The Fourth Unregulated Contaminant Monitoring Rule (UCMR 4)

Region III

Office of Drinking Water and
Source Water Protection

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Overview

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Regulatory Process for Unregulated Contaminants

1996 Safe Drinking Water Act Amendments

- **Contaminant Candidate List (CCL)** – EPA to develop a list of contaminants that are known or anticipated to occur in drinking water and to publish the list every 5 years.

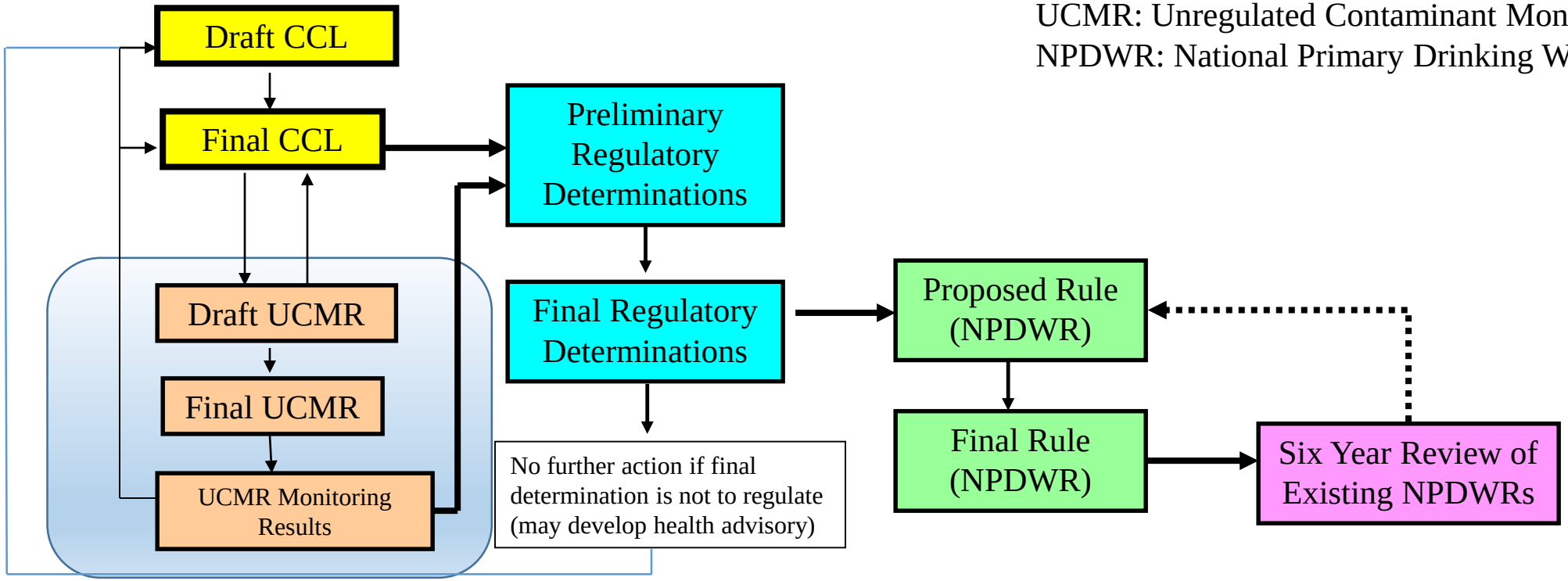
- **Unregulated Contaminant Monitoring Rule** – Once every five years EPA to issue a new list of no more than 30 unregulated contaminants to be monitored by public water systems (PWSs).

- **Regulatory Determination** – EPA must decide whether or not to regulate at least five CCL contaminants with a national primary drinking water regulation (NPDWR) after evaluating criteria specified under 1996 SDWA amendments; Publish determinations on a five year cycle.

- **Regulation Development** – If EPA decides to regulate a contaminant, the Agency has 24 months to propose and 18 months to finalize the health goal and the NPDWR.

Regulatory Process

CCL: Contaminant Candidate List
UCMR: Unregulated Contaminant Monitoring Rule
NPDWR: National Primary Drinking Water Regulation



Increased specificity and confidence in the supporting information

UCMR - Statutory Background

- 1986 Amendments established Unregulated Contaminant Monitoring Program (UCM Program)
  - State drinking water programs managed the original UCM program
  - PWSs serving >500 people were required to monitor
  - UCM Round 1 (1988-1992) and Round 2 (1993-1997)

UCMR - Statutory Background

- 1996 Amendments substantially revised the UCM Program, including:
  - Issue a list of up to 30 unregulated contaminants, once every 5 years
  - PWSs serving >10,000 people plus a nationally representative sample of PWSs serving ≤10,000 people to monitor
  - EPA pays the reasonable costs of testing and analysis for small systems
  - Store analytical results in the National Contaminant Occurrence Database for Drinking Water (NCOD)
  - UCMR1 (2001-2005), UCMR2 (2007-2011), UCMR3 (2012-2016)

- EPA directly implements UCMR with support from States

Objectives of UCMR

- Collect nationally representative occurrence data for unregulated contaminants that may require regulation under the SDWA
  - Consider data collected as part of future EPA decisions on actions to protect public health, e.g., regulatory determination, Health Advisory
  - Provide data to States, local governments and to the public for their use in decisions regarding public health protection

UCMR Approach

- Direct implementation by EPA, with state support through Partnership Agreements (PAs) negotiated between EPA Regions and States
- PWSs report data directly to EPA's Safe Drinking Water Accession and Review System (SDWARS)
- Monitoring required during vulnerable periods
- Participating laboratories must be approved directly by EPA (different from the State Certification Program)
- CCR includes detections during prior CY; PN provides the availability of UCMR sample results

UCMR Approach (continued)

Three Tiered Monitoring

- Assessment Monitoring (List 1) ~ 5,200 systems
  - A census of large water systems >10,000 persons served
  - Randomly selected of small water systems ≤10,000 (stratified, population weighted, and randomly selected)
- Screening Survey (List 2) ~ 1,200 systems
  - A census of very large water systems >100,000
  - Randomly selected of other water system sizes
- Pre-Screen Testing (List 3) ~ 800 systems
  - Limited number of water systems (could target vulnerable systems)

- Based on analytical methods, laboratory capacity, relevant universe of PWSs, and other considerations (e.g., cost/burden)

UCMR 4 only involves Assessment Monitoring

UCMR 4 - System Applicability

Assessment Monitoring (List 1)			
Contaminant	***Source Type***	***Serving > 10,000****	***Serving ≤ 10,000***
10 Cyanotoxins	SW & GUDI	All (~1,987)	800 randomly selected systems
20 Additional Chemicals**	SW, GUDI, & GW	All (~4,292)	800 randomly selected systems
Total		~4,292	1,600

* System size based on retail population reported in the SDWIS/FED as of December 31, 2015. Only CWS and NTNCWS need to monitor. TNCWS are not subject to UCMR 4.

** Only systems subject to the Disinfectants and Disinfection Byproduct Rule (D/DBPR) need to monitor for the haloacetic acids (HAAs) and indicators.

Selection of UCMR Contaminants

- Contaminants on the latest CCL have complete, validated drinking water analytical method(s) in time for rule proposal; are anticipated to have significant occurrence nationally; were not monitored under previous UCMR cycles
- Other contaminants with potential health effects of concerns that can be analyzed by the methods (cost effectiveness)
- Consider one or more of the following factors to facilitate regulatory determination:
  - High public concerns
  - Available health assessment and health effects
  - Active use (e.g., pesticides)
  - An occurrence data gap
- Consider workgroup and stakeholder input; cost effectiveness of method/ contaminant groups; laboratory capacity

UCMR 4

- Final rule published December 20, 2016

  https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule

- 10 cyanotoxins, 9 pesticides, 3 HAAs, 3 alcohols, 3 semi-volatile organic compounds, 2 metals

  EPA Ten-Day Health Advisory Value for Cyanotoxins :

  - Total microcystins (based on microcystin-LR):
    - 0.3 µg/L - bottle-fed infants & young children of pre-school age (<6 years of age)
    - 1.6 µg/L - all other ages
  - Cylindrospermopsin:
    - 0.7 µg/L - bottle-fed infants & young children of pre-school age (<6 years of age)
    - 3.0 µg/L - all other ages

  EPA Ten-Day Health Advisory Value for Manganese:

  - 300 µg/L - bottle-fed infants younger than 6 months
  - 1,000 µg/L - adults and children older than 6 months

UCMR 4 - Contaminants

EPA Method 546 (ADDa ELISA)
"total microcystins"
EPA Method 544 (SPE LC/MS/MS)
microcystin-LA
microcystin-LF
microcystin-LR
microcystin-LY
microcystin-RR
microcystin-YR
nodularin
EPA Method 545 (LC/ECI-MS/MS)
anatoxin-a
cylindrospermopsin

EPA Method 200.8 (ICP-MS) or alternate SM or ASTM
germanium
manganese
EPA Method 525.3 (SPE GC/MS)
alpha-hexachlorocyclohexane
Chlorpyrifos*
dimethipin
ethoprop
oxyfluorfen
profenofos
tebuconazole
total permethrin (cis-& trans-)
tribufos

EPA Method 552.3 (GC/ECD) or 557 (IC/ECI-MS/MS)
HAA5 (regulated)
HAA6Br
HAA9
EPA Method 541 (GC/MS)
1-butanol
2-propen-1-ol
2-methoxyethanol
EPA Method 530 (GC/MS)
butylated hydroxyanisole
o-toluidine
quinolone

* Green: contaminant not on CCL4

UCMR 4 Contaminants (cont.) - HAAs

Analyte	*MCLG*			
Bromochloroacetic acid *(BCAA)*	Not Available	**HAA6Br**		**HAA9**
Bromodichloroacetic acid *(BDCAA)*	Not Available			
Chlorodibromoacetic acid *(CDBAA)*	Not Available			
Tribromoacetic acid *(TBAA)*	Not Available			
Monobromoacetic acid *(MBAA)*	Not Available		**HAA5 = Group MCL 60 µg/L**	
Dibromoacetic acid *(DBAA)*	Not Available			
Dichloroacetic acid *(DCAA)*	0 µg/L			
Monochloroacetic acid *(MCAA)*	70 µg/L			
Trichloroacetic acid *(TCAA)*	20 µg/L			

HAA Indicators – TOC & Bromide

- PWSs are required to monitor for the indicators total organic carbon (TOC) and bromide in their source water at the same time as their HAA samples (or as close as is feasible)

- Entry points associated with 100% purchased water (consecutive connections) do not need to be sampled for TOC and bromide

- Consecutive systems that have their own sources are required to take TOC and bromide samples at those sources

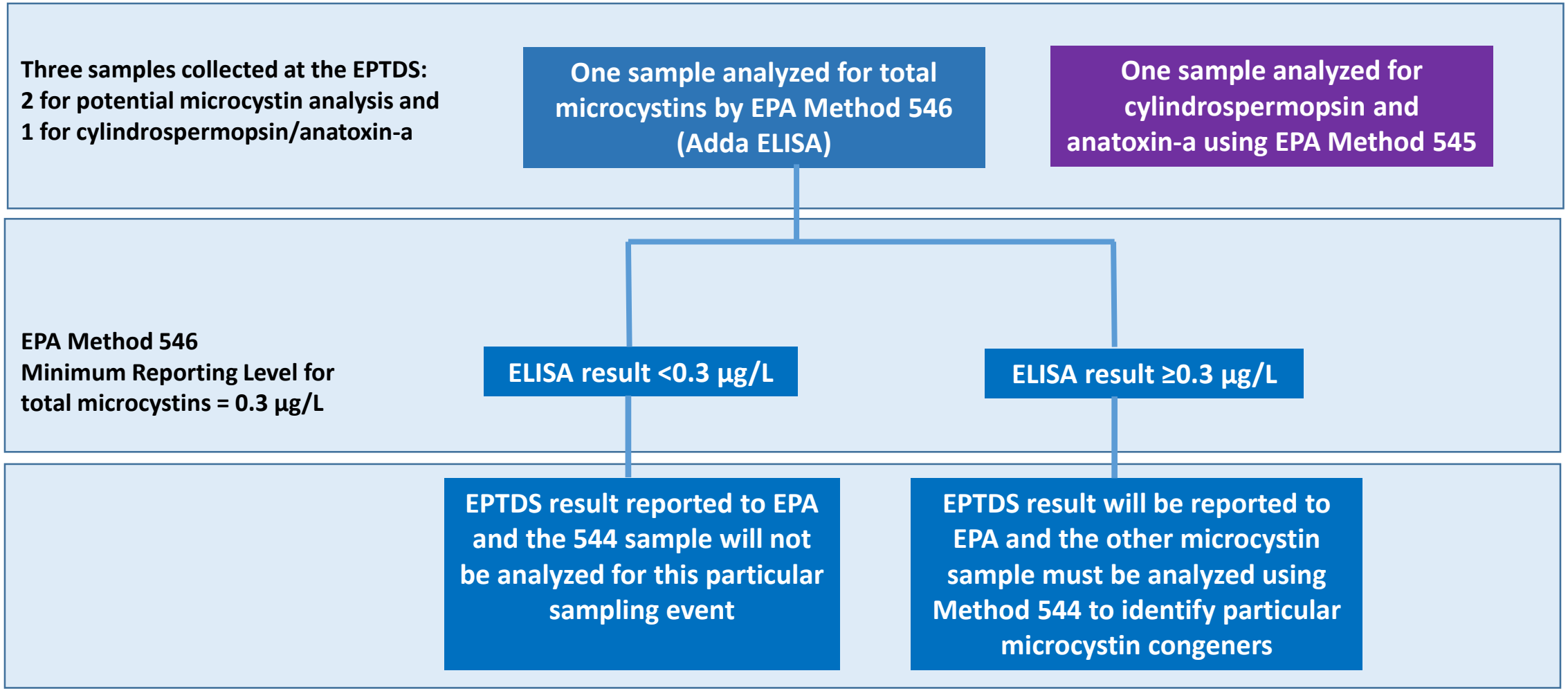
UCMR 4 – Sampling Frequency

- Monitoring Period: 1/1/2018 – 12/31/2020
- 10 Cyanotoxins (March –November)
  - SW and GWUDI Sources: twice/month for four consecutive months (8 sample events). Sample events must occur 2 weeks apart.
- 20 additional contaminants (year-round)
  - SW and GWUDI sources: four times during a consecutive 12-month monitoring period. Sample events must occur 3 months apart.
  - Ground water sources: two times during a consecutive 12-month monitoring period. Sample events must occurs 5-7 months apart.

UCMR 4 – Sampling Locations

- HAA Groups and Indicators
  - HAAs: collect samples at the D/DBPR locations (either routine or reduced) where HAA5 is sampled in the distribution system for compliance monitoring
  - Indicators (TOC & bromide): source water influent locations representing untreated water (without any treatment)
- Cyanotoxins and Remaining UCMR 4 contaminants
  - Entry point to the distribution system (EPTDS) after treatment is applied

Sampling Locations - Cyanotoxins



Sampling Locations – HAA Groups

- PWS HAA results will be reported for three groups (HAA5, HAA6Br, and HAA9)
- All individual HAAs must pass QC within a sample (same collection date) for summation by SDWARS
- Resample only locations that did not produce valid results for all analytes
- Comply with the UCMR 4 frequency requirement even if on reduced D/DBPR monitoring
- Use one lab for UCMR 4 and D/DBPR analysis IF the UCMR 4 approved lab is also certified to analyze compliance samples (using EPA Method 552.3 or 557) in your State; Otherwise, need to send UCMR 4 and D/DBPR samples to different labs
  - Note: EPA Method 552.2 for D/DBPR compliance monitoring is not approved for UCMR 4

Sampling Locations – TOC & Bromide

- SW & GWUDI systems
  - Subject to D/DBPR TOC sampling requirements use TOC source water sampling site(s)
    - Using conventional filtration
    - Not using conventional filtration but taking TOC source samples to reduce their D/DBPR monitoring
  - Not subject to D/DBPR TOC sampling requirements use LT2 source water sampling site(s)
  - Pure (unblended) GW sources are not required to have sampling site(s) per D/DBPR or LT2 unless required by the state

Sampling Locations – TOC & Bromide (continued)

- GW systems
  - Sample at influents entering their treatment train
  - Can use combined taps prior to treatment
  - If have an approved GWRMP only need to take indicator samples representing those EPs
  - Only take indicator samples from active wells at time of collection
    - Add a comment in SDWARS for the non-active locations

Two Types of Representative Monitoring

- Ground Water Representative Monitoring Plans (GWRMPs)
  - large ground water systems with multiple EPTDSs can sample at representative sampling locations rather than at each EPTDS if prior approval is received

- Representative Connections
  - systems that purchase water with multiple connections from the same wholesaler may select one representative connection from that wholesaler

UCMR 4 – Data Reporting

Large Systems:

- Within 120 days from sample collection: Laboratories post monitoring results to EPA's electronic reporting system – Safe Drinking Water Accession and Review System (SDWARS)
- Within 60 days from lab posting of data: review and approve data (default approval after 60 days)

Small Systems:

- EPA contracted labs report monitoring results to SDWARS (within 60 days of sample collection) and EPA reviews and pays for the data submitted by the contracted labs
- Contact EPA if there are any concerns with the data

Large & Small System - Reporting Data Elements Section 141.35(e)

1. Public Water System Identification (PWSID)
2. Public Water System Name
3. Public Water System Facility Identification Code
4. Public Water System Facility Name
5. Public Water System Facility Type
6. Water Source Type
7. Sampling Point Identification Code
8. Sampling Point Name
9. Sampling Point Type Code
10. Disinfectant Type (more details)
11. Treatment Information (more details)
12. Disinfectant Residual Type
13. Sample Collection Date

Large & Small System - Reporting Data Elements Section 141.35(e) (cont.)

14. Sample Identification Code
15. Contaminant
16. Analytical Method Code
17. Extraction Batch Identification Code
18. Extraction Date
19. Analysis Batch Identification Code
20. Analysis Date
21. Sample Analysis Type (more details)
22. Analytical Results – Sign
23. Analytical Results – Measured Value
24. Additional Value
25. Laboratory Identification Code

Large & Small System - Reporting Data Elements Section 141.35(e) (cont.)

26. Sample Event Code
27. Bloom Occurrence
28. Cyanotoxin Occurrence
29. Indicator of Possible Bloom – Treatment
30. Indicator of Possible Bloom – Source Water Quality Parameters

Risk Communication

- EPA plans to post UCMR 4 sample results in the NCOD at its Website starting this fall and will provide periodic updates thereafter

- Reference Concentration
  - Intended to provide, where possible, context around the detection of a particular UCMR contaminant above the MRL
  - Is not an “action level” where particular actions need to be taken
  - Does not indicate EPA’s intent to establish a future drinking water regulation at this or any other level

Risk Communication – CCR

- Community water systems (CWSs) are required to include unregulated contaminants detected during previous CY in their Consumer Confidence Report (CCR)
- Detected unregulated contaminants must contain the average and range at which the contaminant was detected
- The CCR may include a brief explanation of why the CWS is monitoring for unregulated contaminants and this explanation can provide context for reference concentrations
- TOC & bromide are not UCMR 4 contaminants (only indicators) and therefore are not required to be reported on a CCR

Risk Communication - CCR (cont.)

- Recommend that the UCMR 4 results (include UCMR 4 HAA6Br & HAA9 results) be reported in the CCR in a section separate from the compliance monitoring results for regulated contaminants.
- Since CCR requirements for UCMR apply to detection of unregulated contaminants, and since HAA5 is regulated, UCMR 4 HAA5 results do not need to be reported on CCR.
- If the UCMR 4 HAA5 compliance monitoring (i.e., if the monitoring serves both purposes), those results would be reported on the CCR as D/DBPR data.

Risk Communication – PN

- Under the Public Notification (PN) rule, community water systems (CWSs) and non-transient non-community water systems (NTNCWs) must notify persons served of the availability of the UCMR 4 results no later than 12-months after monitoring results are known
- Follows Tier 3 public notice: notice must identify a person and the telephone number to contact for information on monitoring results
- CWSs may include their public notice within their CCRs if timing suits

Questions?