CFR 1320.9(b)(3) is the estimation of burden that UCMR 5 would place onto public water systems. The identification of potential PFAS sources in the watershed is complex, costly, and requires a thorough series of steps to identify and confirm sources. AWWA has recently developed the "Source Water Evaluation Guide for PFAS" (attached) that demonstrates the level of effort and planning that is required to identify potential sources of PFAS for the water system.

It does not appear the proposed rule anticipates preparation of a credible characterization of sources of PFAS. As proposed, the task is framed as a check-the-box, speculative exercise which is unlikely to provide insights if completed at the level of effort described in the UCMR ICR. As currently presented the ICR anticipates small, large, and very large water systems will respectively fulfill all of their ICR responsibilities with 2.2, 7.5, and 10.7 hours, respectively. This number of hours represents an improbably low estimate of the hours to perform only the tasks associated with sampling, quality assurance, and data entry. Anticipating that these systems can also prepare and submit a useful characterization of past and present potential PFAS sources within the allocated hours used to calculate the ICR burden is very unrealistic. Furthermore, any characterization that could be prepared at levels of effort close the anticipated would be poor. Both EPA and water systems are ill-advised to incorporate a poor characterization of potential PFAS sources into UCMR 5 since:

1. EPA does not have a means within UCMR to understand the basis for or level of confidence in the response provided.
2. Differing assumptions regarding the concentration of PFAS that is generally present in modern society and thus the environment will substantially influence responses.
3. Lacking confidence in the response (e.g., apparent predominance of responses based on presumption of ubiquity, no knowledge based on lack of specific-knowledge, ubiquitous based on size of watershed / aquifershed) making the responses uninformative for decision-making.
4. Bias in response based on presumed criticality of sources based on limited direct knowledge (e.g., recognizing the use of fire foam in a watershed without understanding if that fire foam would have been one containing PFAS).
5. Third-party analysis of a low-quality response misrepresenting the relative importance of sources of contamination of the nation's water supplies.

Comments Received on Proposed Rule Cost Estimate

Given the level of effort that this would require from EPA to prepare necessary guidance and participating water systems to execute, collection of this data by public water systems under UCMR 5 is inappropriate. Such a data collection effort would be more appropriate and effective through other EPA offices, including:

1. The EPA's Office of Research and Development (ORD) would be best positioned to conduct a research project understanding the relationship of PFAS detections with PFAS sources. Such a research effort would provide a more targeted approach and would provide more effective, higher confidence data in support of in-depth analysis.
2. The Office of Chemical Safety and Pollution Prevention (OCSPP) has direct authority of formulators and manufacturers. EPA's OCSPP is currently collecting and analyzing information related to potential PFAS sources through the Toxics Release Inventory and recent regulatory efforts.
3. Similarly, EPA's Office of Land and Emergency Management (OLEM) has direct authority of other types of potential PFAS sources including landfills and contaminated sites. EPA's OLEM is also positioned to provide information regarding related sites that may have impacted drinking water sources.

Instead of requiring water systems to prepare a characterization on a case-by-case basis, with limited confidence and capacity, EPA's Office of Water should coordinate with other relevant EPA offices (e.g., ORD, OCSPP, and OLEM) to identify these potential PFAS sources. Such an effort should include state involvement and could focus on developing a geographic information system (GIS) product supported by model watershed field testing.

Individual Response: Please see Discussion on Proposed Rule Cost Estimate and New Data Elements.

Comment Excerpt from Commenter 68

Total Burden of ICR on Public Water Systems

UCMR is an important and worthwhile data collection, but EPA should not minimize the logistical complexity or cost burden incurred by water systems. EPA's ICR summarizes the basis for its UCMR 5 burden analysis as follows:

"Small PWSs selected for UCMR 5 monitoring sample an average of 2.8 times per PWS (i.e., number of responses per PWS) across the three-year ICR period. The estimated burden per response for small PWSs is 2.4 hours. Large PWSs and very large PWSs sample and report an average of 3.2 and 3.7 times per PWS, respectively, across the three-year ICR period. The estimated burden per response for large and very large PWSs, respectively, are 7.0 and 8.8 hours." [FN6: EPA. 2020. Selection of Nationally Representative Public Water Systems for the Unregulated Contaminant Monitoring Rule: 2020 Update. EPA 815-B-20-008. EPA-HQ-OW-2020-0530-0039.]

Water systems of all sizes will have to:

1. Enter ancillary water system information into Safe Drinking Water Accession and Review System (SDWARS)
2. Prepare representative groundwater monitoring plans
3. Engage with state staff involved in oversight of UCMR 5 monitoring (EPA's ICR anticipates significant state-system interaction)
4. Conduct sampling using appropriate quality assurance and quality control measures (note that even with representative samples many water systems will be collecting samples at multiple EPTDSs [FN7: EPA, 2021, Occurrence Data for the Unregulated Contaminant Monitoring Rule, accessed May 5, 2021 at https://www.epa.gov/monitoring-unregulated-drinking-water-contaminants/occurrence-data-unregulated-contaminant#4]
5. Prepare and ship samples, which may include transporting samples to an available pick-up point and / collecting samples from multiple sample sites

Comments Received on Proposed Rule Cost Estimate

6. Review and approve sample results entered into SDWARS by laboratory(ies) for multiple analytes
7. Edit water systems consumer confidence reports to address observations per SDWA.

New participants in UCMR 5, particularly many systems that serve between 3,300 and 10,000 persons will also need to:

1. Register for SDWARS
2. Become familiar with UCMR data collection and assign tasks (e.g., contract operator, available community volunteers, etc.)

Larger systems will also need to (1) procure laboratory services following local and state procurement guidelines and (2) engage with consecutive systems as those systems seek to understand sources of PFAS.

The ICR will also lead to costs associated with active communication of observed occurrence. Given the policy and media focus on PFAS and lithium, those systems that observe these analytes will need to prepare for and execute effective public communication efforts. This cost is not currently included in the draft ICR. Following UCMR 3 and 4 states and EPA regions required distribution of public notice based on observed occurrence and in some instances required installation of treatment or use of an alternative source of supply. While the cost of these latter actions could be described as being beyond the immediate scope of the ICR, the communication costs and associated internal and external coordination should be included in the ICR burden calculation.

Individual Response: Please see Discussion on Proposed Rule Cost Estimate.

Comment Excerpt from Commenter 107

Louisville Water has concerns about the UCMR5 proposed requirement for utilities to collect ancillary data (historical information regarding the detection of PFAS, treatment, and potential sources of PFAS). The draft ICR does not support collection of ancillary data and the UCMR is intended to collect finished water samples, not to require an investigation needed to characterize source water. Additionally, the intended planned use of ancillary data is not clear. The identification of potential PFAS sources in a watershed, if conducted appropriately, is complex and costly.

Individual Response: Please see Discussion on Proposed Rule Cost Estimate and New Data Elements.

Agency Discussion on Cost Associated with Alternative Contaminants Considered – *Legionella pneumophila*

Agency Topic Discussion: The Agency received two comments regarding cost estimates for including *Legionella pneumophila* in UCMR 5 monitoring. EPA considered the utility of the occurrence data collected and the associated burden for water systems and the Agency when selecting contaminants for UCMR 5. If *Legionella pneumophila* had been added to UCMR 5, most of the additional cost would have be borne by large PWSs (for analysis of their samples) and EPA (for analysis of samples from small PWSs). EPA estimates that *Legionella pneumophila* monitoring under UCMR 5 would have added $10.5 million in new expenses for large PWSs, $20 million in new expenses for the Agency for small-system monitoring, and $0.5 million in new expenses for small PWSs and States over the 5-year UCMR period. EPA concluded that the expense of this monitoring is not warranted given the limited utility of the data (see *Legionella pneumophila*).

Comments Received on Cost Associated with Alternative Contaminants Considered – *Legionella pneumophila*

Comment Excerpt from Commenter 57
We also believe EPA has overestimated the cost of including Legionella testing. EPA estimated the cost of including Legionella in UCMR 5 to be a total of $31.5 million, as presented in its April 6th and 7th 2021 public presentation. IDEXX's conservative estimates suggest that the total cost to include Legionella in UCMR 5 would be less than half the cost estimated by EPA.

Individual Response: Please see Discussion on Cost Associated with Alternative Contaminants Considered – *Legionella pneumophila*. Monitoring for *Legionella pneumophila* would have taken place at multiple distribution system locations for PWSs.

Agency Discussion on Cost Associated with Alternative Contaminants Considered – Haloacetonitriles

Agency Topic Discussion: The Agency received a comment from the American Water Works Association (AWWA) agreeing that inclusion of haloacetonitriles in UCMR 5 monitoring would substantially increase cost and burden for PWSs, States, and EPA compared to the sampling design for PFAS and lithium, and would require the inclusion of significant additional costs in EPA's ICR estimate. If haloacetonitriles had been added to UCMR 5, most of the additional expenses would have been borne by large PWSs (for analysis of their samples) and EPA (for analysis of samples from small PWSs). EPA estimates this would have resulted in $13 million in new expenses for large PWSs, $19 million in new expenses for the Agency, and $0.5 million in new expenses for small PWSs and States over the 5-year UCMR period. EPA concluded that this expense of this monitoring is not warranted given the limited utility of the data (see Haloacetonitriles).

Comments Received on Cost Associated with Alternative Contaminants Considered – Haloacetonitriles

Comment Excerpt from Commenter 68
(3.) At this time, it may be possible for EPA to add sampling and analysis to UCMR 5 using EPA Method 551.1 in order to obtain data for four haloacetonitriles. There are no other appropriately validated microbial or DBP analytical methods available to include in UCMR 5. If added, monitoring for haloacetonitriles would substantially increase the cost and burden of UCMR 5 for EPA, water systems, and states. The draft ICR would have to be substantially modified to accommodate this inclusion.

Individual Response: Please see Discussion on Cost Associated with Alternative Contaminants Considered – Haloacetonitriles.

Statutory and Executive Orders

Agency Discussion on Paperwork Reduction Act

Agency Topic Discussion: EPA received a comment on the requirements of the Paperwork Reduction Act (PRA) (44 U.S.C. 3501 et seq.) in the development of the UCMR 5 ICR (USEPA, 2021n). The information collection activities in this final rule were submitted for approval to the Office of Management and Budget (OMB) under the PRA. Since ICRs cannot be approved by OMB for a period longer than three years pursuant to 5 CFR 1320.10, the primary analysis in the ICR only covers the first three years of the UCMR 5 period (i.e., 2022-2024). Prior to expiration of the initial UCMR 5 ICR, EPA will seek to extend the ICR and thus receive approval to collect information under the PRA in the remaining two years of the UCMR 5 period (2025-2026).

Agency Discussion on Paperwork Reduction Act

A PWS's burden is primarily incurred during its one year of required UCMR monitoring. In compliance with the PRA, these cost and burden estimates are presented as an average over the applicable three-year ICR period.

Comments Received on Paperwork Reduction Act

Comment Excerpt from Commenter 57

IDEXX writes to comment on the information collection provisions of the Proposed Unregulated Contaminant Monitoring Rule 5 ("UCMR 5"). IDEXX intends to submit additional comments on the substance of the rule before the May 10, 2021 deadline. We appreciate the significant and important work the EPA has undertaken in identifying unregulated contaminants for further study. That said, we do not believe the information collection provisions in the proposed UCMR 5 meet the standard under the Paperwork Reduction Act ("PRA").

Individual Response: Please see Discussion on Paperwork Reduction Act.

Agency Discussion on Regulatory Flexibility Act/Impact on Small Systems

Agency Topic Discussion: The Agency received two comments requesting clarification of small-system responsibilities in the event of inadequate EPA funding to fully support the envisioned monitoring. For purposes of assessing the impacts of this final rule on small entities, EPA considered small entities to be PWSs serving 10,000 or fewer people. As required by the Regulatory Flexibility Act (RFA), EPA proposed using this alternative definition in the Federal Register (63 FR 7606, February 13, 1998; USEPA, 1998a), sought public comment, consulted with the U.S. Small Business Administration (SBA), and finalized the alternative definition in the CCR rulemaking (63 FR 44512, August 19, 1998; USEPA, 1998b).

As prescribed by AWIA, the inclusion of all PWSs serving 3,300 to 10,000 people in UCMR 5 increases the small-system sample analysis expenses for which EPA is responsible by approximately 8-fold. AWIA authorizes, but does not appropriate, $15,000,000 per year to support monitoring by small PWSs. EPA has developed the final rule anticipating that necessary appropriations will become available; however, to date, Congress has not appropriated additional funding to cover monitoring expenses for all PWSs serving between 3,300 and 10,000 people. Provisions in the final rule enable the agency to adjust the number of these systems that must monitor based upon available appropriations.

Recognizing the uncertainty in funding from year-to-year, the Agency will implement a "monitor if notified" approach for PWSs serving 10,000 or fewer people. By early 2022, EPA will notify all small CWSs and NTNCWSs tentatively selected for the expanded UCMR 5 (i.e., all ~5,200 PWSs serving 3,300 to 10,000 people and a nationally representative set of 800 PWSs serving fewer than 3,300 people) of their anticipated UCMR 5 monitoring requirements. Should EPA not receive sufficient appropriations, then a reduced number of small PWSs would monitor. The result could be an allocation of samples based on a traditional representative sampling design (i.e., including as few as 400 PWSs, instead of 800 PWSs, serving fewer than 3,300 people and including as few as 400 PWSs, instead of approximately 5,200 PWSs, serving between 3,300 and 10,000 people). Under any scenario, EPA will ensure that UCMR 5 monitoring includes a sufficient number of small PWSs from each stratum to achieve a traditional population-weighted stratified sampling design (i.e., a representative sample from PWSs serving 10,000 or fewer people). By approximately July 1 of the year prior to each year's sample collection (i.e., by July 1, 2022 for 2023 sampling; by July 1, 2023 for 2024 sampling; and by July 1, 2024 for 2025 sampling), EPA expects to determine whether it has received necessary appropriations to support its full expanded monitoring plan. As EPA finalizes its small-system plan for each sample collection year, the agency will notify the small PWSs accordingly. An updated description of the

Agency Discussion on Regulatory Flexibility Act/Impact on Small Systems

statistical approach for the nationally representative samples for UCMR 5 is available in the docket as "Selection of Nationally Representative Public Water Systems for the Unregulated Contaminant Monitoring Rule: 2021 Update" (USEPA 2021k). EPA has made minor edits to 40 CFR 141.35 and 141.40 for consistency with this approach.

Although this final rule will not have a significant economic impact on a substantial number of small entities under the RFA, EPA has attempted to reduce impacts by assuming all costs for analyses of the samples, and for shipping the samples from small systems to laboratories contracted by EPA to analyze the UCMR 5 samples (the cost of shipping is included in the cost of each analytical method). EPA has historically set aside $2.0 million each year from the Drinking Water State Revolving Fund (DWSRF) with its authority to use DWSRF monies for the purposes of implementing this provision of SDWA. EPA anticipates drawing on these and additional funds, if available, to implement the plan and carry out the expanded UCMR monitoring approach outlined in AWIA.

PWS costs are attributed to the labor required for reading about UCMR 5 requirements, monitoring, reporting, and record keeping. Small PWSs (those serving 10,000 or fewer people) have the lowest burden because these PWSs receive a great deal of direct assistance from EPA and/or their State. The estimated average annual burden across the 5-year UCMR 5 implementation period of 2022-2026 is 1.3 hours at $52 per small system. By assuming all costs for laboratory analyses, shipping, and quality control for small entities, EPA incurs the entirety of the non-labor costs associated with UCMR 5 small-system monitoring, or 96% of total small-system testing costs. The final rule presents the estimated economic impacts in the form of a revenue test for publicly- and privately-owned systems (USEPA, 2021o). Small PWSs are not expected to incur any additional non-labor costs to respond to the rule. Small PWSs are also not responsible for reviewing their monitoring results or entering monitoring results into SDWARs. However, to provide a conservative cost estimate, EPA assumed that each small PWSs would spend up to 0.5 hours per sampling period reviewing sampling results. These burden estimates are similar to the cost estimates used for other drinking water regulations. Many of the small systems in UCMR 5 may be new to the UCMR program; therefore, as in previous cycles, EPA will input account information, inventory (i.e., PWS identification codes (PWSID), facility identification code along with associated facility types and water source type, etc.), and schedules, and secure contracts with laboratories for sample analysis. The small systems will be responsible for creating an account in SDWARS 5 and must have an active SDWARS account to view inventory and analytical results. To request any inventory, data element, or contact information changes, a small system must contact EPA. Since EPA implements small-system monitoring, the Agency can follow-up with small systems to populate the necessary metadata information.

The average yearly cost to small systems to comply with UCMR 5 over the 5-year period of 2022-2026, is approximately $0.3 million. The average yearly cost to EPA to implement UCMR 5 over the same period is approximately $10.5 million, with most of that cost associated with the small-system sampling program. EPA anticipates that approximately one third of the 5,947 small PWSs will collect samples in each of three years (2023, 2024, and 2025). EPA has determined that 5,947 small PWSs, or approximately 9.35 percent of all small systems, will experience an average impact of 0.02 percent of revenues for complying with UCMR 5. This accounts for small PWSs familiarizing themselves with the regulatory requirements; reading sampling instructions; traveling to the sampling location; collecting and shipping the samples; and maintaining their records. The 5,947 small PWSs are comprised of all 5,147 systems serving 3,300 to 10,000 people, and the representative group of 800 systems serving fewer than 3,300 people; the remainder of small systems will not participate in UCMR 5 monitoring and will not be impacted

Comments Received on Regulatory Flexibility Act/Impact on Small Systems

Comment Excerpt from Commenter 87

On March 11, 2021 the Environmental Protection Agency (EPA) published a proposed rule titled "Revisions to the Unregulated Contaminant Monitoring Rule for Public Water Systems." [FN1: 86 F.R. 13846 (March 11, 2021)] This letter constitutes the Office of Advocacy's (Advocacy) public comments on the proposed rule, which may also be referred to as "UCMR 5" in this letter.

As written, EPA's proposed rule creates a confusing regulatory framework for small PWS which may be left wondering whether they are obligated to collect and analyze samples without funding from EPA. Advocacy encourages EPA to revise the proposed rule to expressly conform to existing statutory requirements as well as to streamline the necessary sample collection and analysis by eliminating duplicative sampling and analysis requirements already required by EPA and states under other regulations.

The Office of Advocacy
Advocacy was established pursuant to Pub. L. 94-305 to represent the views of small entities before federal agencies and Congress. Advocacy is an independent office within the U.S. Small Business Administration (SBA), so the views expressed by Advocacy do not necessarily reflect the views of the SBA or the Administration. The Regulatory Flexibility Act (RFA) [FN2: 5 U.S.C. § 601 et seq.], as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) [FN3: Pub. L. 104-121, Title II, 110 Stat. 857 (1996) (codified in various sections of 5 U.S.C. § 601 et seq.)], gives small entities a voice in the rulemaking process. For all rules that are expected to have a significant economic impact on a substantial number of small entities, federal agencies are required by the RFA to assess the impact of the proposed rule on small entities and to consider less burdensome alternatives. The Small Business Jobs Act of 2010 requires agencies to give every appropriate consideration to comments provided by Advocacy [FN4: Small Business Jobs Act of 2010 (Pub. L. No. 111-240) § 1601]. The agency must include, in any explanation or discussion accompanying the final rule's publication in the Federal Register, the agency's response to these written comments submitted by Advocacy on the proposed rule, unless the agency certifies that the public interest is not served by doing so [FN5: Id.]. Advocacy's comments are consistent with Congressional intent underlying the RFA, that "[w]hen adopting regulations to protect the health, safety, and economic welfare of the nation, federal agencies should seek to achieve statutory goals as effectively and efficiently as possible without imposing unnecessary burdens on the public." [FN6: 5 U.S.C. § 601 note]

Individual Response: Please see Discussion on Regulatory Flexibility Act/Impact on Small Systems.

Comment Excerpt from Commenter 87

3. Small PWS have no obligations under UCMR 5 unless EPA funds all non-labor monitoring and reporting costs and notifies small PWS funding is available.

As amended by the America's Water Infrastructure Act of 2018, PWS "serving not fewer than 3,300 persons and not more than 10,000 persons" are required "to monitor for [PFAS]" subject to the "availability of appropriations." Similarly, PWS "serving fewer than 3,300 persons are required to monitor for [PFAS]" subject to the "availability of appropriations." The Act further clarifies that "[t]he Administrator shall pay the reasonable cost of such testing and laboratory analysis as is necessary to carry out the monitoring required" for PWS serving 10,000 or fewer persons. In summary, all non- labor sampling and laboratory analysis costs for small PWS must be paid for by EPA funds. If EPA does not provide such funding, small PWS have no monitoring or reporting obligations under UCMR, including UCMR 5.

Pursuant to the proposed section 141.35(d), EPA will "notif[y]" small PWS if they "have been selected for

Comments Received on Regulatory Flexibility Act/Impact on Small Systems

UCMR monitoring." Such notifications should only be provided if EPA has the necessary funds available to pay for all small PWS non-labor costs to comply with monitoring and reporting obligations under UCMR 5.

4. Small PWS should have at least 120 days' notice from EPA of its monitoring and reporting obligations under UCMR 5.

EPA has proposed in section 141.35(d)(2) that a small PWS "must provide [its] inventory information by December 31, 2022" without confirming when EPA plans to notify any small PWS pursuant to section 141.35(d) that they are obligated to comply with UCMR 5 obligations. Advocacy recommends that EPA either (1) clarify it will distribute such notifications to small PWS by a certain date well in advance of the December 31, 2022 deadline, or (2) revise the Section 141.35(d)(2) proposed language to "by the later of December 31, 2022 or 120 days from receiving notice from EPA identified in this section (d)."

5. EPA needs to define "inventory information" to provide clarification for the regulated community.

Section 141.35(d)(2) currently requires small PWS to "provide [its] sampling location(s) by December 31, 2017, using EPA's electronic data reporting system, as specified in paragraph (b)(1) of this section." EPA has proposed to modify this section by requiring small PWS to "provide [its] inventory information by December 31, 2022, using EPA's electronic data reporting system, as specified in paragraph (b)(1) of this section." EPA has not defined or clarified what "inventory information" is and has not explained why it has chosen to use the phrase of "inventory information" instead of the phrase of "sampling location(s)" used in previous UCMR rules. If "inventory information" is meant to be the term that means "a list of all sampling location(s)," or if it is meant to be the term for some other concept, EPA should include that information in the rule's definitions.

6. Small PWS should not be required to ask EPA if they are required to monitor and report unregulated contaminants under UCMR 5.

EPA has proposed to revise section 141.35(d)(3) to require small PWS to "send a letter to EPA" if the small PWS is "subject to UCMR requirements" and it has "not been contacted by either EPA or [its] State by [120 days after publication of the Federal Register." The proposed rule further states that "regardless of whether you have been contacted by the State or EPA" and you "meet[] the applicability criteria specified in Section 141.40(a)(2)(ii)", the small PWS is "subject to the UCMR monitoring and reporting requirements." The "applicabl[e] criteria" identified in Section 141.40(a)(2)(ii) references the definition of a small PWS as one that "serves a retail population of 3,300 to 10,000 people, or if you serve a population of fewer than 3,300 people."

EPA has also proposed to revise section 141.40(2)(ii)(A) to require all small PWS serving a population between 3,300 and 10,000 to "monitor for the contaminants on List 1 per Table 1", "monitor for the contaminants on List 2 of Table 1", and "monitor for the contaminants on List 3 of Table 1." Comparable to EPA's proposed language in section 141.35(d)(3), EPA has failed to limit the aforementioned monitoring obligations to instances in which EPA has provided or will provide the necessary funds to small PWS to comply with these obligations.

As summarized previously, small PWS are required to adhere to the monitoring and reporting obligations of UCMR 5 only if EPA provides the funds to comply with such obligations. Despite these clear statutory requirements EPA is placing the burden on small PWS to self-identify if they haven't been contacted by either EPA or their state about monitoring and reporting requirements, and by improperly requiring small PWS to comply with monitoring and reporting requirements under UCMR 5 without an assurance that EPA will provide the required funding.

Comments Received on Regulatory Flexibility Act/Impact on Small Systems

Advocacy appreciates that small PWS may want to participate in the UCMR program if funds are provided by EPA for the sample collection and analysis, as participation provides important information regarding the chemical composition of small PWS' water supply. However, in the absence of funding from EPA, small PWS have no monitoring or reporting obligations under UCMR 5, and the regulatory language should properly and expressly acknowledge this statutory condition.

Advocacy recommends that section 141.35(d)(3) be deleted in its entirety, so no burden is placed on small PWS to (1) contact EPA if neither EPA nor the State has contacted them, and (2) adhere to monitoring and reporting requirements under UCMR 5 if no statutorily required appropriations have been made to EPA to fund all non-labor costs associated with the monitoring and reporting requirements. In lieu of the proposed section 141.35(d)(3), Advocacy recommends including language that would encourage small PWS to contact EPA if they have any questions regarding the availability of funding to participate in the UCMR 5 program. Advocacy recommends that EPA revise section 141.40(2)(ii)(A) to clearly state that monitoring is not required for any small PWS if EPA has not received the necessary appropriations to fund all non-labor costs of monitoring and reporting for small PWS. Advocacy also recommends revising the proposed language from "[i]f you own or operate a PWS . . . that serves a retail population of 3,300 to 10,000 people, or if you serve a population of fewer than 3,300 people and you are notified of monitoring requirements . . ." to "[i]f you own or operate a PWS . . . that (1) serves a retail population of 10,000 people or fewer, and (2) you are notified of monitoring requirements . . ."

Conclusion
EPA's proposed rule creates a confusing regulatory framework for small PWS which may be left wondering whether they are obligated to collect and analyze samples without funding from EPA. Advocacy encourages EPA to revise the proposed rule to expressly conform to existing statutory requirements as well as to streamline the necessary sample collection and analysis by eliminating duplicative sampling and analysis requirements already required by EPA and states under other regulations.

Individual Response: Please see Discussion on Regulatory Flexibility Act/Impact on Small Systems. "Inventory information" includes PWS identification code (PWSID), facility identification code along with associated facility types and water source type, and information for each sampling location, or for each approved representative sampling location (if applicable). These correspond to Data Elements 1-9 as defined in Table 1 of 40 CFR 141.35(e).

Comment Excerpt from Commenter 90
We appreciate the opportunity to provide comments on the Agency's proposed rule for "Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems," Docket ID No. EPA–HQ–OW–2020–0530.

We have three primary concerns:
1. We support EPA's interpretation of America's Water Infrastructure Act of 2018 (AWIA) that requires EPA to pay the ''reasonable cost of such testing and laboratory analysis'' for all applicable Public Water Systems (PWS) serving 10,000 or fewer individuals. Congress included this provision in AWIA to ensure the monitoring for UCMR was neither cost prohibitive for small and rural communities nor would result in potentially adverse economic consequences. The proposal states, "Regarding EPA's resources, however, if EPA concludes that it will not have the resources necessary to support the expanded monitoring described by the AWIA, the Agency will not promulgate a final rule that requires all water systems serving between 3,300 and 10,000 persons to

Comments Received on Regulatory Flexibility Act/Impact on Small Systems

monitor as presented in this proposed rule." We support this finding and appreciate the Agency's consideration of small and rural community affordability.

Individual Response: Please see Discussion on Regulatory Flexibility Act/Impact on Small Systems.

Agency Discussion on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks

Agency Topic Discussion: EPA received many comments on the consideration of children's health in the development of the UCMR 5 final rule. Executive Order (EO) 13045 (62 FR 19885, April 23, 1997) establishes federal executive policy on children's health considerations for rules promulgated by the Agency. This order applies only to regulatory actions that EPA has reason to believe may disproportionately affect children. Since UCMR 5 is an information gathering rule to monitor for contaminants and not to reduce their presence in drinking water to an acceptable level, EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. Therefore, EO 13045 does not apply to UCMR. However, EPA's *Policy on Evaluating Health Risks to Children*, which ensures that the health of infants and children is explicitly considered in the Agency's decision making, is applicable. By monitoring for unregulated contaminants that may pose health risks via drinking water, UCMR furthers the protection of public health for all citizens, including children, pregnant women, and other vulnerable populations. The objective of UCMR 5 is to collect nationally representative drinking water occurrence data on unregulated contaminants for future regulatory consideration. Occurrence data collected under UCMR 5 will be used by EPA as basis for future regulatory determinations and may support additional actions to strengthen children's health drinking water protections.

Using quantitation data from multiple laboratories, EPA establishes statistically-based UCMR-specific MRLs that the Agency considers feasible for the national network of approved drinking water laboratories. EPA generally sets the MRLs as low as is technologically practical for measurement by that national network of laboratories, even if that level is well below concentrations that are currently associated with known or suspected health effects. In doing so, EPA positions itself to better address contaminant risk information in the future, including that associated with unique risks to children. If analytical method limitations and/or national laboratory capabilities only allow for an MRL higher than any available health values for a contaminant, that contaminant is less likely to be included in a UCMR cycle due to the limited utility of the resulting dataset for regulatory decision making.

Health effects information was limited for many of the UCMR 5 contaminants at the time of Agency review. However, there are EPA Office of Research and Development Integrated Risk Information System (IRIS) health assessments in development for PFBA (USEPA, 2021h), PFDA, PFHxA, PFHxS, and PFNA (USEPA, 2021i). Information on the prioritization process, as well as contaminant-specific information (e.g., source, use, production, release, persistence, mobility, health effects, and occurrence), that EPA used to select the analyte list, is contained in "Information Compendium for Contaminants for the Final Unregulated Contaminant Monitoring Rule (UCMR 5)" (USEPA, 2021j), available in the UCMR 5 public docket.

Comments Received on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks

Comment Excerpt from Commenter 48

Overall, after reading through the UCMR revision 5 proposal I feel that it is necessary to human health and

Comments Received on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks

safety, as well as environmental protection. It proposes to expand the amount of PFAS currently being studied and regulated nationally along with lithium in order to keep public water systems safe. After doing research, I found that the merits of this proposal lines up with what scientists say about these contaminants. The only factors that I would advise to be considered in future UCMR's and after the results of this proposal in 2026 is to include pregnant women and children into this protection. They are the most vulnerable to PFAS and the most likely to be impacted by such contaminants.

Individual Response: Please see Discussion on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks and General Support of UCMR Program and Proposed UCMR 5 Approach.

Comment Excerpt from Commenter 65

The Unregulated Contaminant Monitoring Rule ("UCMR") is a national survey program for contaminants that do not have health-based standards set through the Safe Drinking Water Act ("SDWA"). UCMR 5 is the latest of the series and will measure 29 PFAS compounds as well as lithium in a national data set. The data collected through UCMR will help support the Administrator's determination on regulating particular contaminants in the interest of protecting the public.

The EPA's proposed rule ("PR") for UCMR 5 is not sufficient to meet the needs of safeguarding the United States' drinking water. The proposed rule fails to recognize the importance of children and vulnerable populations and the potential impact of PFAS on communities of color. The EPA has also failed by not using the best available technology to accurately measure PFAS in the environment. I am writing to urge the EPA to reconsider these aspects of the proposed rule.

Individual Response: Please see Discussion on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks and EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 65

EPA Must Set A Standard with Reference to Children

The PR is deficient because it fails to do what the SDWA plainly requires: namely, to take children into account when testing for contamination. In fact, the PR expressly states that it will not do so. The PR states:

"Thus, while children's exposure to contaminants in drinking water may present a disproportionate health risk (USEPA, 2011), the objective of UCMR 5 is to collect nationally representative drinking water occurrence data on unregulated contaminants for consideration in potential future regulation." 86 Fed. Reg. 13846 (March 11, 2021) "Executive Order 13045 [regarding risks to children] does not apply to UCMR 5 because EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children" 86 Fed. Reg. 13846 (March 11, 2021)

The PR is wrong as a matter of law and fact. In terms of the law, the EPA is mandated by the SDWA to take vulnerable populations into account when testing for contamination. The SDWA could not be more clear in this regard. The SDWA states that:

"In selecting unregulated contaminants for consideration [for the unregulated contaminants list], the Administrator shall select contaminants that present the greatest public health concern. The Administrator, in making such selection, shall take into consideration, among other factors of public health concern, the effect of such contaminants upon subgroups that comprise a meaningful portion of the general population (such as

Comments Received on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks

infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subpopulations) that are identifiable as being at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population" (Bolded emphasis added) 42 U.S.C. §300g-1(b)(1)(C)

Plainly, EPA is in violation of the SDWA unless it changes the proposed rule to address vulnerable populations such as children and infants. EPA is also in violation of Executive Order ("EO") 13045, which states that each Federal agency:

"shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks" (bold and italics added for emphasis) Exec. Order No 13045 62 FR 19885; April 23, 1997

The EPA is in violation of the EO since the UCRM 5 is a federal "program" being used to evaluate environmental and safety risks in drinking water. Thus, EPA is mandated by both statute and executive order to take into account risks to vulnerable populations such as children, and it violates the law when it ignores those risks.

The EPA is also wrong as a factual matter. PFAS present unique and disproportionate risks to children and infants. Children consume far more water per unit of body weight compared to adults. This is especially true for formula-fed infants, who drink an extremely large amount of water compared to their body weight. These facts are pointed out within the PR itself, which makes the PR incoherent when it states that there are no disproportionate risks to children. Many of the PFAS health consequences are especially troublesome for pregnant women and children, such as decreased vaccination response, decreases in infant birth rate, and increased risk of high blood pressure or pre-eclampsia in pregnant women. It is true that the current data on PFAS is not conclusive and needs further investigation. However, there should be enough known or potential effects, such as those described above, that warrant extra caution. Indeed, the Clean Air Act (CAA) sets an appropriate precedent for using children's health for the standard of overall public health, which can be seen when the agency determines appropriate lead levels for purposes of the National Ambient Air Quality Standards ("NAAQS"). See Lead Indus. Ass'n v. EPA, 647 F.2d 1130, 1141 (1980) (EPA noting that "protection of the most sensitive groups within the population had to be a major consideration in determining the level at which the air quality standards should be set").

The EPA should rewrite the PR to reflect these disproportionate effects on children and vulnerable populations (infants and pregnant women). Without adding consideration of these groups, the proposed rule violates the SDWA and EO 13045 and does not accord with the past practice of the agency in other contexts such as the CAA. This is especially critical as there are knowledge gaps and inconclusive data on PFAS contamination within these vulnerable groups.

Individual Response: Please see Discussion on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks.

Comment Excerpt from Commenter 69

Furthermore, to emphasize the Agency's priority for children's environmental health, it could include readily available identification codes for schools, so school administrators could ensure they are up to date on PFAS results. This step would allow the public to search for PFAS detection by schools in addition to zip codes.

Comments Received on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks

Individual Response: Please see Discussion on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks.

Comment Excerpt from Commenter 69

Providing guidance to the public regarding filtration methods will not, however, solve the issue of a disparate impact on minority, low-income and/or indigenous-population communities who may be uniquely impacted by PFAS. Commercial filtration systems that effectively remove PFAS, such as Berkey Filters, are costly [FN11: https://www.berkeyfilters.com/pages/do-berkey-water-filters-remove-pfcs-and-pfas]. One Royal Berkey Water Filter, meant to serve a family of two to six, starts at $305 (including two filters, with a lifespan of 6,000 gallons per pair) [FN12: https://www.berkeyfilters.com/products/royal-berkey]. More immediately affordable filtration systems, such as Brita filters, are not as effective at removing PFAS [FN13: https://www.brita.com/why-brita/better-water/]. The cost of three Brita Replacement Filters is $14.99, and they are each meant to last forty gallons [FN14: https://www.brita.com/replacement-filters/]. Thus, low-income families might be less likely to invest in personal filtration systems that effectively remove PFAS. In addition, if a household relies on purchased bottled water for its only source of safe drinking water, it not only imposes monetary costs to the household, but it also produces more plastic waste into the environment. Because the scope of UCMR 5 only includes monitoring PFAS levels rather than effective removal methods, the Agency should at least provide the public with guidance of how to potentially attain these filtration methods.

Individual Response: Please see Discussion on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks and Risk Communication.

Comment Excerpt from Commenter 76

Finally, EPA should follow the Safe Water Drinking Act requirement to take vulnerable populations such as pregnant women, infants and children into account when testing for contamination. We have heard from scientists looking at health impacts of PFAS that these populations are more adversely affected, so they need to be explicitly considered in developing UCMR 5 and future regulations.

Individual Response: Please see Discussion on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks.

Comment Excerpt from Commenter 77

The UCMR 5 Test needs to be used on all systems - big or small as we the public, should have the right to make informed decisions regarding our, our children and even our pets health. Water is a right-to -life issue. These chemicals are health disrupters to pregnant women, fetuses, growing infants and children. Women especially must know.

Individual Response: Please see Discussion on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks and Sampling Design.

Comment Excerpt from Commenter 100

Lithium and PFAS are dangerous to intake in high quantities and their concentration in drinking water should be monitored. PFAS are very dangerous especially to unborn babies and pregnant women.

Individual Response: Please see Discussion on EO 13045: Protection of Children from Environmental Health Risks and Safety Risks.

Agency Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Agency Topic Discussion: EPA received many comments on environmental justice (EJ) considerations. Executive Order (EO) 12898 (59 FR 7629, February 16, 1994), which establishes federal executive policy on EJ, directs federal agencies, to the greatest extent practicable and permitted by law, to make EJ part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EJ principles were evaluated as part of the action development process for UCMR 5. EPA has concluded that this action is not subject to EO 12898 because it does not establish an environmental health or safety standard. EPA Administrator Regan issued a directive to all EPA staff to incorporate EJ into the Agency's work, including regulatory activities, such as integrating EJ considerations into the regulatory development processes and considering regulatory options to maximize benefits to communities that "continue to suffer from disproportionately high pollution levels and the resulting adverse health and environmental impacts." In keeping with this directive, and consistent with AWIA, EPA will, subject to the availability of appropriations, expand UCMR 5 to include all PWSs serving 3,300 to 10,000 people, and laboratory capacity. If there are sufficient appropriations, the expansion in the number of participating PWSs will provide a more comprehensive assessment of contaminant occurrence data from small and rural communities, including disadvantaged communities.

EPA structured the UCMR 5 rulemaking process to allow for meaningful involvement and transparency through workgroup formation (including representatives from several States), Tribal government consultation, public stakeholder meetings and webinars regarding the development and implementation of UCMR 5, and solicitation of public comment. Commenters expressed support for the continued collection of U.S. Postal Service Zip Code(s) for each PWS's service area, a one-time reporting requirement established under UCMR 3 in consultation with EPA's Office of Environmental Justice, and requested that EPA provide multilingual UCMR materials. EPA will continue to collect Zip Code(s) for UCMR 5, as collected under UCMR 3 and UCMR 4, to support potential assessments of whether or not certain communities are disproportionately impacted by particular drinking water contaminants. These reporting specifications are established in 40 CFR 141.35(c)(1) and (d)(1) for large and small systems, respectively. EPA also intends to develop the sampling instructions, fact sheets, and data summaries in both English and Spanish.

If EPA receives the needed appropriations, the expanded monitoring scope reflected in UCMR 5 (i.e., including all PWSs serving 3,300 to 10,000 people) will better support state and regional analyses and determination of potential EJ-related issues that need to be addressed. The expanded scope could result in the participation of approximately 5,200 more PWSs than in UCMR 1 through UCMR 4, essentially doubling the amount of PWSs subject to UCMR monitoring. This change will also result in the collection of occurrence data for approximately 50% of the population served by small PWSs (i.e., those serving 10,000 or fewer people) and approximately 8-10% of all small PWSs, compared to <2% of small PWSs that would monitor without the AWIA provisions (i.e., representative sample of PWSs serving 10,000 or fewer people; USEPA, 2021k). EPA will support stakeholder interest in UCMR 5 results by making them publicly available, and by developing additional risk-communication materials to help individuals and communities understand the significance of contaminant occurrence. The inclusion of thousands of more PWSs in UCMR monitoring further serves to increase public awareness around the presence of unregulated contaminants in drinking water as UCMR results that are above specified MRLs are required to be reported in annual PWS Consumer Confidence

Agency Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Reports (CCRs). UCMR 5 is a key action to ensure science-based decision-making and prioritize protection of disadvantaged communities in accordance with EPA's PFAS Strategic Roadmap (USEPA, 2021d).

EPA recognizes that unregulated contaminants in drinking water are of interest to all populations. The purpose of UCMR is to provide EPA and other interested parties with scientifically valid data on the national occurrence data of selected contaminants in drinking water. By developing a national characterization of unregulated contaminants that may pose health risks via drinking water from PWSs, UCMR furthers the protection of public health for all citizens. EPA considers it important that all States, Tribes, and Territories are represented and have the opportunity to participate in the UCMR program. Therefore, UCMR uses a statistically-derived set of 800 systems for the nationally representative sample (selected from all PWSs serving fewer than 3,300 people) that is population-weighted within each geographic and source water category, ensuring that any PWS has an equivalent likelihood of selection and no group within the population is under-represented (see "Selection of Nationally Representative Public Water Systems for the Unregulated Contaminant Monitoring Rule: 2021 Update," USEPA, 2021k). The statistically-derived set of systems for the national sample also ensures UCMR is not biased towards any communities. Biasing the UCMR monitoring design by selecting communities in a non-random manner would compromise the utility of the dataset in making accurate estimates of national contaminant occurrence used in regulatory decision-making.

To minimize the burden of monitoring on small PWSs, UCMR 5 requires only a representative sample of 800 PWSs serving 3,300 people or fewer to monitor. Additionally, EPA covers the cost for all sample kit preparation, sample shipping fees, and analysis costs for PWSs serving a population of 10,000 or fewer people, minimizing the overall burden (40 CFR 141.40(a)(2)(C)(ii)). EPA acknowledges that small PWSs do incur modest labor costs (e.g., reading the rule, sample collection, data review, and reporting), but EPA assumes the majority of the costs associated with UCMR monitoring at small systems.

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Comment Excerpt from Commenter 52

My name Is Scott Taylor and I am the GM for the Lamont Public Utility District. My comment centers around who will be paying for the additional testing, reporting and alike for water Districts that have more than 10,000 people BUT are formally designated a severe economically disadvantaged community? I would like to comment and recommend that the EPA to also cover the costs of complying with the testing and reporting requirements, for economically challenged Districts serving over 10,000 population similar to EPA agreeing to pay for costs for smaller districts.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 56

Financial support should be provided to test in smaller PWSs. In particular, sites should be selected in connection to the presence of certain corporations, namely DuPont, Chemours, 3M and other companies which make waterproof, oilproof, or repellant products. There should also be a site selection protocol, to pay for testing in lower income and minority communities, often targeted by large corporations for environmental hazard. A schematic with a "representative sample" directly ignores the impacted connection of the confluence of systemic racism on the environment - where redlining meets corporations profits, we end up

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with considerable PFAS in the water system. Having been charged under the SDWA to test adequately "assure a supply of drinking water which dependably complies with ... maximum contaminant levels" you cannot simply take a "representative sample" that ignores that minority and impoverished communities aren't getting a "representative" amount of PFAS and other environmental contaminants, but significantly more. Future regulations should tie sanctions, clean-ups and the cost of more testing, to those companies' output. A company which makes 28 billion dollars a month, being fined 16 million by the EPA like DuPont was for Teflon in 2012, does not create a strong enough disincentive to force a company to stop harming our communities. If anything, it shows that our lives are just the cost of doing business.

The Biden Administration has suggested that there is a renewed focus on protecting our communities from PFAS. Accordingly, we need regulations that have teeth. Please, consider expanding the depth and breadth of this proposed rule. Test for more substances, test for the amount of those substances, test for the source of those substances, centralize the data (perhaps by centralizing the testing, and subsidizing costs so that PWSs are not paying them and are much more likely to comply), test in lower income and minority communities to add a racialized analysis to environmental hazard data, and make the next step after this rule is promulgated, a rule with harsher civil sanctions for poisoning our communities, that perhaps, is retroactive. Thank you for your time and diligence. Please remember, the safety of both our children is reliant on how hard you push. Push harder.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, Sampling Design, and Centralized Laboratory. No communities have been “historically excluded” within the UCMR program. Since the beginning, the UCMR goal has been to collect nationally representative occurrence data so all PWSs are taken into consideration when establishing the nationally representative and “random” small-system sample. For UCMR 5, because of AWIA, even more small PWSs will be tested (i.e., all serving more than 3,300 people, and a random sample of those serving 3,300 or fewer people). Addressing the Agency's roles in implementing civil sanctions for pollution are outside the scope of the UCMR 5 rulemaking.

Comment Excerpt from Commenter 58

8. Collect zip codes served by public water systems’ distribution systems. Collection of zip codes for all systems’ distribution systems is critical to helping EPA, states and health researchers evaluate environmental justice and public health implications of the results of drinking water monitoring.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 62

Financial support should be provided to test in smaller PWSs. In particular, sites should be selected in connection to the presence of certain corporations, namely DuPont, Chemours, 3M and other companies which make waterproof, oilproof, or repellant products. There should also be a site selection protocol, to pay for testing in lower income and minority communities, often targeted by large corporations for environmental hazard. A schematic with a "representative sample" directly ignores the impacted connection of the confluence of systemic racism on the environment - where redlining meets corporation's profits, we end up with considerable PFAS in the water system. Having been charged under the SDWA to test adequately "assure a supply of drinking water which dependably complies with ... Maximum contaminant levels" you cannot take a "representative sample" that ignores that minoritized and historically excluded communities aren't getting a "representative" amount of PFAS and other environmental contaminants, but significantly more. Future

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regulations should tie sanctions, clean-ups and the cost of more testing, to those companies' output. A company which makes 28 billion dollars in annual profits, being fined 16 million by the EPA like DuPont was for Teflon in 2012, does not create a strong enough disincentive to force a company to stop harming our communities. If anything, it shows that our lives are just the cost of doing business.

Expand the depth and breadth of this proposed rule. Test for more substances, test for the amount of those substances, test for the source of those substances, centralize the data (perhaps by centralizing the testing, and subsidizing costs so that PWSs are not paying them and are much more likely to comply), test in historically excluded communities and ensure their are appropriate measures in placed to stop the poisoning our communities and compensates those for which it is already too late.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, Sampling Design, and Centralized Laboratory.

Comment Excerpt from Commenter 65

EPA Must Account for Environmental Justice

The PR is also deficient because it violates EO 12898's requirement to account for environmental justice. The PR states:

"EPA has concluded that this action is not subject to Executive Order 12898 because it does not establish an environmental health or safety standard" 86 Fed. Reg. 13846 (March 11, 2021)

Although there is no explicit statutory connection to the SDWA, the EPA incorrectly stated EO 12898 does not apply. Under EO 12898, identifiable disparities of adverse human health or environmental effects must be addressed when actionable against minority and low-income populations. EO 12898 states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States" (Italics added for emphasis) Exec. Order No. 12898 59 FR 7629; February 16, 1994 The Agency states that it does not have to abide by this EO since UCMR does not establish environmental health or safety standards. But by its plain terms, EO 12898 is not limited to environmental health or safety standards. Rather, it applies broadly to "each Federal agency" and to all "programs, policies, and activities." EPA is a "Federal agency" and the UCMR 5 is clearly a "program" or "activity." As such, EO 12898 applies.

Furthermore, there is evidence of a correlation between contamination sites and areas of low income and minority populations. This correlation, found through reviewing national maps of known and estimated contamination sites, should be taken in account when forming UCMR 5 and planning sample locations. These sites are particularly dangerous to human health as they have higher concentrations of PFAS and are therefore more likely to have realized risks to humans.

The EPA should include greater sampling representation and more sample sites that will help map a more accurate national representation of at-risk locations. The maps attached (figures 1-4) show how low-income neighborhoods (Fig. 2) line up with many of the past UCMR 4 locations (Fig. 1). [Attachments: See Document ID EPA-HQ-OW-2020-0530-0065] The Environmental Working Group's ("EWG") map of potential and known PFAS contamination sites in the United States (Fig. 3) shows contamination sites line up with poverty rates that are not represented by UCMR 4 locations. Low-income and marginalized neighborhoods need to have sampling representation in UCMR 5. In order for the program to be considered a "nationally representative

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drinking water occurrence data on unregulated contaminants" as stated in the PR, there needs to be national representation, meaning a greater range of locations added onto the locations already sampled in previous UCMRs.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 69

b. The Massachusetts Department of Environmental Protection ("MassDEP") Provides a Model Baseline Approach for PFAS Detection and Public Notice.

As a current resident of Massachusetts, I sought to find how accessible PFAS reports are to the general public in the state. Allowing the public, including minority populations, to access information regarding PFAS is a step toward environmental justice. MassDEP provides direct and thorough information for the public to access [FN7: https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas#pfas-detected-in-drinking-water-supplies-in-massachusetts-]. Its website dedicated to keeping the public informed even provides fact sheets for PFAS in drinking water in various languages, including Spanish, Creole, Haitian Creole, and Portuguese. Additionally, MassDEP provides information specific to PWS, including: general question and answer sheets, a question and answer sheet from "PFAS Roundtable with PWS" as of March 9, 2021, forms to request previous data results, and public education and notification templates.

Since October 2, 2020, PWS in Massachusetts have access to free PFAS testing until June 30, 2021. MassDEP's website even includes a map that displays all the towns and number of PWS that have sampled PFAS. Not only does the site provide this map and search tool to allow the public to be aware of where PFAS has been detected, but it also includes information on preliminary measures (step-by-step instructions on how to test for PFAS) and remedial measures (how to remove PFAS from drinking water and where to report PFAS detections) [FN8: https://www.mass.gov/doc/field-sampling-guide-for-pfas/download; https://www.mass.gov/doc/lab-testing-primer-for-pfas/download; https://www.mass.gov/lists/drinking-water-permits-forms-and-templates#laboratory-analytical-forms-]. Having a visual display tool for PFAS detections and informative links for testing and removal processes benefits the public's awareness.

With these state-level notices, the Agency could implement similar practices to streamline public notice at the national level. The Agency could incorporate each state's collected data onto its own site. Further, the Agency could emulate MassDEP's map and expand it to a national scale, including data from other states. Finally, the Agency could provide fact sheets with instructions on how to test for PFAS and how to remove PFAS from drinking water. Importantly, the fact sheets should be available in various languages to further the Agency's goals in promoting environmental justice.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, Risk Communication, and Data Accessibility, CCR, and Public Notification.

Comment Excerpt from Commenter 70

CARE Comment Two: USEPA must consider environmental justice throughout UCMR 5 implementation and analysis.

USEPA is prohibited from engaging in actions that have the effect of discriminating on the basis of race, color, and national origin. Pursuant to Title VI of the Civil Rights Act of 1964, no person in the United State shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or

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be subjected to discrimination under any program or activity which receives federal financial assistance [FN14: 42 U.S.C. §2000d, et seq.].

Environmental justice is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" [FN15: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/]. In 1994, President Clinton issued Executive Order ("EO") 12898 directing agencies to identify and address any disproportionate environmental impacts of federal action on minority and low income communities [FN16: https://www.epa.gov/laws-regulations/summary-executive-order-12898-federal-actions-address-environmental-justice]. The end goal was to achieve environmental protection equally among all communities in the United States [FN17: Id.].

In 2021, President Biden strengthened EO 12898 by issuing an EO of his own, making environmental justice a part of every federal agency's mission [FN18: Id.]. "It is, therefore, the policy of my Administration to [. . .] prioritize [. . .] environmental justice." [FN19: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/] Biden's EO directs agencies to develop programs, policies, and activities to address the disproportionate health, environmental, economic, and climate impacts on disadvantaged communities [FN20: Id.]. CARE urges USEPA to act in accordance with its newly strengthened commitment to environmental justice by collecting PFAS data regarding disproportionately affected areas as part of UCMR 5.

Integrating environmental justice investigation and analysis at this stage is a crucial step toward understanding any such impacts of PFAS contamination before standards are promulgated. In USEPA's PFOS and PFOA final regulatory determination, USEPA stated that environmental justice had not yet been considered as standards had not yet been promulgated thus not invoking EO 12898 [FN21: https://www.federalregister.gov/documents/2021/03/03/2021-04184/announcement-of-final-regulatory-determinations-for-contaminants-on-the-fourth-drinking-water]. This logic no longer stands in the wake of President Biden's January EO to advance environmental justice "immediately." [FN22: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/] Collecting this data now ensures environmental justice impacts are appropriately addressed in any subsequent rulemaking.

Tools are widely available to implement environmental justice data collection seamlessly. For example, ArcGIS is proving to be a useful tool in states such as Illinois to display sampling data easily and effectively to the public. USEPA could employ a similar approach when conducting its environmental justice analysis. Using a mapping software or similar technology, USEPA could display PFAS hotspots and where they are in relation to environmental justice communities. This could prove to be a useful tool for the USEPA as well as municipalities and environmental groups throughout the country.

There is a strong basis for environmental analysis simply based on the monitoring Illinois EPA has already completed. As of April 20, 2021, Illinois EPA has taken 904 samples and plans to take an additional 541. Of those 904 samples, PFAS chemicals at or greater than the minimum reporting level were detected at 42 locations and at or greater than the USEPA Guidance Level were detected at 38 locations [FN23: https://illinois-

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epa.maps.arcgis.com/apps/webappviewer/index.html?id=f154845da68a4a3f837cd3b880b0233c]. Of the 80 [FN24: These locations included Lockport, Criswell Court MPH, East Moreland Water Service Association, Ingalls Park, Rockford and College View Subdivision in Romeoville, environmental justice concern areas in Will County] Illinois locations with detectable levels of PFAS, 29 were located within Illinois EPA designated environmental justice concern areas, which means the area has a population of predominately minority and/or low-income residents [FN25: https://illinois-epa.maps.arcgis.com/apps/webappviewer/index.html?id=f154845da68a4a3f837cd3b880b0233c]. More importantly, of the 38 USEPA guidance level exceedances, 20 were detected within Illinois EPA designated environmental justice concern locations [FN26: Id.]. A further breakdown of environmental justice implications present in the Illinois EPA sampling is presented in Table-1 below. {Table 1 [FN27: https://ejscreen.epa.gov/mapper/; FN28: The minority and annual household income statistics reflect the demographics of a 2-mile radius around each zip code location.]: See Document ID EPA-HQ-OW-2020- 0530-0070}

Sampling in Illinois is still ongoing, additional information will be available throughout the sampling period which will continue until approximately late 2021. Further, not all PFAS chemicals involved in UCMR 5 are being tested for in Illinois. Only 18 PFAS are of interest in the Illinois testing, but all 18 are included in UCMR 5. As such, the actual environmental justice implications of PFAS contamination are unknown and may be much more severe once UCMR 5 testing is completed. However, even this limited data set provides a clear basis for an environmental justice analysis for PFAS contamination.

Considering the agency's newly strengthened commitment and the environmental justice implications obvious in Illinois alone, USEPA should conduct UCMR 5 sampling and analysis with environmental justice interwoven. It is crucial to collect data and understand the environmental justice impacts of this issue at this early stage to identify any disproportionate impacts of PFAS contamination in drinking water. This understanding will allow U.S. EPA to solicit public comments and regulate such impacts without any significant delays. As such, CARE implores the USEPA to implement UCMR 5 with environmental justice interwoven within the rule to ensure appropriate attention will be paid to the any environmental justice implications of PFAS drinking water contamination and any subsequent rulemaking.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 73

IDEXX applauds EPA for the deep and substantial work to generate a draft UCMR 5 and for its longstanding efforts to protect both our environment and public health. We know EPA is prioritizing addressing environmental justice issues and inequity, particularly as they relate to ensuring all Americans are supplied water that is safe and with minimal risk from harmful contaminants. However, we have already seen years of delay in establishing better policies that could have prevented untold Legionnaires' disease cases and deaths. We think this can be rectified, with the inclusion of L. pneumophila on UCMR 5. We thank EPA for commitment to its mission and for thoughtfully considering our comments.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comments Received on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Comment Excerpt from Commenter 76

I would also urge the EPA to include more small water systems in its testing requirement, especially in low income communities, also to make sure of an accurate assessment of possible danger so that all Americans can know if they are at risk and can take action to protect themselves. In Hoosick Falls, NY, with a small water system which did not require testing, the residents would not have known of the contamination except for the action of one individual to have their water tested. Testing requirements should come with funding for struggling small water systems or environmental justice communities with greater likelihood of a contamination source nearby.

It is important for UCMR 5 to require reporting of zip codes in communities served by the testing water systems, so that EPA can note any trends of excessive contamination in environmental justice communities or communities near industries that use PFAS.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 82

This comment serves as sign on to support the codification of this rule. Americans for far too long have had no choice but to use water that science has shown to be potentially substandard. The right to safe drinking water will be closer to being secured for Americans with this rule, especially those in small communities, communities of color, and low to moderate income communities. This nation's health and economy can only benefit from the safety of its denizens and time and time again we see that voluntary self regulation is no match for federal regulatory action. Codify this rule and lead the charge in taking our water back from chemical agents we have let loose in the name of profit. This responsibility is yours.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and General Support of UCMR Program and Proposed UCMR 5 Approach.

Comment Excerpt from Commenter 100

I fully support the proposed rule however, there is a question as to who will be paying for this operation as it will be very expensive. Many less fortunate districts often have worse water, so the testing there would be more expensive, contributing to the problem of poverty.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 101

The business community agrees with your approach to align water monitoring data collection to assess how and whether disadvantaged communities are unduly impacted by unregulated contaminants. Such information remains essential to ensuring that federal interventions are prioritized appropriately.

We stand ready to assist you and public and private water systems across the U.S. as this proposal moves forward.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

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Comment Excerpt from Commenter 103

Environmental Justice Data Collection

As with previous UCMR programs, EPA's proposed UCMR 5 includes a data collection request for U.S. Postal Service Zip codes for each PWS's service area. As with UCMR 3 and UCMR 4, this request is intended to support potential assessments of whether or not minority, low-income, and/or indigenous population communities are uniquely impacted by drinking water contaminants. AWWA agrees with the continued inclusion of this data request but recommends that the EPA consider how to best collect this data such that zip codes may be paired with representative EPTDSs. Under UCMR 4, zip codes were provided as a function of the entire public water systems. Given that different sources may have varying levels of contaminants, this creates challenges with pairing zip codes to specific contaminant levels.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations**.**

Comment Excerpt from Commenter 104

- At 86 FR 13861, EPA indicates that U.S. Postal Service zip codes will be used to determine the overlap between public water system service area and Environmental Justice communities. It is recommended that census tract information be collected in lieu of or in addition to zip code to better determine the impact to minority and low- income communities. In addition, PA DEP recommends consideration of an additional sample of small systems located in Environmental Justice communities for UCMR 5 monitoring. This could expand monitoring at small community water systems and at nontransient noncommunity water systems such as schools and daycare centers in rural low-income areas.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 108

EPA's proposal states that it will continue to collect information for each PWS service area to support potential assessments of whether or not minority, low-income, and indigenous-population communities are uniquely impacted by particular drinking water contaminants, and the Coalition supports EPA's efforts. In addition to these efforts, the Coalition urges EPA to prioritize supporting the PWS serving such communities in their efforts to implement the requirements of UCMR5.

IV. Conclusion

The Coalition appreciates the opportunity to submit these comments concerning the proposed rulemaking. We look forward to working closely with EPA in its development of the UCMR5 proposal. Please feel free to call or e-mail if you have any questions, or if you would like any additional information concerning the issues raised in these comments.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comment Excerpt from Commenter 111

C. EPA Should Prioritize and Advance Environmental Justice with PFAS Monitoring

The States urge EPA to collect census tract data or zip codes for each public water system's service area, as collected under the UCMR 3 and UCMR 4, to support future assessments of impacts on environmental justice communities [FN89: A potential environmental justice area is defined to mean "a minority or low-income community that may bear a disproportionate share of the negative environmental consequences" of a

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project. New York Dep't of Envtl. Conserv., Commissioner Policy 29, Environmental Justice and Permitting, at 4 (Mar. 19, 2003). U.S. Census Bureau data are used for identifying these areas. A "minority population" is a population recognized by the U.S. Census Bureau as "Hispanic, African-American or Black, Asian and Pacific Islander or American Indian." Id. For an urban area, a "minority community" means a census block group or groups with a 51.1 percent or more minority population. Id. at 3. A "low- income population" means a population having an annual income less than the poverty level, as established by the U.S. Census. Id. A "low-income community" is a census block group or groups having a low-income population equal or greater than 23.59 percent of the total population, as demonstrated by census data. Id.]. Census data are more granular and precise for identifying potential environmental justice areas as compared to zip code data. Additionally, census data cover a well-defined area and align conterminously with county boundaries, which may better align with the boundaries of public water system service areas.

Throughout the United States, communities of color and low-income communities have faced disproportionate harm from environmental contamination for decades. The White House has identified environmental justice as a top priority for the Biden Administration, directing federal agencies to develop programs and policies to address the disproportionate health and environmental impacts on disadvantaged communities [FN90: News Release, FACT SHEET: President Biden Takes Executive Actions to Tackle the Climate Crisis at Home and Abroad, Create Jobs, and Restore Scientific Integrity Across Federal Government (Jan. 27, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/; see U.S Environmental Protection Agency, Technical Guidance for Assessing Environmental Justice in Regulatory Analysis (Jun 2016), https://www.epa.gov/sites/default/files/2016-06/documents/ejtg_5_6_16_v5.1.pdf]. It is critical that EPA evaluate potential disparate impacts created by PFAS contamination of drinking water. EPA's PFAS rulemakings must adequately address such environmental justice concerns [FN91: Federal agencies have a unique responsibility to prevent environmental injustice and discrimination based on race, including in federally assisted housing. Benfer, "Contaminated Childhood: How the United States Failed to Prevent the Chronic Led Poisoning of Low- Income Children and Communities of Color," 41 Harv. Envtl. L. Rev. 493, 537–38 (2017); see also Exec. Order No. 12,898, 59 Fed. Reg. 7,629 (Feb. 16, 1994)].

PFAS substances are a major concern for communities living near PFAS manufacturers or industries using PFAS. Epidemiological studies have been done in communities near such sites, linking exposure to contaminated local drinking water supplies to cancer and other illnesses [FN92: Studies have been conducted of various fence-line communities, including Parkersburg, West Virginia and in Alabama. See e.g., Worley RR, Moore SM, Tierney BC, Ye X, Calafat AM, Campbell S, Woudneh MB, Fisher J. Per and polyfluoroalkyl substances in human serum and urine samples from a residentially exposed community. Environment International. 2017;106:135–143. https://doi.org/10.1016/j.envint.2017.06.007. See also C8 Science Panel (last updated Jan. 22, 2020), http://www.c8sciencepanel.org/]. By collecting geographic locational data in the UCMR 5, we can gain insight on proximity to PFAS sources, the drinking water exposure pathways, and the cumulative impact of multiple stressors, exposure to air pollution and other toxic chemicals [FN93: Post GB, Louis JB, Lippincott RL, Procopio NA. Occurrence of Perfluorinated Compounds in Raw Water from New Jersey Public Drinking Water Systems. Environ. Sci. Technol. 2013 Nov 4;47, 23:13266–13275. https://doi.org/10.1021/es402884x; see also Olden K, Lin Y-S, Gruber D, Sonawane B. Epigenome: Biosensor of Cumulative Exposure to Chemical and Nonchemical Stressors Related to Environmental Justice. Am J Public Health. 2014 Oct;104(10):1816–1821. https://dx.doi.org/10.2105%2FAJPH.2014.302130]. With this

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information, EPA will be better able to analyze potential environmental justice concerns associated with the presence of PFAS in drinking water and the cumulative risk of multiple contaminants and other community stressors. CONCLUSION The States appreciate the opportunity to submit these comments on the proposed UCMR 5. To ensure public health is protected from harmful drinking water contamination, as required by the SDWA, we strongly believe EPA should regulate PFAS as a class. To do so, we urge EPA to (1) require monitoring for total PFAS or PFAS subgroups in the UCMR 5, (2) promptly validate analytical methods that measure total PFAS for use in the UCMR 5, (3) lower the MRLs for the PFAS in the UCMR 5, and (4) advance environmental justice with PFAS monitoring. **Individual Response:** Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
Comment Excerpt from Commenter 119 8. Collect zip codes served by public water systems' distribution systems. Collection of zip codes for all systems' distribution systems is critical to helping EPA, states and health researchers evaluate environmental justice and public health implications of the results of drinking water monitoring. **Individual Response:** Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
Comment Excerpt from Commenter 120 8. Collect zip codes served by public water systems' distribution systems. Collection of zip codes for all systems' distribution systems is critical to helping EPA, states and health researchers evaluate environmental justice and public health implications of the results of drinking water monitoring. **Individual Response:** Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
Comment Excerpt from Commenter 121 Position I am writing in regards to EPA-HQ-OW-2020-0530, which expands requirements for contaminations monitoring in public water systems to include lithium and 29 per and polyfluoroalkyl substances (hereby referred to as PFAS) [FN1: https://www.regulations.gov/. Accessed May 5, 2021. https://www.regulations.gov/document/EPA-HQOW-2020- 0530-0001]. Specifically, I am writing in response to a request for comments about how best to support minority and low-income populations. While I support the bill, I believe that the selection of 800 small water systems should not be random. As a public health professional, I recommend the selection of small water systems instead be based on where PFAS are a greater risk, such as outside of factories that use them. **Individual Response:** Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and Sampling Design.
Comment Excerpt from Commenter 121 It requires collecting data on these 30 substances for all public water systems that serve more than 3,300 people [FN1: https://www.regulations.gov/. Accessed May 5, 2021. https://www.regulations.gov/document/EPA-HQ-OW-2020-0530-0001]. It will then randomly select 800 small

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public water systems that serve less than 3,300 people to also do monitoring [FN1: Regulations.gov. Accessed May 5, 2021. https://www.regulations.gov/document/EPA-HQOW-2020-0530-0001]. Language in the rule claims that it is not an environmental justice policy, because it "does not establish an environmental health or safety standard" [FN1: https://www.regulations.gov/. Accessed May 5, 2021. https://www.regulations.gov/document/EPA-HQ-OW-2020-0530-0001]. However, this rule is indeed an issue of environmental justice. This issue disproportionately effects low-income and minority populations. In a report by Union of Concerned Scientists, using data from Northwestern University, it "was found that nearly 39,000 more low-income households (15% more than expected based on US census data) and approximately 295,000 more people of color (22% more than expected) live within five miles of a site contaminated with PFAS." [FN6: PFAS Contamination Is an Equity Issue, and President Trump's EPA Is Failing to Fix It. Union of Concerned Scientists. Published October 30, 2019. Accessed May 6, 2021. https://blog.ucsusa.org/genna-reed/pfas-contamination-is-an-equity-issue-president-trumps-epa-is-failing-to-fix-it/] In creating this rule, the EPA has an opportunity to choose the 800 smaller sites based on vulnerability.

Individual Response: Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and Sampling Design.

Comment Excerpt from Commenter 121

Specific Prioritizing of Low-Income and Minority Populations

Monitoring is particularly important because issues surrounding dangerous concentration of these compounds are already happening. For example, perfluorooctanoic acid, one of the compounds on the proposed list, was found in concentrations of 190x the EPA's recommended limit in the town of Washington, WV, which was located near a fluorochemical plant [FN7: Hu XC, Andrews DQ, Lindstrom AB, et al. Detection of Poly and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants. Environ Sci Technol Lett. 2016;3(10):344-350. doi:10.1021/acs.estlett.6b00260]. Perfluorooctanoic acid specifically has been positively associated with testicular and kidney cancer [FN8: Barry V, Winquist A, Steenland K. Perfluorooctanoic acid (PFOA) exposures and incident cancers among adults living near a chemical plant. Environ Health Perspect. 2013;121(11-12):1313- 1318. doi:10.1289/ehp.1306615]. These cancers already disproportionately affect low- income and minority communities. For example, the U.S. average rate of kidney cancer is 16.8 cases/100,000 people, but in Holmes County, MS, that rate is 41.2/100,000 people and rising [FN9: State Cancer Profiles > Incidence Rates Table. Accessed May 5, 2021. https://www.statecancerprofiles.cancer.gov/incidencerates/index.php?stateFIPS=00&areatype=county&cancer=072&race=00&sex=0&age=001&stage=999&year=0&type=incd&sortVariableName=rate&sortOrder=desc#results]. The poverty rate of Holmes County is also 33.8%, compared with the U.S. rate of 13.3%, and is 83% black [FN10: U.S. Census Bureau QuickFacts: Holmes County, Mississippi. Accessed May 5, 2021. https://www.census.gov/quickfacts/holmescountymississippi]. These are the characteristics that the EPA should be prioritizing when selecting the 800 small water systems.

In the example of Washington WV, Washington's municipal district serves about 2,400 people, which makes them a "small" public water supply. If this were happening today and Washington was not one of the 800 small sites chosen, this public health emergency could have gone undetected.

Response to Potential Criticism

Critics of the rule may say that the financial cost of monitoring this many new chemicals is too high to do all at once. However, the cost of the health outcomes are worse. While PFAS are not the only contributor, kidney

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cancer, for example, cost the United States healthcare system $4.8 billion dollars in 2018 [FN11: Financial Burden of Cancer Care | Cancer Trends Progress Report. Accessed May 5, 2021. https://progressreport.cancer.gov/after/economic_burden]. And this is only the cost of care, not the years of productivity lost by people who contract these cancers. Another issue that could be raised is that randomly selecting small systems will provide the EPA with unbiased science about the extent of these issues, and they can try targeted monitoring systems later. I believe the reverse should be true. Vulnerable populations need to be prioritized first, and randomly selected sites could always be added in later. Conclusion This rule has the potential to advance public health in a strong and meaningful way. Monitoring of these 30 new chemicals will provide the EPA and other health agencies with important information regarding how these compounds interact with human and ecological health. However, the EPA should be working towards eliminating environmental inequities, not perpetuating them. When it comes to the 800 small sites, it is important that the EPA approach and target the most vulnerable populations first so that low-income and minority populations have a better chance at a healthy future. **Individual Response:** Please see Discussion on EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Comments Outside the Scope of UCMR 5

Agency Discussion on Comments Outside the Scope of UCMR 5
Agency Topic Discussion: The following comments address topics that are outside the scope of UCMR.

Comments Received Outside the Scope of UCMR 5
Comment Excerpt from Commenter 47 Is the fact that clorox bleach is sold open without a seal, not a issue for contaminant monitoring regulatory standards? The bottles are shipped open like this where anything could be placed inside just unscrew the cap. I think this is also irresponsible because this product is sold at grocery stores where kids are; and where food, consumable products are sold. It isn't safe and the other off brand bleach products use a seal, why has this not been looked at? as a health and safety contaminate issue? **Individual Response:** Addressing the Agency's role in regulating consumer products is outside the scope of the UCMR 5 rulemaking.
Comment Excerpt from Commenter 48 Also, lithium is currently being used in the batteries of electric cars which is a solution to another pressing environmental problem of CO2 emission reduction. So, it may be advisable to consider eliminating lithium from the building of these cars and find an alternative type of battery to use in order to reduce the amount of this contaminant that goes into public water systems. I fully support this proposal and just wanted to make some suggestions for future revisions done to UCMR's going forward and in the implementation of this current revision. **Individual Response:** EPA appreciates the commenter's support of the UCMR 5 proposal. Addressing the Agency's role in regulating contaminants in the manufacturing sector is outside the scope of the UCMR 5

Comments Received Outside the Scope of UCMR 5
rulemaking.
Comment Excerpt from Commenter 93 While the purpose of this correspondence is to convey our overwhelming recommendation that USEPA include Legionella pneumophila in UCMR 5, we would like to go on record that the most significant underlying problem, that is consistently ignored, is REAL regulation of total organic carbon (TOC) in community drinking water systems. TOC is currently regulated on a sliding percentage reduction scale as a "Treatment Technique" (TT). The dirtier your source water supply, the more dirt you're allowed to send into your distribution system; simply put, TOC is basically dirt in drinking water. TOC is the primary food source for microbial growth and regrowth in the Community Drinking Water System. TOC is the principle source of disinfectant demand resulting in lost reactive disinfectant and formation of disinfection byproducts (DBPs) whether in a chlorinated or chloraminated system (chloramine DBPs are 1,000 times more toxic than the chlorine associated DBPs). Haphazard, irresponsible, disinfectant changes from chlorine to chloramine and distribution system nitrification have led to sever toxic unintended consequences of simultaneous compliance with the Surface Water Treatment Rule, Disinfection Byproduct Rules and Lead & Copper Rules. Changes in water chemistry that occur seasonally are now compounded by "free chlorine burns" resulting in significant increases in corrosion potential. As a result, many systems are now feeding a corrosion inhibitor, most often phosphate based. Therefore, if TOC is the meat and potatoes for biofilm, ammonia is the chocolate cake… and phosphate… is the crack cocaine. **Individual Response:** Addressing the Agency's role in reviewing and/or revising treatment methods for existing drinking water standards is outside the scope of the UCMR 5 rulemaking.
Comment Excerpt from Commenter 94 While the purpose of this correspondence is to convey our overwhelming recommendation that USEPA include Legionella pneumophila in UCMR 5, we would like to go on record that the most significant underlying problem, that is consistently ignored, is REAL regulation of total organic carbon (TOC) in community drinking water systems. TOC is currently regulated on a sliding percentage reduction scale as a "Treatment Technique" (TT). The dirtier your source water supply, the more dirt you're allowed to send into your distribution system; simply put, TOC is basically dirt in drinking water. TOC is the primary food source for microbial growth and regrowth in the Community Drinking Water System. TOC is the principle source of disinfectant demand resulting in lost reactive disinfectant and formation of disinfection byproducts (DBPs) whether in a chlorinated or chloraminated system (chloramine DBPs are 1,000 times more toxic than the chlorine associated DBPs). Haphazard, irresponsible, disinfectant changes from chlorine to chloramine and distribution system nitrification have led to sever toxic unintended consequences of simultaneous compliance with the Surface Water Treatment Rule, Disinfection Byproduct Rules and Lead & Copper Rules. Changes in water chemistry that occur seasonally are now compounded by "free chlorine burns" resulting in significant increases in corrosion potential. As a result, many systems are now feeding a corrosion inhibitor, most often phosphate based. Therefore, if TOC is the meat and potatoes for biofilm, ammonia is the chocolate cake… and phosphate… is the crack cocaine. **Individual Response:** Addressing the Agency's role in reviewing and/or revising treatment methods for existing drinking water standards is outside the scope of the UCMR 5 rulemaking.

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Appendix 1 – UCMR 5 Topic Codes

10000 General Comments
10100 SDWA Authorities (1445(a)(2), 1445(a)(1)(A))
10200 Interrelationship of CCL, UCMR, and Regulatory Determinations
10400 Timeline of Activities
10500 General Support of UCMR Program and Proposed UCMR 5 Approach
10700 Regulatory Development
10800 Risk Communication
20000 Sampling Design
20800 Ground Water Representative Monitoring Plans/Locations
30000 Potential UCMR 5 Contaminants
31100 29 PFAS Using EPA Methods 533 and 537.1
31400 Total Organic Fluorine (TOF) and Total Oxidizable Precursors Assay (TOP)
31600 Alternate PFAS Methods (ASTM/SM/Other Suggested Methods)
31700 New PFAS Methods
32000 PFAS Contaminants – Miscellaneous Comments
35200 Lithium
36100 *Legionella pneumophila*
36400 Haloacetonitriles
36700 1,2,3-Trichloropropane
37000 Other Recommended Priority Contaminants
40000 Contaminant Selection Process and Supporting Documents
40200 NDAA Provision Allowing Consideration of More than 30 Contaminants
50000 Reporting
50100 SDWARS Functionality/Improvements
50400 New Data Elements
50500 Historical Information for Contaminant Detections and Treatment
50600 Potential PFAS Sources
51200 Reporting Timeframe (PWSs and Laboratories)
51300 Reporting Below the MRL
60000 Data Accessibility, CCR, and Public Notification
70000 Laboratory Approval Program
70800 Laboratory Capacity
70900 Minimum Reporting Level Determination
71200 Centralized Laboratory
71300 Field Blank Analysis
100000 UCMR 5 Cost/Burden
100100 Proposed Rule Cost Estimate
100700 Cost Associated with Alternative Contaminants Considered – *Legionella pneumophila*
100800 Cost Associated with Alternative Contaminants Considered – Haloacetonitriles
101000 Statutory and Executive Orders
101300 Paperwork Reduction Act
101500 Regulatory Flexibility Act/Impact on Small Systems
101900 EO 13045: Protection of Children from Environmental Health Risks and Safety Risks
102200 EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
130000 Comments Outside the Scope of UCMR 5

Appendix 2 – Sampling Frequency Data Analysis

Assessment of sampling frequency using UCMR 3 and UCMR 4 data shows that the counts or percentage of systems above a concentration of interest can vary between sample events, and that there are individual cases where the contaminant is not detected (i.e., measured at or above the UCMR MRL) in one sample event but occurs at significant levels in a subsequent event. EPA examined data for the UCMR 3 PFAS compounds and found that, for ground water (GW) systems, PFOA was detected at 143 different sample points on the first sample event. On the second sample event, PFOA was detected at 31 new sample points, which represents an increase of 22 percent in the total number of sample points where PFOA was detected (See Exhibit A1 below). There were 2 occasions where the second result for a sample point exceeded the Health Advisory (HA) value of 0.07 µg/L while the first did not. A similar evaluation of UCMR 3 PFOS data for GW systems showed an increase of 26 percent in the total number of sample points where the analyte was detected after the first sample event, and 15 occasions where the second result exceeded the HA value while the first did not.

EPA also examined UCMR 3 data on PFOA and PFOS for water systems required to monitor four times over a one-year period; this includes SW, GWUDI, and MX systems (See Exhibits A2 and A3 below). However, there were only 17 detections for PFOA and 19 detections for PFOS in the GW and MX systems, which is not enough data to arrive at meaningful conclusions. If the PFOA data for SW, GU, and MX systems are analyzed as a single set, the results of the analysis are as follows:

- An increase of 116 percent in the total number of sample points where PFOA was detected after the first sample event and 1 occasion where a later result for a sample point exceeded the HA value while the first did not.
- An increase of 46 percent after the second sample event and 1 occasion where a later result for a sample point exceeded the HA value while the first two did not.

If the PFOS data for SW, GU, and MX systems are analyzed as a single set, the results of the analysis are as follows:

- An increase of 100 percent in the total number of sample points where PFOS was detected after the first sample event and 9 occasions where a later result for a sample point exceeded the HA value while the first did not.
- An increase of 29 percent after the second sample event and 7 occasions where a later result for a sample point exceeded the HA value while the first two did not.

Additional monitoring data for the individual water system categories are shown in Exhibits A2 and A3 below.

Exhibit A1. Increase in the detection frequencies between the first and subsequent sample events for PFOA and PFOS for ground water systems under UCMR 3.

Contaminant	Number of unique sample points with detection (>MRL) for the first sample event	Number of new sample points with detection (>MRL) after the first sample event [% increase in total number of sample points with detections]	Number of unique sample points with results >0.07 µg/L after the first sample event[1]
PFOA	143	31 (or 22% increase)	2
PFOS	111	30 (or 26% increase)	15

1. Count of sample points where subsequent sample event results exceeded 0.07 µg/L when the first sample event result did not (this count includes those sample points where the first sample event result was detected above the MRL, but was measured at less than the HA value).

Exhibit A2. Increase in the detection frequencies after the first sample event for PFOA and PFOS for surface water, ground water under the direct influence of surface water, and mixed water systems under UCMR 3.			
Contaminant	**Number of unique sample points with detection (>MRL) for the first sample event**	**Number of new sample points with detection (>MRL) after the first sample events [% increase in total number of sample points with detections]**	**Number of unique sample points with results >0.07 µg/L after the first sample event[1]**
Surface Water Systems (SW)			
PFOA	22	24 (or 109% increase)	1
PFOS	13	14 (or 108% increase)	8
Ground Water Under the Direct Influence of Surface Water Systems (GWUDI) and Mixed Water Systems (MX)			
PFOA	3	5 (or 167% increase)	0
PFOS	5	4 (or 80% increase)	1
All SW, GWUDI, and MX Systems			
PFOA	25	29 (or 116% increase)	1
PFOS	18	18 (or 100% increase)	9

1. Count of sample points where subsequent sample event results exceeded 0.07 µg/L when the first sample event result did not (this count includes those sample points where the first sample event result was detected above the MRL, but was measured at less than the HA value).

Exhibit A3. Increase in the detection frequencies after the second sample event for PFOA and PFOS for surface water, ground water under the direct influence of surface water, and mixed water systems under UCMR 3.			
Contaminant	**Number of unique sample points with detection (>MRL) for the first and second sample events**	**Number of new sample points with detection (>MRL) after the second sample event [% increase in total number of sample points with detections]**	**Number of unique sample points with results >0.07 µg/L after the second sample event[1]**
Surface Water Systems			
PFOA	31	15 (or 48% increase)	1
PFOS	20	7 (or 35% increase)	6
Ground Water Under the Direct Influence of Surface Water Systems (GWUDI) and Mixed Water Systems (MX)			
PFOA	6	2(or 33% increase)	0
PFOS	8	1 (or 13% increase)	1
All SW, GWUDI, and MX Systems			
PFOA	37	17 (or 46% increase)	1
PFOS	28	8 (or 29% increase)	7

1. Count of sample points where subsequent sample event results exceeded 0.07 µg/L when the first sample event result did not (this count includes those sample points where the first sample event result was detected above the MRL, but was measured at less than the HA value).

EPA also examined manganese monitoring data from the April 2021 UCMR 4 data release and presented results from that assessment in the *Federal Register* Notice for the Final Rule. EPA used the most complete publicly available data during the development of that Notice, and has since completed an updated assessment using the monitoring data from the July 2021 UCMR 4 data release. Assessments using monitoring data from the two data releases are presented individually in the tables below.

The July 2021 UCMR 4 manganese monitoring data for GW systems showed an increase of 14 percent in the total number of sample points where manganese was detected after the first sample event, and 27 occasions where the second result for a sample point exceeded the HA value (300 ug/L) while the first did not (See Exhibit A4). The results for GU and MX systems showed an increase of 24 percent in the total number of sample points where manganese was detected after the first sample event and 1 occasion where a later result for a sample point exceeded the HA value while the first did not. The total number of sample points where manganese was detected in GU and MX systems increased by 11 percent after the second sample event and there was 1 occasion where a later result exceeded the HA value while the first two did not.
If the manganese data for SW, GU, and MX systems are analyzed as a single set, the results of the analysis are as follows:

- An increase of 22 percent in the total number of sample points where manganese was detected after the first sample event and 13 occasions where a later result for a sample point exceeded the HA value while the first did not (See Exhibit A5).
- An increase of 8 percent after the second sample event and 9 occasions where a later result for a sample point exceeded the reference concentration while the first two did not (See Exhibit A6).

Exhibit A4. Increase in the detection frequencies after the first sample event for manganese for ground water systems under UCMR 4.

Data Release Date	Number of unique sample points with detection (>MRL) for the first sample event	Number of new sample points with detection (>MRL) after the first sample event [% increase in total number of sample points with detections]	Number of unique sample points with results >300 µg/L after the first sample event[1]
April 2021	7,478	1,041 (or 14% increase)	26
July 2021	7,512	1,050 (or 14% increase)	27

1. Count of sample points where subsequent sample event results exceeded 300 µg/L when the first sample event result did not (this count includes those sample points where the first sample event result was detected above the MRL, but was measured at less than the HA value).

Exhibit A5. Increase in the detection frequencies after the first sample event for manganese for surface water, ground water under the direct influence of surface water, and mixed water systems under UCMR 4.

Contaminant	Number of unique sample points with detection (>MRL) for the first sample event	Number of new sample points with detection (>MRL) after the first sample event [% increase in total number of sample points with detections]	Number of unique sample points with results >300 µg/L after the first sample event[1]
Surface Water Systems (SW)			
April 2021	2,576	555 (or 22% increase)	10
July 2021	2,582	558 (or 22% increase)	12
Ground Water Under the Direct Influence of Surface Water Systems (GWUDI) and Mixed Water Systems (MX)			
April 2021	343	81 (or 24% increase)	1
July 2021	346	82 (or 24% increase)	1
All SW, GWUDI, and MX Systems			
April 2021	2,919	636 (or 22% increase)	11
July 2021	2,928	640 (or 22% increase)	13

1. Count of sample points where subsequent sample event results exceeded 300 µg/L when the first sample event result did not (this count includes those sample points where the first sample event result was detected above the MRL, but was measured at less than the HA value).

Exhibit A6. Increase in the detection frequencies after the second sample event for manganese for surface water, ground water under the direct influence of surface water, and mixed water systems under UCMR 4.

Contaminant	Number of unique sample points with detection (>MRL) for the first and second sample events	Number of new sample points with detection (>MRL) after the second sample event [% increase in total number of sample points with detections]	Number of unique sample points with results >300 µg/L after the second sample event[1]
Surface Water Systems			
April 2021	2,896	235 (or 8% increase)	7
July 2021	2,904	236 (or 8% increase)	8
Ground Water Under the Direct Influence of Surface Water Systems (GWUDI) and Mixed Water Systems (MX)			
April 2021	384	40 (or 10% increase)	1
July 2021	387	41 (or 11% increase)	1
All SW, GWUDI, and MX Systems			
April 2021	3,280	275 (or 8% increase)	8
July 2021	3,291	275 (or 8% increase)	9

1. Count of sample points where subsequent sample event results exceeded 300 µg/L when the first and second sample event results did not (this count includes those sample points where the first and/or second sample event results were detected above the MRL, but were measured at less than the HA value).

Appendix 3 – Wholesaler and Consecutive Systems Data Analysis

EPA attempted to use recent UCMR data to compare analytical results between PWSs with consecutive connections (i.e., purchasers) and the PWSs from which they purchase water (i.e., wholesalers) based on a variety of assumptions. The occurrence rate for manganese (over 26,000 detections) was far higher than any other contaminants in UCMR 4 (other than the disinfection byproducts). Therefore, EPA chose manganese for further investigation because it is likely to be of greater utility for comparing numerical results.

As explained in EPA's discussion on Consecutive System Monitoring, UCMR does not collect the information necessary to precisely determine which wholesaler sample points (or which wholesalers, in general) are servicing the consecutive connections. Furthermore, UCMR has never imposed the requirement to have consecutive connections sample at a similar time as their wholesaler, or vice versa. Therefore, to make comparisons, EPA had to consult data sources from outside of UCMR and had to make some simplifying assumptions to aggregate the data. EPA's analysis began with the complete list of UCMR 4 manganese data from sample points that are identified as consecutive connections. There were about 2,400 consecutive connections that sampled for manganese in UCMR 4. To determine the wholesalers servicing each of these consecutive connections, EPA used the SDWIS/Fed database, which associates wholesalers with consecutive connections (EPA relied on the assumption that a consecutive system purchases water from a single wholesaler and does not blend that water with other sources). EPA then generated a list of all UCMR 4 manganese data from these wholesalers and paired the consecutive connection data with its corresponding wholesaler data. Next, EPA eliminated all consecutive connection-wholesaler data pairs for which there was not at least one detection (by either PWS) above the MRL, because comparison is not possible between two PWSs with no numeric results. This winnowing process resulted in 190 consecutive connection-wholesaler data pairs.

One-to-one comparison of the analytical results was not possible because (1) consecutive connections and their wholesalers typically had multiple sample events with sampling dates that differed by weeks, months, or even years and (2) many wholesalers have multiple UCMR sample points and the SDWIS/Fed database does not identify a specific wholesaler sample point for each consecutive connection. To work around these information gaps, EPA aggregated the data by averaging across sample events and then, for wholesalers, across appropriate sample points. An average value was calculated for each consecutive connection by averaging the results for all sample events. For purposes of averaging, a value of half the MRL (i.e., 0.2 µg/L) was used for sample events for which the result was less than MRL (i.e., "not detected"). An average value was calculated for each wholesaler sample point in the same fashion. In addition, if the wholesaler had multiple sample points, the results for wholesaler sample points with the same water types (e.g., GW, SW, GU, or MX) as the consecutive connection water type were also averaged together. This resulted in a single value for the wholesaler, weighted by sample point (i.e., each sample point was given the same weight, regardless of how many samples were collected). For each data pair, the average result for the wholesaler was compared to the average result for the consecutive connection (see Exhibit A7).

Exhibit A7. Differences between consecutive connections and wholesalers in average manganese results for UCMR 4.	
No. of instances where difference between consecutive connection and wholesaler average is WITHIN ±0.4 µg/L	60
No. of instances where consecutive connection average is LESS THAN the wholesaler average by more than 0.4 µg/L	65
No. of instances where consecutive connection average is GREATER THAN the wholesaler average by more than 0.4 µg/L	65
Total	190

EPA's interest in performing this comparative analysis is to see if the analytical results between consecutive connections and their wholesalers were similar or different. EPA considered the results "similar" if they differ by no more than the value of the MRL (i.e., ± 0.4 µg/L). Using this heuristic, about 32% of the manganese results between consecutive connections and their wholesalers were similar and 68% were different.

Different phenomena may account for the differences in occurrence data between wholesaler and consecutive systems. For example, contaminant occurrence is subject to change over time, and the PWSs may have collected their samples weeks, months, or even years apart. Complex water quality chemistry (e.g., differences in pH, alkalinity, water age) among the PWSs may also contribute to different occurrence, as may blending from multiple water sources. The purpose of the manganese analysis is to illustrate the potential for variability, but EPA cannot explain all the reasons for it. Such an explanation would require controlled, complex, parametric experiments via a research project rather than drawing conclusions based on an occurrence study such as UCMR.

Appendix 4 – Laboratory Correspondence for TOF

In 2020 and 2021 EPA contacted nine laboratories from five States to estimate laboratory capacity and pricing for TOP and TOF (when these measures were being considered for UCMR 5). Six of these laboratories responded to the request. Four of the laboratories that responded do not provide any services for TOP or TOF. One laboratory provided responses for Adsorbable Organic Fluorine and Extractable Organic Fluorine, and one laboratory provided estimates for both TOP and TOF. Three of the laboratories did not offer context for why they did or did not offer these analyses, nor did they provide information on if they had plans to offer them in the future; they simply stated whether they did or did not run the analyses, and provided cost estimates if they did. One laboratory indicated they did not have combustion ion chromatography (CIC) equipment installed at the time.

The laboratories contacted by EPA represented different regions of the country and included both small and large businesses. The geographic and size diversity was intended to provide EPA a picture of the capabilities across the country.

Appendix 5 – PWS and Laboratory Reporting Timeframe Data Analysis

Additionally, less than half of participating large PWSs chose to approve their data for UCMR 3 and UCMR 4 (Exhibit A8), as opposed to letting SDWARS automatically approve it for them. Thus, the revised timeframe for PWS data review under UCMR 5 will not impact the many large PWSs that have routinely chosen to not review and approve their data.

Exhibit A8. PWS and Laboratory Reporting Timeliness					
Timeframe	**UCMR 2**	**UCMR 3**	**UCMR 4 (all years)**	**2019/20**	**2020**
% of laboratories approving data within 60 days	**78.5**	**88**	**41[1]**	**46.5[1]**	**55**
% of laboratories approving data within 90 days	**89.5**	**95.5**	**57[1]**	**65[1]**	**78**
% of large PWSs approving data within 30 days[2]	**87**	**82**	**86**	**86**	**87.5**

[1] EPA considers the early years of UCMR 4 reporting by laboratories anomalous because there were challenges with the web-based reporting and laboratory attention to deadlines during those years. The challenges were addressed, as reflected in the improved turnaround in 2020. EPA considers the results for 2020 to be more representative of UCMR 4 laboratory timeliness. EPA is committed to delivering and maintaining a highly functional reporting system for UCMR 5 and to providing guidance and support for users of that system.

[2] Figures are for those large PWSs (approximately half of the total) that took action to review and approve their data; other large PWSs took no action but instead relied on the "default approval" approach