



The Third Unregulated Contaminant Monitoring Rule (UCMR 3)

OGWDW, SRMD

Technical Support Center

Cincinnati, Ohio

September 2012

DISCLAIMER: This Webinar describes UCMR 3 and the regulations which establish legally binding requirements. This Webinar does not substitute for those provisions or regulations.



Presentation Overview

- Introduction to UCMR
- Systems Subject to UCMR 3
- Contaminants to be Monitored
- Sample Collection
- Reporting Requirements
- Contacts and Resources



Introduction to UCMR

- History of the Safe Drinking Water Act
 - Amendments
- Objective of the UCMR Program
- Regulatory Process
- History of UCMR
- Time Frame of UCMR 3
- Time Line of UCMR 3



3



Safe Drinking Water Act

- Passed in 1974, amended in 1986 and 1996
- Authorized EPA to set enforceable health standards for contaminants in drinking water
 - National Primary Drinking Water Regulations (NPDWRs)
- Outlined a sound science approach to NPDWR development that required consideration of:
 - Occurrence Data
 - Health Effects Data
 - Cost Benefit Analysis

4



SDWA Amendments

- 1986 SDWA amendments were the basis for the original Unregulated Contaminant Monitoring Program
 - State drinking water programs managed the original UCM program
 - Public Water Systems (PWSs) serving > 500 people were required to monitor

5



SDWA Amendments

- 1996 SDWA amendments redesigned the UCM program and included these requirements:
 - Monitor no more than 30 contaminants per 5-year cycle
 - Monitor only a representative sample of PWSs serving 10,000 or fewer people
 - Store analytical results in the National Drinking Water Contaminant Occurrence Database (NCOD)
 - Direct implementation – EPA managed program in partnership with States
 - EPA funds testing/analytical costs for small PWSs

6

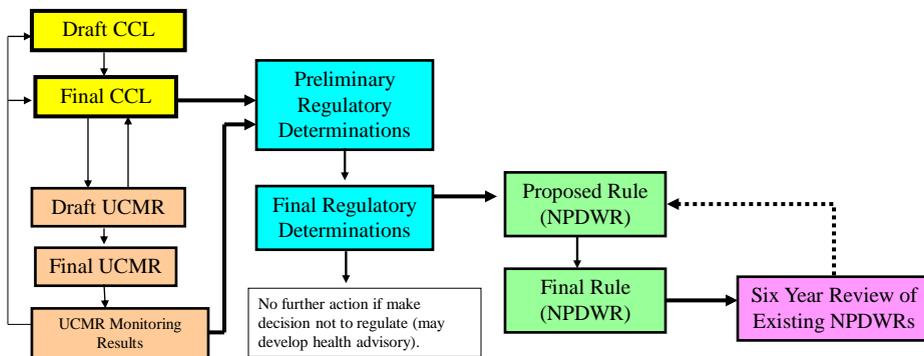


Objective of UCMR Program

- Collect occurrence data for suspected drinking water contaminants that do not have health-based standards set under SDWA
- Occurrence information is used to support future regulatory decision-making
 - Supports the Administrator’s determination of whether (or not) to regulate a contaminant under the drinking water program



Regulatory Process



At each stage, need increased specificity and confidence in the type of supporting data used (e.g. health and occurrence).



History of UCMR

- UCMR 1 (2001-2005)
 - (64 FR 50556)
- UCMR 2 (2007-2011)
 - (72 FR 368)
- UCMR 3 (2012-2016)
 - (77 FR 26072)

9



Time Frame of UCMR 3

- December 31, 2010 – Applicability date
 - State Monitoring Plans developed (including national representative sample based on Safe Drinking Water Information System/Fed population)
- March 3, 2011 – Proposed rule published
 - Lab approval program begins
- May 2, 2012 – Final rule published
 - States/EPA begin to inform PWSs and finalize monitoring plans

10



Time Line of UCMR 3 Activities

2012	2013	2014	2015	2016
Pre-monitoring Implementation <ul style="list-style-type: none">• Lab Approval• Notifications• SDWARS Registration• Inventory• Schedule	Sampling and Reporting Period <p>One consecutive 12-month period during January 2013 - December 2015 (monitoring can span more than one calendar year, as long as conducted during a consecutive 12-month period).</p>			Post-monitoring Phase <ul style="list-style-type: none">• Complete Resampling• Conclude Data Reporting• Finalize NCOD• Continue Enforcement

11



Systems Subject to UCMR 3

- System Definitions and Sizes
- System Applicability
 - Applicability Changes from UCMR 2
- System Participation
 - Small water systems
 - Large water systems



12



System Definitions and Sizes

- **Public water system (PWS)** provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year.
 - **Community Water System (CWS)** supplies water to the same population year-round.
 - **Non-Transient Non-Community Water System (NTNCWS)** regularly supplies water to at least 25 of the same people at least six months per year, but not year-round. Examples include schools, factories, office buildings, and hospitals that have their own water systems.
 - **Transient Non-Community Water System (TNCWS)** provides water in a place such as a gas station or campground where people do not remain for long periods of time.

13



UCMR 3 System Applicability

Assessment Monitoring (List 1 Contaminants)		
System Type	Systems Serving > 10,000	Systems Serving ≤ 10,000
CWS & NTNCWS	All systems (~4,200)	800 randomly selected systems
TNCWS	No requirements	No requirements
Screening Survey (List 2 Contaminants)		
System Type	Systems Serving > 10,000	Systems Serving ≤ 10,000
CWS & NTNCWS	All systems (~410) serving more than 100,000, and ~320 randomly selected systems serving 10,001 to 100,000	480 randomly selected systems
TNCWS	No requirements	No requirements
Pre-Screen Testing (List 3 Contaminants)		
System Type	Systems Serving > 1,000	Systems Serving ≤ 1,000
CWS, TNCWS & NTNCWS	No requirements	800 randomly selected systems

14



UCMR 3 Applicability Changes



- UCMR 3 applicability based on retail population served

- Retail customers served directly by PWS, as reported to Safe Drinking Water Information System (SDWIS/Fed) on December 31, 2010
- No longer includes the population served by any consecutive system(s) receiving all or part of its finished water from a different system



- Includes transient non-community systems for Pre-Screen Testing

15



Small System Participation

- Small PWSs serving 10,000 or fewer people are not responsible for the costs associated with analyses and shipping
 - EPA engages States and PWSs to collect samples for List 1 and List 2
 - EPA collects samples for List 3
 - EPA coordinates sample analyses with contracted laboratories and funds the analyses
 - EPA examines the results along with quality control data and generates reports

16



Large System Participation

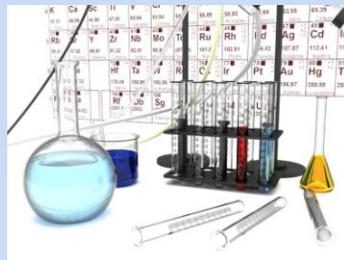
- Large PWSs serving more than 10,000 people are responsible for the costs associated with analyses
 - PWS coordinates sample analyses with an approved laboratory, and that lab posts the data to the Safe Drinking Water Accession and Review System (SDWARS 3)
 - http://cdx.epa.gov/epa_home.asp
 - PWS reviews and can act upon (e.g., approve) data in SDWARS 3

17



Contaminants to be Monitored

- UCMR 3 Monitoring Lists
 - Assessment Monitoring
 - Screening Survey
 - Pre-Screen Testing



18



UCMR 3 Monitoring Lists

- **Assessment Monitoring** (List 1 Contaminants) relies on common analytical method technologies used by drinking water laboratories.
- **Screening Survey** (List 2 Contaminants) monitoring uses more specialized analytical method technologies not as commonly used by drinking water laboratories.
- **Pre-Screen Testing** (List 3 Contaminants) relies on newer method technologies not as commonly used by drinking water laboratories.

For UCMR 3 these PWSs are ground water systems that:

- Serve less than 1,000 people
- Do not disinfect
- Are located in vulnerable areas of karst or fractured bedrock

19



UCMR 3 List 1 Contaminants

Assessment Monitoring: List 1 Contaminants	MRL (µg/L)
Volatile Organic Compounds – EPA Method 524.3	
chloromethane (methyl chloride)	0.2
bromomethane (methyl bromide)	0.2
chlorodifluoromethane (HCFC-22)	0.08
bromochloromethane (halon 1011)	0.06
1,1-dichloroethane	0.03
1,2,3-trichloropropane	0.03
1,3-butadiene	0.1
Synthetic Organic Compound – EPA Method 522	
1,4-dioxane	0.07

EPA will pay for all analytical and shipping costs associated with List 1 monitoring at small systems (≤ 10,000). 20



UCMR 3 List 1 Contaminants

Assessment Monitoring: List 1 Contaminants	MRL (µg/L)
Perfluorinated Compounds– EPA Method 537	
perfluorooctane sulfonic acid (PFOS)	0.04
perfluorooctanoic acid (PFOA)	0.02
perfluorononanoic acid (PFNA)	0.02
perfluorohexane sulfonic acid (PFHxS)	0.03
perfluoroheptanoic acid (PFHpA)	0.01
perfluorobutanesulfonic acid (PFBS)	0.09
Oxyhalide Anion – EPA Method 300.1; SM 4110D; ASTM D658-08	
chlorate	20

EPA will pay for all analytical and shipping costs associated with List 1 monitoring at small systems (≤ 10,000). 21



UCMR 3 List 1 Contaminants

Assessment Monitoring: List 1 Contaminants	MRL (µg/L)
Metals – EPA Method 200.8; SM 3125; ASTM D5763-10	
cobalt	1
molybdenum	1
strontium	0.3
vanadium	0.2
chromium	0.2
Chromium-6 – EPA Method 218.7	
chromium-6	0.03

EPA will pay for all analytical and shipping costs associated with List 1 monitoring at small systems (≤ 10,000).

22



UCMR 3 List 2 Contaminants

Screening Survey: List 2 Contaminants	MRL (µg/L)
Hormones – EPA Method 539	
17-β-estradiol	0.0004
17-α-ethynylestradiol (ethinyl estradiol)	0.0009
16-α-hydroxyestradiol (estriol)	0.0008
equilin	0.004
estrone	0.002
testosterone	0.0001
4-androstene-3,17-dione	0.0003

EPA will pay for all analytical and shipping costs associated with List 2 monitoring at small systems (≤ 10,000).

23



UCMR 3 List 3 Contaminants

Pre-Screen Testing: List 3 Contaminants	Detection Assay
Microbiological Contaminants – EPA Method 1615	
enterovirus	Cell culture; qPCR
norovirus	qPCR
Microbiological Indicators	
total coliforms	
<i>E. coli</i>	
<i>Enterococci</i>	
bacteriophage	
aerobic spores	

EPA will collect the samples from List 3 sampling locations, and will pay for all analytical and shipping costs associated with viruses and indicators at these small systems (≤ 1,000).

24



Sample Collection

- Timing and Frequency of Monitoring
- Sampling Locations
 - Distribution Maximum Residence Time Locations
 - Representative Intakes
- Sample Collection Procedures
- Selecting and Working with a Laboratory



25



Timing of Monitoring

- PWSs must monitor during a consecutive 12-month period between 2013 – 2015
- EPA established a monitoring schedule for all PWSs
 - Large PWSs can revise their pre-determined schedule in SDWARS by November 29, 2012, independently, or after that date with EPA permission.
 - After November 29, 2012 PWSs must submit request to UCMR Sampling Coordinator
 - UCMR_Sampling_Coordinator@epa.gov

26



Frequency of Monitoring

- Number of times a water system collects samples is directly related to the sample point source
 - **Surface water and “ground water under the direct influence of surface water”** – must monitor quarterly during their 12-month schedule (sample three months apart)
 - **Ground water** – must monitor twice a year during their 12-month schedule (sample five to seven months apart)



27



UCMR 3 Sampling Locations

Contaminant Type	Sampling Location Type
Assessment Monitoring: List 1 Contaminants	
Volatile Organic Compounds	EPTDS
Synthetic Organic Compound (1,4-dioxane)	EPTDS
Perfluorinated Compounds	EPTDS
Oxyhalide Anion (chlorate)	EPTDS and DSMRT
Metals	EPTDS and DSMRT
Chromium-6	EPTDS and DSMRT
Screening Survey: List 2 Contaminants	
Hormones	EPTDS
Pre-Screen Testing: List 3 Contaminants	
Viruses	EPTDS

28



DSMRT Monitoring Locations

- Distribution Maximum Residence Time
 - UCMR 3 defines DSMRT as an active point (i.e., a location that currently provides water to customers) in the distribution system where the water has been in the system the longest relative to the entry point to the distribution system (EPTDS)
 - If systems are unsure of their DSMRT location and are subject to the Stage 2 Disinfection Byproducts Rule, they can use their total trihalomethanes (TTHM) highest concentration sampling site(s) as their DSMRT sampling site(s)



29



Representative Sampling Locations

- Representative Intakes from Wholesaler
 - PWSs that purchase water with multiple connections from the same wholesaler may select one representative connection from that wholesaler
 - Must receive water from same source for all intakes it represents
 - Must represent highest annual volume connection
 - If representative connection is not available for scheduled sampling, an alternate **highest volume** representative connection must be sampled



30



Sample Collection Procedures

- Recommendations for Sample Collection
 - Consult your contracted laboratory for specifics
 - Sample early enough in the day to allow for overnight delivery
 - Sample Monday through Thursday to allow for overnight delivery
 - Do not collect samples on Friday, Saturday, or Sunday

31



Sample Collection Procedures

- Fresh pair nitrile gloves
- Collect from spigot, faucet or tap
- Do not overflow bottles
 - VOCs, fill to meniscus so there is no air bubble
- Cap and invert to mix dechlorinating agent and/or preservatives
- Fill out sample labels and all forms
- Do not composite samples

32



Sample Collection Procedures

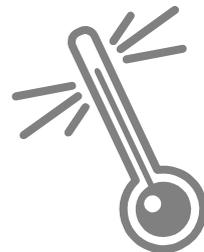
- Hormone samples
 - Wear nitrile gloves, avoid breathing directly on sample, and avoid direct contact with sample
- VOC and hormone samples
 - Remove tap aerators
- Chlorate samples
 - If you use chlorine dioxide as a disinfectant, sparge unpreserved sample at time of collection

33



Sample Collection Procedures

- Temperature
 - Samples must arrive at the lab $\leq 10^{\circ}\text{C}$ (50°F)
 - Warm weather sampling precaution
 - Chill samples at PWS prior to shipment
 - Do NOT freeze samples
 - Ship samples on ice or with chemical ice packs
 - Ship to arrive at lab within 48 hours of collection



34



Sample Collection Procedures

Contaminant Type	Collect Field Blanks
Assessment Monitoring: List 1 Contaminants	
Volatile Organic Compounds	Yes
Synthetic Organic Compound (1,4-dioxane)	No
Perfluorinated Compounds	Yes
Oxyhalide Anion (chlorate)	No
Metals	Yes
Chromium-6	No
Screening Survey: List 2 Contaminants	
Hormones	Yes
Pre-Screen Testing: List 3 Contaminants	
Viruses	No

35



Field Blank Collection Procedures

Contaminant	Analytical Method	Collection Requirement for Field Blanks
Metals	EPA 200.8 ASTM D5673-10 SM 3125	Lab fills sample bottle with reagent water and preservatives, seals and ships with field sample bottles. At sampling site, sampler opens the bottle, then seals and ship with field sample bottles.
VOCs	EPA 524.3	Duplicate field blanks required. Labs fills two sample bottles with reagent water and preservatives, seals and ships with field sample bottles. DO NOT OPEN in the field, these field blanks must remain sealed until analysis.
PFCs	EPA 537	Lab fills sample bottle with reagent water and preservatives, seals and ships with field sample bottles. Lab also include an empty sealed bottle (no preservatives). At sampling site, sampler opens the bottle containing reagent water, pours it into the empty bottle, then seals and ships with field sample bottles
Hormones	EPA 539	

36



Sample Collection Procedures

- Resampling is required if sample:
 - Fails to meet collection/analytical QC requirements
 - Lost or damaged during shipping
 - Broken during processing at lab or subject to other lab error
- Resamples must be taken within 30 days of the laboratory notifying the water system of the issue

37



Communication with Laboratory

- Samples must be analyzed by EPA-approved laboratories
 - <http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/laboratories.cfm>
- Clarify sampling bottles and volumes needed
- Communicate schedule so labs can prepare and mail sampling kits prior to monitoring date
- Inform labs when samples shipped
- Confirm arrival of undamaged samples at lab

38



Reporting Requirements

- Where to Report
- Reporting Prior to Monitoring
- Data Reporting
- CCR and PN Requirements
- EPA use of UCMR Data



39



Where to Report

- Safe Drinking Water Accession and Review System for UCMR 3 (SDWARS 3)
 - http://cdx.epa.gov/epa_home.asp
- Central Data Exchange (CDX) account required to access SDWARS
- Contact UCMR Sampling Coordinator if your water system does not have an active CDX account

To...	UCMR_Sampling_Coordinator@epa.gov
Cc...	
Subject:	UCMR 3 CDX Account Question

40



Reporting Prior to Monitoring

- EPA sent notification letters to PWSs in non-partnering States by May 9, 2012; partnering States notified their systems
 - Large systems may review and edit their schedules in SDWARS until November 29, 2012
- After this date water systems must contact the UCMR Sampling Coordinator to:
 - Edit their monitoring schedule
 - Inform EPA of changes in applicability or monitoring status

41



Reporting Prior to Monitoring

- Contact information (SDWARS)
 - PWS technical and official contacts
 - Name
 - Organization/Affiliation
 - Mailing address
 - Phone number
 - Email address
- Ensures that water systems receive automated notices/reminders from SDWARS regarding their monitoring schedule and data review

42



Reporting Prior to Monitoring

UCMR 3 Reporting Elements		
Public Water System Identification Code	Disinfectant Type	Sample Analysis Type
Public Water System Facility Identification Code	Sample Collection Date	Analytical Results – Sign
Water Source Type	Sample Identification Code	Analytical Result – Value
Sampling Point Identification Code	Contaminant	Laboratory Identification Code
Sampling Point Type Identification Code	Analytical Method Code	Sample Event Code

43



Reporting Prior to Monitoring



USPS Zip Code Information

- As a one-time reporting requirement, PWSs must report the zip code(s) for **all** retail customers being served drinking water by the water system

44



UCMR 3 Reporting Element

Data Element	Definition
 Disinfectant Type	All of the disinfectants that have been added by the PWS to the water being sampled. To be reported by systems for each sampling point, with possible choices being: CLGA – Gaseous chlorine CLOF – Offsite Generated Hypochlorite (stored as a liquid form) CLON – Onsite Generated Hypochlorite (no storage) CAGC – Chloramine (formed from gaseous chlorine) CAOF – Chloramine (formed from offsite hypochlorite) CAON – Chloramine (formed from onsite hypochlorite) CLDO – Chlorine dioxide OZON – Ozone ULVL – Ultraviolet Light OTHD – All Other Types of Disinfectant NODU – No Disinfectant Used

45



UCMR 3 Data Reporting

- **Samples must be analyzed by EPA-approved laboratories**
 - EPA-approved laboratories will be listed on the UCMR Website at:
<http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/laboratories.cfm>
- **Within 120 days of sample collection**
 - Laboratories post data to SDWARS
- **Within 60 days of lab posting data**
 - PWSs review and approve the data
 - If the PWS has not taken action after 60 days, the data are considered approved and ready for State and EPA review

46



CCR and PN Requirements

- Water systems applicable to UCMR 3 should also be aware of related requirements:
 - Consumer Confidence Reports

Suggested explanation of monitoring:

Unregulated contaminants are those that don't yet have a drinking water standard set by USEPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a standard.

More information on CCR requirements:

 <http://water.epa.gov/lawsregs/rulesregs/sdwa/ccr/index.cfm>

- Public Notifications

- <http://water.epa.gov/lawsregs/rulesregs/sdwa/publicnotification/upload/PNrevisedPNHandbookMarch2010.pdf>

47



EPA Use of UCMR 3 Data

- EPA should update the data set quarterly in the National Contaminant Occurrence Database (NCOD)
 - <http://water.epa.gov/scitech/datait/databases/drink/ncod/databases-index.cfm>
- Data will continue to be added and may be corrected upon further review
 - Use caution when interpreting the data before the dataset is complete (mid-late 2016)
- UCMR 3 is one of the primary sources of occurrence and exposure information the agency uses to develop regulatory determinations for contaminants of concern

48



Contacts and Resources

- UCMR 3 Contacts
- More Information



49



UCMR 3 Contacts

- UCMR Questions?
 - UCMR Message Center: (800) 949-1581
 - Email: UCMR3@glec.com
- Safe Drinking Water Questions?
 - Safe Drinking Water Hotline: (800) 426-4791
- CDX/SDWARS Help?
 - CDX helpdesk: (888) 890-1995
 - Email:

To...	<input type="text" value="epacdx@csc.com"/>
Cc...	<input type="text"/>
Subject:	<input type="text" value="UCMR 3 SDWARS Help"/>

50



UCMR 3 Contacts

UCMR Sampling Coordinator

To...	UCMR_Sampling_Coordinator@epa.gov
Cc...	
Subject:	UCMR 3 Sampling Schedule Question

UCMR Laboratory Approval Coordinator

To...	UCMR_Sampling_Coordinator@epa.gov
Cc...	
Subject:	UCMR 3 Laboratory Approval Question



More Information

UCMR 3 Web Pages:

<http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/>

- Links to:
 - Basic Information
 - Laboratories
 - Methods & Contaminants
 - Reporting

Unregulated Contaminant Monitoring Rule 3 (UCMR 3)

UCMR 3 Home | Basic Information | Methods & Contaminants | Laboratories | Reporting

The third Unregulated Contaminant Monitoring Rule (UCMR 3) was signed by EPA Administrator, Lisa P. Jackson on April 16, 2012. As finalized, UCMR 3 will require monitoring for 30 contaminants using EPA and/or consensus organization analytical methods during 2013-2015. Together EPA, States, laboratories and public water systems (PWSs) will participate in UCMR 3.

Federal Register Notice

Final Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 3) for Public Water Systems, May 2, 2012

The UCMR design divides contaminants into three types of monitoring. UCMR 3 includes monitoring under each of the three lists, as follows: