UCMR5 and PFAS Monitoring
February 25, 2021
Bradley Cahoon

Monrovia, CA
South Bend, IN
PURPOSE – WHY DO WE HAVE UCMR

Draft CCL → Final CCL

Draft UCMR → Final UCMR

UCMR Monitoring Results

Preliminary Regulatory Determinations

Final Regulatory Determinations

No further action if make decision to not to regulate (may develop health advisory).

Proposed Rule (NPDWR)

Final Rule (NPDWR)

Six Year Review of Existing NPDWRs

Public review and comment
UCMR HISTORY

UCMR1
2001 2002 2003

UCMR2
2008 2009 2010

UCMR3
2013 2014 2015

UCMR4
2018 2019 2020

UCMR5
2023 2024 2025
WHAT HAVE WE FOUND

4 UCMRs X 30 Analytes = 120 Analytes

UCMR1 – Perchlorate
UCMR2 – NDMA
UCMR3 – Hex Chrome, 1,4-Dioxane, PFAS
UCMR4 - not much
The proposed fifth Unregulated Contaminant Monitoring Rule (UCMR 5) was not published in the Federal Register and is undergoing review in accordance with the Regulatory Freeze Pending Review Memorandum that White House Chief of Staff Ronald Klain issued on January 20, 2021.
### TIMELINE – FINAL RULE WINTER 2021?

<table>
<thead>
<tr>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
</tr>
</thead>
<tbody>
<tr>
<td>After final rule publication: EPA/State primacy authorities (1) develop SMPs (including the national representative sample) (2) inform PWS/establish monitoring plans</td>
<td></td>
<td>Assessment Monitoring</td>
<td>Reporting and analysis of data</td>
<td>Complete reporting and analysis of data</td>
</tr>
</tbody>
</table>

- **2022**: After final rule publication, EPA/State primacy authorities (1) develop SMPs (including the national representative sample) (2) inform PWS/establish monitoring plans.
- **2023**: Assessment Monitoring.
- **2024**: Reporting and analysis of data.
- **2025** and **2026**: Complete reporting and analysis of data.
SYSTEMS IMPACTED

• Large systems (> 10K) = All SW, GWUDI, and GW systems

• Small Systems (3,300 – 10K) = All SW, GWUDI, and GW systems

• Very small systems (25 – 3,299) = 800 randomly selected SW, GWUDI, and GW systems

• Assessment Monitoring: A 12-month period from Jan. 2023 through Dec. 2025

• Sample Point Location: EPTDS
Only USEPA approved laboratories may submit UCMR5 data and obtain ADHS approval in Arizona.

- Five Step Process (Request, Registration, Application, PT Study, Approval)
- PT results + SIDWIS compatible EDD to pass
<table>
<thead>
<tr>
<th>25 PFAS by EPA 533</th>
<th>Acronym</th>
<th>MRL (ng/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>perfluorobutanoic acid</td>
<td>PFBA</td>
<td>5</td>
</tr>
<tr>
<td>perfluoropentanoic acid</td>
<td>PFPeA</td>
<td>3</td>
</tr>
<tr>
<td>perfluorohexanoic acid</td>
<td>PFHxA</td>
<td>3</td>
</tr>
<tr>
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<td>PFHxA</td>
<td>3</td>
</tr>
<tr>
<td>perfluoroctanoic acid</td>
<td>PFOA</td>
<td>4</td>
</tr>
<tr>
<td>perfluorononanoic acid</td>
<td>PFNA</td>
<td>4</td>
</tr>
<tr>
<td>perfluorodecanoic acid</td>
<td>PFDA</td>
<td>3</td>
</tr>
<tr>
<td>Perfluoroundecanoic acid</td>
<td>PFUnA</td>
<td>2</td>
</tr>
<tr>
<td>perfluorododecanoic acid</td>
<td>PFDa</td>
<td>3</td>
</tr>
<tr>
<td>perfluorobutanesulfonic acid</td>
<td>PFBS</td>
<td>3</td>
</tr>
<tr>
<td>perfluoropentanesulfonic acid</td>
<td>PFPeS</td>
<td>4</td>
</tr>
<tr>
<td>perfluorohexanesulfonic acid</td>
<td>PFHxS</td>
<td>3</td>
</tr>
<tr>
<td>perfluoroheptanesulfonic acid</td>
<td>PFHpS</td>
<td>3</td>
</tr>
<tr>
<td>perfluorooctanesulfonic acid</td>
<td>PFOS</td>
<td>4</td>
</tr>
<tr>
<td>1H,1H, 2H, 2H-perfluorohexane sulfonic acid</td>
<td>4:2FTS</td>
<td>3</td>
</tr>
<tr>
<td>1H,1H, 2H, 2H-perfluoroctane sulfonic acid</td>
<td>6:2FTS</td>
<td>5</td>
</tr>
<tr>
<td>1H,1H, 2H, 2H-perfluorodecane sulfonic acid</td>
<td>8:2FTS</td>
<td>5</td>
</tr>
<tr>
<td>4,8-dioxa-3H-perfluorononanoic acid²</td>
<td>ADONA</td>
<td>3</td>
</tr>
<tr>
<td>hexafluoropropylene oxide dimer acid</td>
<td>HFPO-DA</td>
<td>5</td>
</tr>
<tr>
<td>nonafluoro-3,6-dioxaheptanoic acid</td>
<td>NFDHA</td>
<td>2</td>
</tr>
<tr>
<td>perfluoro(2-ethoxyethane)sulfonic acid</td>
<td>PFEEESA</td>
<td>3</td>
</tr>
<tr>
<td>perfluoro-3-methoxypropanoic acid</td>
<td>PFMPA</td>
<td>3</td>
</tr>
<tr>
<td>perfluoro-4-methoxybutanoic acid</td>
<td>PFMBPA</td>
<td>3</td>
</tr>
<tr>
<td>9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid</td>
<td>9Cl-PF3ONS</td>
<td>2</td>
</tr>
<tr>
<td>11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid</td>
<td>11Cl-PF3OUdS</td>
<td>5</td>
</tr>
</tbody>
</table>
## METHODS & ANALYTES

### 4 PFAS by EPA 537.1

<table>
<thead>
<tr>
<th>Acronym</th>
<th>MRL (ng/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-ethyl perfluorooctanesulfonamidoacetic acid</td>
<td>NEtFOSAA 5</td>
</tr>
<tr>
<td>N-methyl perfluorooctanesulfonamidoacetic acid</td>
<td>NMeFOSAA 6</td>
</tr>
<tr>
<td>perfluorotridecanoic acid</td>
<td>PFTrDA 7</td>
</tr>
<tr>
<td>perfluorotetradecanoic acid</td>
<td>PFTeDA 8</td>
</tr>
</tbody>
</table>

### 1 Metal by EPA 200.7, SM 3120 B, or ASTM D1976-20

<table>
<thead>
<tr>
<th>Acronym</th>
<th>MRL (µg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium</td>
<td>Li 9</td>
</tr>
</tbody>
</table>
Representative Monitoring Plans (UCMR4)

**TYPE 1 = Groundwater Representative Monitoring Plan**

Multiple EPTSs → Representative EPDS

- All wells have same or no treatment
- All wells are from the same source/aquifer

**TYPE 2 = Representative Connections**

Multiple Purchased Water Inlets → Representative Inlet

**NOTE:** a Representative sample must be:

a) Highest volume producing well
b) Consistently in operation during UCMR4 schedule
GW PWS – Sample at the EPDS

Collect 2 times during your 12 month assigned monitoring period.

Collection events must be 5-7 months apart so ideally….

- January & July
- February & August
- March & September
- April & October
- May & November
- June & December
SW/GWUDI PWS – Sample at the EPDS

Collect 4 times during your 12 month assigned monitoring period.

Collection events must be 3 months apart so….

Jan, Apr July, Oct
Feb, May, Aug & Nov
Mar, Jun, Sept, Dec

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr</td>
<td>May</td>
<td>June</td>
<td></td>
</tr>
<tr>
<td>Jul</td>
<td>Aug</td>
<td>Sept</td>
<td></td>
</tr>
<tr>
<td>Oct</td>
<td>Nov</td>
<td>Dec</td>
<td></td>
</tr>
</tbody>
</table>
PFAS Sampling – EPA 537.1, EPA 533

BLANKS
Lithium Sampling – EPA 200.8

5-10 MIN. FLOW PRIOR TO COLLECTION
Reporting Requirements and Key Dates

➢ If like UCMR4

➢ > 3300 – 10K and 10K+ PWS

- APPROVED labs post data to SDWARS within 90 days of sample collection plus ALL QC data.

- PWS review / approve the data via CDX within 60 days of lab posting – automatic approval after 60 days

- Post any hits in your CCR

➢ All data publicly available in EPA National Contaminant Occurrence Database (NCOD)
UCMR5 CDX SET UP STEPS

1. CDX Account
2. SDWARS5
3. Profile Settings
4. Notification Letter
5. Add Contacts
6. Add Inventory
7. Confirm Schedule
8. Add Zip Codes
9. Nominate User
10. Confirm & Save
STEP 1 – CDX ACCOUNT

Log in to CDX

User ID

Password

Log In  Register with CDX

Forgot your Password?
Forgot your User ID?
Warning Notice and Privacy Policy

https://cdx.epa.gov/
STEP 2 – SDWARS5
STEP 3 – PROFILE SETTINGS

Application Profile Settings

Organization Name

PWS Name

Program Client ID

PWS Identification Number

Program

UCMR5

Proceed  Cancel
STEP 4 – NOTIFICATION LETTER

Notification Letter

RE: Unregulated Contaminant Monitoring for Surface Water (SW) and Ground Water Under the Direct Influence of Surface Water (GWUDI) Systems Serving over 10,000 Persons

Dear Public Water System:

The purpose of this letter is to notify your public water system (PWS) of its monitoring requirements under the revision to the Unregulated Contaminant Monitoring Rule (UCMR4). The U.S. Environmental Protection Agency (EPA) published the final rule detailing the upcoming monitoring of unregulated contaminants at PWSs on December 20, 2016, establishing a new list of contaminants to be monitored and the conditions for that monitoring. This rule benefits public health by providing EPA and other interested parties with scientifically valid data on the national occurrence of selected contaminants in drinking water. This dataset is one of the primary sources of information on occurrence, levels of exposure and population exposure EPA uses to develop regulatory decisions for contaminants in the public drinking water supply.

Under the UCMR4, all community water systems and non-transient, non-community water systems serving more than 10,000 persons must participate in Assessment Monitoring (AM). Our records indicate that your surface water system must monitor for all List 1 contaminants: metals, pesticides, semi-volatile organic chemicals (SOCs), alcohols (AM 1), haloacetic acids (HAA) (AM 2), and cyanotoxins (AM 3).

What must your PWS complete in SDWARS before December 31, 2017?

Similar to reporting under UCMR3, PWSs will use the Central Data Exchange (CDX) (https://cdx.epa.gov) to access the updated version of the Safe Drinking Water Accession and Review System (SDWARS). PWSs are required to:

- enter your official and technical contact information;
- review, and if necessary, update your sample location data by adding missing locations (e.g., Stage 1 and Stage 2 Disinfectants and Disinfection Byproduct Rules sampling locations for the HAA), indicating ineligible locations or editing basic information about the locations; and
- review and, if you wish, revise your monitoring schedule assigned by the EPA.

What must your PWS do during UCMR4 monitoring?

Your PWS must ensure that samples are properly collected, packaged and shipped to a UCMR4 EPA approved laboratory. Your PWS is also responsible for providing the data elements required for each sampling location (e.g., disinfection type, treatment type etc.) in SDWARS. Once data are posted to SDWARS by your laboratory, your PWS will have 60 days to review and act upon these results. If you choose not to review these results in this time frame, they will be considered final. Additionally, community water systems are required to address their UCMR monitoring results in their annual Consumer Confidence Report (CCR) whenever unregulated contaminants are detected (https://www.epa.gov/ccr).

Where can I find more information about UCMR4?

EPA recommends that you review the complete rule and supporting reference materials addressing UCMR4 at https://www.epa.gov/owd/water/fourth-unregulated-contaminant-monitoring-rule. The “Revisions to the Unregulated Contaminant Monitoring Rule (UCMR4) for Public Water Systems and Announcement of Public Meeting” [EPA-HQ-OW-2015-0218; FRL-9556-71-OW]; UCMR4 implementation fact sheets: Metals, Pesticides, SOC, and Alcohol (AM 1), Haloacetic Acids (HAA) (AM 2), Cyanotoxins (AM 3) and General Information; EPA approved laboratories for UCMR4 (the list will be updated as additional laboratories are approved); Outreach materials and announcements for stakeholder meetings and trainings.

Analytical results from UCMR4 are publically available in the National Contaminant Occurrence Database (NCOD); for a summary of the NCOD results, tips for querying NCOD, and health effects information please refer to the UCMR Data Summary document.

This notification letter is being sent to you as the official representative of this PWS. If someone else at your PWS needs this information, such as the plant operator, please provide them with a copy of this letter. Your cooperation in meeting these requirements is appreciated.

For questions regarding SDWARS or CDX, please contact the CDX Help Desk at 1-888-859-1995. For implementation or general questions, please contact the UCMR Message Center at 1-800-945-1915 or UCMR4HelpDesk.com. Thank you for your cooperation.
STEP 5 – ADD CONTACTS

All PWSs must have an “Official” contact defined as the administrative representative for the PWS and a “Technical” contact that may be contacted as an alternate representative. Specify additional contacts as “Other” contact types. Edit or delete these contacts using the appropriate links any time you experience changes in personnel. Click Add Contact to include a contact. Click the edit icon to revise the information for that contact. Click the delete icon to remove that contact.

You must assign a Technical and Official contact immediately. If you have just deleted either of these, you must add a new contact to comply with UCMPA. You cannot proceed in SDWARS until you assign a Technical and Official contact.

Add Contact

Contact Name | Contact Email | Affiliation/Organization | Contact Type | Actions

No Contacts found for the PWS.
CONFIRM CONTACTS

PWS Contacts

All PWSs must have an "Official" contact defined as the administrative representative for the PWS and a "Technical" contact that may be contacted as an alternate representative. Specify additional contacts as "Other" contact types. Edit or delete these contacts using the appropriate links any time you experience changes in personnel. Click Add Contact to include a contact. Click the edit icon to revise the information for that contact. Click the delete icon to remove that contact.

You must assign a Technical and Official contact immediately. If you have just deleted either of these, you must add a new contact to comply with UCMR4. You cannot proceed in SDWARS until you assign a Technical and Official contact.
STEP 6 – ADD INVENTORY

Designate and Review Your Inventory

If you wish to load your inventory from SDWARS3, click Upload Import Inventory drop-down and select Import Inventory from SDWARS3. You will be able to select which locations will get loaded. Select the 'Yes' under Sampling Required to identify applicable sample locations for UCMR4 monitoring. If you select 'No' under Sampling Required, you will be required to provide a reason. Click either the Facility ID or Sample Point ID to edit the inventory you specified. Click Add Facility or Add SP to Existing Facility to add inventory. You must click Save Changes for the information to be added to the database.

Note: Please ensure all required sample locations for UCMR4 are included in your inventory below. This includes all entry points to the distribution system and for those PWSs monitoring HAAs, their Stage 2 Disinfectants and Disinfection Byproducts Rule distribution system sites and intake(s) prior to treatment. An intake sample is not required for a consecutive connection (100% purchased).
IMPORT FROM SDWARS4

**Import Facilities and Sample Points from SDWARS4**

Select the sample locations from SDWARS3 which need to be loaded into SDWARS4. You must click Next > button to review your inventory before it is added to the database.

<table>
<thead>
<tr>
<th>ID</th>
<th>Facility ID</th>
<th>Facility Name</th>
<th>Facility Type</th>
<th>Water Type</th>
<th>Sample Point ID</th>
<th>Sample Point Name</th>
<th>Sample Point Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>000001</td>
<td>Treatment Plant #1</td>
<td>TP</td>
<td>GW</td>
<td>EP001</td>
<td>EP from TP #1</td>
<td>EP</td>
<td></td>
</tr>
<tr>
<td>00002</td>
<td>Treatment Plant #2</td>
<td>TP</td>
<td>GW</td>
<td>EP002</td>
<td>EP from TP #2</td>
<td>EP</td>
<td></td>
</tr>
</tbody>
</table>

**Import Facilities and Sample Points from SDWARS3**

Select the import button to add the inventory to the database.

<table>
<thead>
<tr>
<th>Facility ID</th>
<th>Facility Name</th>
<th>Facility Type</th>
<th>Water Type</th>
<th>Sample Point ID</th>
<th>Sample Point Name</th>
<th>Sample Point Type</th>
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<td>EP</td>
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<tr>
<td>00002</td>
<td>Treatment Plant #2</td>
<td>TP</td>
<td>GW</td>
<td>EP002</td>
<td>EP from TP #2</td>
<td>EP</td>
</tr>
</tbody>
</table>
MANUALLY ADD

Create a New Facility and Sample Point

1. You must complete every field marked with an (*). You must click Save Changes for the information to be added to the database.

- Facility ID*
- Facility Name*
- Facility Type*
- Water Type*
- Sample Point ID*
- Sample Point Name*
- Sample Point Type
  - Select Facility Type

Add Sample Point to Your Facility

2. You must complete every field marked with an (*).

Select an existing Facility to which the sample point (SP) will be added. If the facility you are looking for is not listed, you must create it by clicking Add Facility link on the previous page.

You must click Save Changes for the information to be added to the database.

- Facility*
- Sample Point ID*
- Sample Point Name*
- Sample Point Type
  - Select Facility

(SS.PWS.1103a)
STEP 7 – CONFIRM SCHEDULE

Review Your Schedule

Click the date specified for Sample Event 1 (SE1) if you wish to edit the sample schedule for the corresponding location. (For groundwater sample points, the second sampling may occur within 5-7 months from the original sampling. Surface water systems must sample every 3 months.)

Filter by:
- Facility ID:
- Facility Name:
- Facility Type:
- Water Type:
- Sample Point ID:
- Sample Point Name:

Monitoring Requirement: AM1

Facility ID: 00001  Facility Name: Treatment Plant #1  Facility Type: TP  Water Type: GW

<table>
<thead>
<tr>
<th>Sample Point ID</th>
<th>Sample Point Name</th>
<th>Sample Point Type</th>
<th>SEA1</th>
<th>SEA2</th>
<th>SEA3</th>
<th>SEA4</th>
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<tbody>
<tr>
<td>EP001</td>
<td>EP from TP #1</td>
<td>EP</td>
<td>Jan 2018</td>
<td></td>
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<td></td>
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<tr>
<td>EP002</td>
<td>EP from TP #2</td>
<td>EP</td>
<td>Jan 2018</td>
<td></td>
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</tbody>
</table>

Facility ID: 00002  Facility Name: Treatment Plant #2  Facility Type: TP  Water Type: GW

<table>
<thead>
<tr>
<th>Sample Point ID</th>
<th>Sample Point Name</th>
<th>Sample Point Type</th>
<th>SEA1</th>
<th>SEA2</th>
<th>SEA3</th>
<th>SEA4</th>
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<tbody>
<tr>
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<td>EP from TP #1</td>
<td>EP</td>
<td>Jan 2018</td>
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<td></td>
</tr>
<tr>
<td>EP002</td>
<td>EP from TP #2</td>
<td>EP</td>
<td>Jan 2018</td>
<td></td>
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</table>
STEP 8 – ADD ZIP CODES

Zip codes can be copy/pasted or typed.
STEP 9 – NOMINATE USER
### STEP 10 – CONFIRM & SAVE

<table>
<thead>
<tr>
<th>Facility ID: 91821</th>
<th>Facility Name: Oliver P. Roemer</th>
<th>Facility Type: IN</th>
<th>Water Type: SW</th>
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<tbody>
<tr>
<td><strong>Sample Point ID</strong></td>
<td><strong>Sample Point Name</strong></td>
<td><strong>Sample Point Type</strong></td>
<td><strong>SEH1</strong></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Facility ID: 91801</th>
<th>Facility Name: Well 54</th>
<th>Facility Type: TP</th>
<th>Water Type: GW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sample Point ID</strong></td>
<td><strong>Sample Point Name</strong></td>
<td><strong>Sample Point Type</strong></td>
<td><strong>SEA1</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility ID: 91813</th>
<th>Facility Name: 213 E, Walnut</th>
<th>Facility Type: DS</th>
<th>Water Type: MX</th>
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</thead>
<tbody>
<tr>
<td><strong>Sample Point ID</strong></td>
<td><strong>Sample Point Name</strong></td>
<td><strong>Sample Point Type</strong></td>
<td><strong>SEH1</strong></td>
</tr>
</tbody>
</table>
The UCMR 5 proposal fulfills a key commitment in EPA’s PFAS Action Plan by including the collection of drinking water occurrence data for a broader group of PFAS (i.e., building on the monitoring for six PFAS that took place under UCMR 3).

Known health effects
PFAS Have Been around for a Long Time.
UCMR3 vs. UCMR5 PFAS MONITORING

UCMR3: Only six PFAS and higher MRLs (ng/L)

- PFBS – 90
- PFHxA - 10
- PFHxS - 30
- PFOA - 20
- PFNA – 20
- PFOS – 40

UCMR5: 29 PFAS and lower MRLs of 2-8 ng/L
PFAS - UCMR3 OCCURANCE

UCMR3 NCOD Data
We now know that PFAS is far more widespread than what was identified during UCMR3

- Longer lists
- Lower reporting levels

![Chemical structure of PFOA]

*PFOA*
USEPA established the health advisory level of 70 ng/L for PFOA/PFOS, 2016.

At least 29 states have passed or proposed regulations monitoring some PFAS in state drinking water.

Maximum contaminant level (MCL), notification level (NL), action level (AL), health-based Value (HBV), or trigger level (TL), adopted by multiple states.

- AL – CA, OH, WA
- HBV – MI, MN
- MCL – MA, NH, NJ, NY, PA, VT, WI
- TL – OR
QUESTIONS

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