

Emerging Drinking Water Regulations That May Affect You as Operator

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Disclaimer

The information, contents, and opinions contained and/or expressed in this presentation do not represent a formal legal analysis and viewpoint of the regulations. Regulations, rules, bills mentioned herein are not meant to be complete/comprehensive. Only some highlights are presented for discussion.

Acronyms Used

- DW = Drinking Water
- EPA = United States Environmental Protection Agency
- SWRCB DDW (or SWRCB) = Division of Drinking Water of State Water Resources Control Board
- LCR = Lead and Copper Rule
- POE/POU = Point-of-Entry/Point-of-Use
- LSL = Lead Service Line
- AL = Action Level
- TL – Trigger Level
- MonP = Monitoring Period
- FFA = Find-and-Fix Assessment
- CCT = Corrosion Control Treatment
- PFAS = Per- and Poly-fluoroalkyl Substances
- MP = Microplastics
- UC = Unregulated Contaminant
- and, many many more!

Presentation Outline

- DW Regulations – Why Operators Care?
- Emerging Federal Drinking Water Regulations
 - Per- and polyfluoroalkyl substances (PFAS)
 - Fifth Unregulated Contaminant Monitoring Rule (UCMR5)
 - Lead & Copper Rule (long-term revision)
- Emerging State Drinking Water Regulations
 - Per- and polyfluoroalkyl substances (PFAS)
 - Microplastics
 - POU Treatment
- Operator's Role to Emerging DW Regulations

DW Regulations – Why Operators Care?

- Standards
 - Health protection
 - Aesthetic-driven
 - More than MCL
- Assurance
 - Treatment performance consistency
 - Operations consistency
 - Potable water supply availability
- Liability
 - Compliance
 - Reporting and notifications
- What else?

Emerging Federal DW Regulations

- Federal Level
 - Congress bills
 - USEPA plans and actions
- Existing regulations
 - TCRs, SWTRs, GWR, DBPRs, LCRs, UCMRs, and many more etc.
- Emerging Regulations
 - PFAS
 - UCMR5
 - Revisions to Lead and Copper Rule

Federal Actions on PFAS in DW

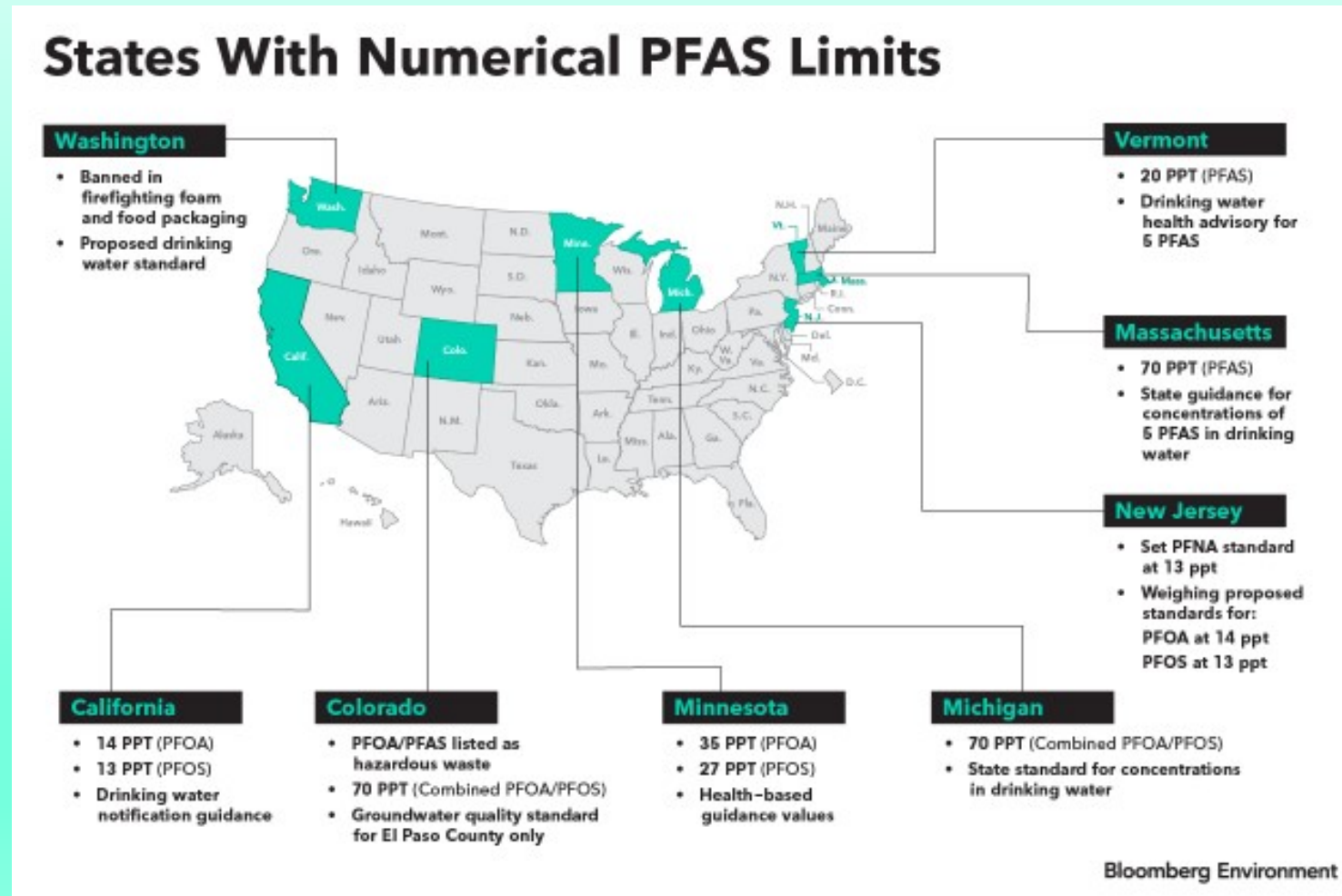
Congress Bills (2019 – 2020)

- Numerous bills introduced in the 116th Congress
 - H.R. 2377, The Protect Drinking Water from PFAS Act, 4/29/19
 - Directs EPA to promulgate a national primary drinking water regulation for total PFAS w/i 2 years
 - S.1251, The Safe Drinking Water Assistance Act, 4/30/19
 - Improves and expands research into human health effects of UCs that may be found in drinking water
 - H.R. 2533, The Providing Financial Assistance for Safe (PFAS) Drinking Water Act, 5/7/19
 - Authorizes a new 5-year, \$2.5 billion grant program to help water systems address PFAS contamination
 - S.1473, The Protect Drinking Water from PFAS Act, 5/15/19
 - Directs EPA to establish a national primary drinking water regulation for PFAS w/i 2 years
 - H.R. 2800, The PFAS Monitoring Act, 5/16/19
 - Expand monitoring for PFAS in drinking water
 - S. 1507, The PFAS Release Disclosure Act, 5/16/19
 - Requires EPA to promulgate national primary drinking water regulations for PFOA and PFOS w/i 2 years
 - Sets up a new process for EPA to follow when regulating other PFAS under the SDWA
 - S.1790, The National Defense Authorization Act
 - Direct EPA to develop MCLs for PFOA and PFOS, require monitoring of all PFAS in next UCMR, etc.

EPA's PFAS Actions

- PFOA and PFOS on CCL3 in 2009
- 2013-2015 UCMR3 included 6 PFAS
- 2016 HAL at 70 ppt for combined PFOA and PFOS
- PFAS National Leadership Summit, May 2018
- PFAS Action Plan, February 2019
- Continue processes
 - Gather occurrence data via UCMR5
 - Expand PFAS toxicity information and conduct health-risk analysis
 - Develop new analytical methods for more PFAS and at lower levels
 - Provide more PFAS treatment and cost information

“Standards” from Some States



Map of 2018. Few other States were added to the list as of 2019: New Hampshire, Connecticut, New York, North Carolina.

2019 Revisions to Lead and Copper Rule (rLCR)

Proposed rLCR

- EPA proposes Revisions to LCR in October 2019
- Not yet in FR
- Comment period: 60 days after proposed rule in FR
- Date of final rule in FR
 - Effective after 60 days
 - Compliance after 3 years
 - Continue complying w/ existing LCR in between these days
- Very prescriptive and complicated
- Rule numbering system for ease of reference: §141.XX (a)(1)(i)(A)

Summary of Proposed rLCR

- Six key areas of improvement for reducing lead exposure in DW
 - Identify areas with greatest impacts, based on a lead service line inventory
 - Revise and strengthen CCT, based on tap monitoring results and new Trigger Level
 - Improve LSL replacement program and perform Find-and-Fix at site with Pb level >AL
 - Increase sampling reliability with consistent sampling requirements and new Tier criteria
 - Enhance risk communication (w/i 24 hrs when Pb > AL, LSL inventory publicly available, etc.)
 - Require CWS conduct lead sampling at children in schools and daycare facilities

New Definitions/Terms

- Adds some definitions...
 - Action Level (“AL” determines requirements) at 15 ppb (value not change)
 - Trigger Level (“TL” prompts activities) at value >10 ppb but ≤15 ppb
 - Consumer (customers and other users of a PWS)
 - Customers (paying user of a PWS)
 - Find-and-Fix (perform at @site with Pb levels >AL)
 - Galvanized Service Line (GSL), Gooseneck, Pigtail, Connector
 - Lead Service Line, includes GSL that was/is downstream of unknown material SL (note exemption)
 - School, Childcare Facility
 - Others...

Key Reporting Req'ts Related to Notices

- Provide Tier 1 notice copy ASAP but NLT 24 hrs learning violation or exceedance
 - USEPA Administrator
 - Head of SWRCB DDW
- Provide a certification w/ copies of Tier 2 or 3 notices in 10 days after notification
 - SWRCB DDW

rLCR Establishes Treatment Technique

- Applicable to CWS and NTNCWS
- Requirements for
 - Corrosion control treatment
 - Source water treatment
 - Lead SL inventory
 - Lead SL replacement
 - Public Notice
 - Tap sampling
 - Consumers
 - Schools (CWS only)
 - Childcare facilities (CWS only)
 - Public Education (CWS only) – why only spells out CWS??
- AL or TL Exceedance – based on 90th-percentile value

Tap Sample Site Locations

- System based on LSL inventory
 - Identifies a pool of targeted sites
 - Re-evaluate annually tap locations if LSLs or SL of unknown material present
 - Do not include site with POU/POE for removal of inorganics
 - When insufficient, system shall review information sources
 - Plumbing info (permits, BD records, etc.) in publicly and privately owned structure
 - Inspection records indicate SC material
 - Existing WQ info indicates locations susceptible to high Pb or Cu concentrations

Tap Sample Tiers

- CWS Tier 1
 - Single-family structure served by LSL, and
 - Multi-family residence comprise 20+% of the structure
 - SL of unknown material **must not** be Tier 1
- CWS Tier 2
 - Building including multi-family residences served by LSL
- CWS Tier 3
 - Single-family structures contain copper SL w/ lead solder
- CWS Tier 4
 - Single-family structures or building representative of sites throughout system*
- NTNCWS
 - Tier 1, Tier 3 and Tier 4, but **no** Tier 2

*Representative site means the plumbing materials used is commonly found at other sites served by the system

New Ways of 90th Percentile Calculations

- System has no LSL and only Tier 3 or Tier 4 sites
 - $N > 5$, same existing (0.9 x total number of samples)
- System has LSL and enough Tier 1 or Tier 2 sites meeting the minimum no.
 - $N > 5$, same existing way (**DO NOT INCLUDE** any Tier 3 or Tier 4 results)
- System has LSL and insufficient Tier 1 and Tier 2 sites
 - $N > 5$, same existing way
 - Include highest T3 or T4 results to Tier 1 and Tier 2 results to meet the minimum no.
- Irrespective of presence/absence of LSL
 - All systems with $N = 5$, same existing (average of 4th and 5th highest)
 - All systems with $N < 5$, equal to highest concentration

Corrosion Control Treatment (CCT)

System Size	Pb TL	Cu AL	Pb AL and/or Cu AL	CCT already in place	Existing CCT Optimized?	§141.81 (d)(1)-(8)	§141.81 (e)(1)-(8)
LWS (>50k)	Exceed, or	Exceed		Y		✓	
LWS	Exceed, or	Exceed		N			✓
LWS	Not exceed	Not exceed		Y	N	✓	
LWS	Not exceed	Not exceed		N			✓
MWS (10k<, ≤50k)	Exceed, or	Exceed		Y		✓	
MWS			Exceed either	N			✓
MWS	Exceed			N			✓
SWS (≤10k)	Exceed, or	Exceed		Y		✓	
SWS			Exceed either	N			✓
SWS	Exceed			N			✓

Optimize or Re-optimize CCT

- Meet one of three following conditions
 - For SWS or MWS, in 2 consecutive 6-month monitoring periods,
 - Does not exceed Pb TL and Cu AL, or
 - Exceed Pb TL but does not exceed Pb AL and Cu AL
 - Any system size, in 2 consecutive 6-month monitoring periods,
 - 90th percentile Pb results are \leq PQL of 5 ppb
- Many other details.....lengthy and case-specific

Find-and-Fix Assessment (FFA)

- New requirements if a tap sample site Pb result > AL
- Steps of actions
 - Sample at a new or existing WQP site on same-size water main
 - In same PZ within 1/2-mile from tap site > Pb AL
 - Sample within 5 days of receiving the sample result
 - Sample for pH, alkalinity, ortho-P (if used), and silica (if used)
 - Conduct a follow-up tap sample w/i 30 days of receiving initial result
 - May use different volumes and procedures to help identify Pb source
 - Results submitted to SWRCB but cannot be included in 90th percentile calculation
 - Document to SWRCB if a follow-up sample cannot be collected
 - Evaluate monitoring results to determine if localized or centralized adjustment of OCCT is needed
 - Submit recommendations to SWRCB within 6 months of end of MonP

FFA (cont'd)

- Steps of actions
 - SWRCB approves or specifies different treatment recommendation w/i 6 months of recommendation
 - System completes SWRCB-approved treatment adjustment w/i 12 months of approval
 - System conducts follow-up monitoring w/i 12 months of treatment adjustment
 - SWRCB reviews system's proposed modification of CCT and designates (updated) OWQP
 - System adjusts its OCCT to continue tap sampling
 - Add new WQP monitoring sites to existing OWQP sites

Testing in Schools & Childcares (SCCs)

- Compile a list of schools or licensed childcare facilities by rLCR compliance date
 - Submit revised list or confirmation of no change once every 5 years
- All CWSs must conduct **directed** public education
 - SCCs including those are also consecutive systems, constructed pre Jan 1, 2014
 - Annual dissemination of health risk from Pb in DW to SCCs' contacts
 - Notify Pb testing at SCCs
 - Instructions to SCCs for identifying outlets and prep for sampling 30 days before
 - Document if SCCs refuses entry or decline to participate Pb sampling and education
- Use “3Ts for Reducing Pb in DW Toolkit”
- Samples be collected by SCCs or water systems
- 20+% SCCs to be sampled annually, and recurs every 5 years
- Allow alternative school sampling programs, such as State-mandated

Pb Monitoring at SCCs

- Schools (5 locations)
 - 2 DFs, 1 KF, 1 CF, 1 nurse's office (if available)
- Childcare facilities
 - 1 DF, 1 KF or CF
- Sample other outlets used for consumption if SCCs does not contain
 - Specified number and/or types of outlet
 - Document if SCCs refuses entry or decline to participate Pb sampling and education
- Only outlets for consumption
- No POU
- Cold water taps only
- Water stationary for 8 – 18 hrs in the building's plumbing system

Notification of Results to SCCs

- NLT 30 days after results received
 - SCCs, along with remedial option information
 - Local or State Health Dept
 - SWRCB DDW

SWS Compliance Flexibility

- Applicable
 - CWS $\leq 10,000$ persons and NTNCWs
- $Pb\ TL < 90^{th}\text{-ile} \leq AL$, but meet both ALs, or $Pb > AL$ but $Cu < AL$
 - CWS: evaluates 3 specified compliance options & make an option
 - NTNCWS: evaluate 4 specified compliance options & make an option
 - SWRCB: approves or designates alternative option w/i 6 months of recommendation
- Implement recommendation or State-designated option when
 - Subsequently exceeds Pb AL, even below it in future MonP
- Compliance options
 - LSL replacement in 15 years,
 - CCT or re-optimize CCT
 - POU installation, maintenance, and monitoring
 - Lead-bearing plumbing replacement (for NTNCWs only)

POU

- Install a minimum one POU in every household or building in DS
- ANSI certified for Pb reduction
- Maintenance (change cartridge and resolve operational issue)
- Monitoring
 - 1/3 POU's annually and complete all in 3 years
 - 1st draw sample after POU, 1-L, 6+ hrs stagnation
 - All results must be \leq TL
 - Document problem and corrective actions taken to address result $>$ TL
- Check applicable requirements of SWRCB's POU regulations
 - §64418 requirements

State Regulatory Actions on PFAS in DW

CA Legislature Actions on PFAS

- Most prominently, AB 756, signed by Governor July 31, 2019
 - Effective January 1, 2020
 - Authorizes SWRCB to more broadly order water systems to monitor for PFAS and report their detections
 - Requires drinking water sources with PFAS levels > RL
 - stop service, or
 - Water system must provide public notice of RL exceedance

Extent of Detection in CA

- Updated NLs for PFOA and PFOS August 2019
- 133 UCMR3 detections
- Required follow-up monitoring for >70 ppt
- Nine water systems
 - Anaheim, CalAm-Sacramento Suburban, Corona, Chico, Visalia, Eastern Municipal, Lathrop, Orange, Pico Rivera

SWRCB DDW Actions

- NLs (14 ppt PFOA, 13 ppt PFOS) and RL (70 combined) in 2018
- PFAS Phase Investigation Plan, March 2019
- DW PFAS sample collection guidance March 2019
- Revised PFAS Sampling Guidance, April 2019
- PFAS Water Systems Orders, March - April 2019
- FAQ DW Guidelines for PFOA and PFOS, August 2019
- Revised NLs (5.1 ppt PFOA, 6.5 ppt PFOS, August 2019
- Requested OEHHA develop PHG for PFOA and PFOS, August 2019
- 2-day seminar on PFAS in California: Past, Present, and Future, Sacramento, December 4-5, 201

SWRCB Phase I Investigation

- March 2019 – Fall 2019
- PFAS Water Systems Orders April 30, 2019
- Water Code 13267 Investigative Orders
 - 31 Airports with training/fire response sites
 - 252 Municipal solid waste (MSW) landfills
- Health & Safety Code 116400 Orders
 - 578 Drinking water wells w/i 2-mile radius of airports
 - 353 Drinking water wells w/i 1-mile of MSW
 - 389 Impacted drinking water sources w/i 1-mile of UCMR3 sites with detections
 - Adjacent small systems

SWRCB Phase II Investigation

- Summer/Fall 2019
- PFAS Sources
 - Primary manufacturing facilities (if any in CA)
 - Refineries
 - Bulk terminals
 - Non-airport fire training areas
 - 2017-2018 urban wildfire areas
- Nearby drinking water well sampling

SWRCB Phase III Investigation

- Early 2020
- PFAS Sources and nearby DW wells
 - Secondary manufacturing source sites
 - Wastewater treatment & pre-treatment plants
 - Domestic wells

What's Next*?

- Continue data gathering to assess extent
 - Develop MCL(s)?
 - RLs for other PFAS?
 - Revise RL for PFOA and PFOS?
 - Regulation of PFAS by class?
 - Response strategy to PFAS detections?
-
- PFAS in California: Past, Present, and Future, at CalEPA on December 4 and 5, 2019
 - 2-day seminar
 - PFAS chemistry, toxicology, site investigations, remedial technologies, stewardship, case studies

Microplastics (MP)

Plastic → MP

- WHO Report 2015
 - Humans produced around 407 million tons of plastic
 - Plastic does not biodegrade; but breaks down into progressively smaller pieces of plastic
 - Unknown effects on human body
 - Doesn't appear to pose a health risk at current levels
 - WWT can effectively remove 90+% of MP
- What is MP
 - Current industrial definition: plastic piece 5 mm down to 1 μm
 - Plastic particles from 1 μm to 100 nanometers are sub-MP

Is MP in DW a Problem?

- Australia's World Wildlife Fund study 2018
 - People are consuming about 5 grams of plastic every week (equivalent of a credit card)
 - Single largest source of plastic ingestion is through water (both bottled and tap)
 - Other consumables with highest recorded plastic levels include shellfish, beer, and salt
 - Since 2000, more plastic produced worldwide than all preceding years combined
- Orb Media study in 2017 and 2018
 - 83% tap water samples contains MP
 - 93% tested bottled water samples contains MP
- Do we know the extent of the problem in CA?

CA Actions on MP in DW

- SB 1422 in 2018, now H&SC 116376
- Requires SWRCB
 - By July 1, 2020: Adopt definition of MP
 - By July 1, 2021:
 - Adopt a standard methodology for testing of MP
 - Adopt requirements for 4 years of testing and reporting of MP
 - Public disclosure of results of 4-year tests
 - Consider issuing quantitative guidelines (e.g., NLS) to aid consumer interpretations of the testing results
 - Accredite qualified laboratories in California to analyze MP

CA POE/POU Regulations

- AB434 requires SWRCB develop emergency regulations for POE/POU treatment
 - Emergency regulation expired January 1, 2018
- SWRCB adopted permanent regulations on February 6, 2018
 - Limits POU and POE treatment to PWSs <200 SCs
 - Limits POU and POE treatment to 3 years or until funding for centralized treatment is available (whichever occurs first)
 - §64417 through §64418.8 for POU treatment requirements
 - §64419 through §64420.8 for POE treatment requirements

What Operators Should Do?

- Regulations are emerging
 - LCR proposed for comments
 - Fast-paced, multi-faceted development on PFAS
 - Uncertain on MP
- Be involved and self-educated
 - Review proposed rule
 - Review existing treatment, monitoring, reporting, and notice practices
 - Discuss with manager
 - Submit comments to EPA and/or other institutions (e.g. AWWA, AMWA, ACWA, etc.)
- Be prepared
 - Make plan to accommodate new requirements
 - Get trained via institutions
 - Work collaboratively with own communications and other agencies, if needed

What Operators Should Do (cont'd)?

- Review and make comments on LCR to EPA
 - Assess potential and possible impacts on operations, monitoring, reporting, and notifications
- Plan to conduct PFAS monitoring, if appropriate
 - Review and strictly follow SWRCB's updated sampling guidance
 - Help utility develop notification and response plans
- Hold off actions on MP until SWRCB's definition and methods of test

Website Resources

<https://www.epa.gov/ground-water-and-drinking-water>

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/publicwatersystems.html

And many others on Internet....

Questions?

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