

Virginia PFAS Workgroup Meeting Minutes (Final)

January 19, 2021 - 1:00 pm. to 3:30 p.m.

WebEx platform

Virginia Department of Health (VDH) - Office of Drinking Water 109 Governor Street 6th
Floor, Richmond, VA 23219

Workgroup Members /Alternate Participants:

Jillian Terhune (City of Norfolk, Dept. of Public Utilities, waterworks > 50,000 consumers)

David Jurgen (City of Chesapeake, waterworks > 50,000 consumers)

Jamie Hedges (Fairfax Water, waterworks > 50,000 consumers)

Mike Hotaling (Newport News, waterworks > 50,000 consumers)

Mike McEvoy (Western Virginia Water Authority, waterworks > 50,000 consumers)

Jessica Edwards (Loudoun Water, waterworks > 50,000 consumers)

Geneva Hudgins (VA AWWA (alternate), advocacy group)

Russ Navratil (VA AWWA, advocacy group)

John Aulbach (Aqua Virginia, waterworks < 50,000 consumers)

Wendy Eikenberry (Augusta County Service Authority, waterworks < 1,000 consumers)

Paul Nyffeler (Aqua law, (Virginia Water Environment Association, advocacy group))

Steve Herzog (Hanover County, (Virginia Water Environment Association, advocacy group))

Steve Rissoto (American Chemistry Council, manufacturer with chemical experience)

Henry Bryndza (DuPont (retired), manufacturer with chemical experience)

Anna Killius (James River Association, environmental organization)

Erin Rielly (James River Association, environmental organization)

Philip Musegaas (Potomac Riverkeeper Network, environmental organization)

Jeff Steers (Virginia Department of Environmental Quality)

William Mann (Consumer for Public Drinking Water)

Robert Edelman (VDH, Office of Drinking Water, Monitoring & Occurrence Subgroup Lead)

Dwight Flammia (VDH, State Toxicologist, Health & Toxicology Subgroup Lead)

Nelson Daniel (VDH Office of Drinking Water, Policy & Regulation Subgroup Lead)

Dan Horne (VDH, Office of Drinking Water, Treatment Technology Subgroup Lead)

Tony Singh (VDH, Office of Drinking Water, PFAS Workgroup Lead)

ODW Staff Supporting the Meeting:

Dwayne Roadcap (VDH Office of Drinking Water)

Christine Latino (VDH Office of Drinking Water)

Speaker:

Dr. Ian Smith (Michigan's Emerging Contaminants Unit Manager)

1. Call to Order

VDH Office of Drinking Water (ODW) Deputy Director, Tony Singh, Ph.D. called the meeting to order 1:08 p.m. The meeting was conducted in a public format and recorded minutes will be posted on the Town Hall website (<https://townhall.virginia.gov>). Dr. Singh discussed the agenda and checked attendance of Workgroup members. ODW held the meeting via electronic

communication means due to the public health emergency associated with the coronavirus pandemic.

2. Meeting minutes from October 20, 2020

Workgroup members did not have any comments or corrections to the minutes from October 20, 2020 meeting. ODW will post the minutes as final on Town Hall (<https://townhall.virginia.gov>).

3. Development of MCLs for PFAS in Michigan

Dr. Singh discussed the tasks of the PFAS Workgroup and the agenda; then introduced, Dr. Ian Smith, Michigan's Department of Environment, Great Lakes and Energy (EGLE) Emerging Contaminants Unit Manager. Dr. Smith played a primary role in the administration of the Michigan PFAS Action Response Team and EGLE's statewide public drinking water PFAS survey over the past two and a half years. He contributed to the successful promulgation of EGLE's PFAS Maximum Contaminant Levels (MCLs) and continues to work on the implements of these rules.

Dr. Smith discussed a brief history of Michigan's challenges, methods, discovery and conclusions developed to establish the current PFAS MCL's for the state of Michigan. His complete PowerPoint presentation follows the meeting minutes. Dr. Smith also provided these additional links if you are interested in further information:

<https://www.michigan.gov/documents/pfasresponse/Health> and
https://www.michigan.gov/documents/pfasresponse/Health-Based_Drinking_Water_Value_Recommendations_for_PFAS_in_Michigan_Report_659258_7.pdf

4. VDH Update & Collaborative Work

- a. **Subgroups:** PFAS Workgroup members formed four subgroups following the October meeting. Most of the subgroups met in December and January. During subgroup meetings, several members raised concerns about the expectations for each subgroup and the potential for overlapping efforts. Dr. Singh reviewed the overall expectations for each of the subgroups:

Subgroup 1: Health and Technology:

- Review other states information and make recommendations on the What's & Why's
- These recommendations should accompany with:
 - o Rational (Scientific/Toxicology/Tech)
 - o Why chose these PFAS chemicals or
 - o Why add or remove all chemicals for VA
- What Approach (Past & Future)
- What Value (Rational)
- A Report on the Subgroup Findings

Subgroup 2: Occurrence and Monitoring

- Why, Why and How
- Rational & Approach on selecting sampling sites

- Sampling Methodology
- Coordinate Sampling Effort & Report Results
- A report on the Subgroup Findings.

Subgroup 3: Policy and Regulation

- What methodology did other States follow to regulate such PFAS chemical in their drinking water (How)?
- Based on what info/resources we have in VA; What framework would be best suited?
- What will the path be moving forward?
- A report on the Subgroup Findings.

Subgroup 4: Treatment Technologies

- Review & Recommend Best Available Treatment Technologies for PFAS removal.
- Technical & Economical Feasibility Analysis on the BATT for PFAS removal.
- Relevance & Limitations of Treatment Technologies in Virginia Proximity to potential PFAS contamination.
- A report on the Subgroup Findings.

- b. DEQ Update:** During the October PFAS Workgroup meeting, Jeff Steers (DEQ) indicated that DEQ staff would query the agency’s databases to identify locations (VPDES discharge points) that are permitted for certain types of industries (based on SIC codes) that are possible users of PFAS compounds, with the idea that the receiving stream may have PFAS present below the discharge point. DEQ staff also identified POTW’s that receive wastewater from industries that are possible users of PFAS (again, based on SIC codes) and un-lined landfills (those that DEQ permitted before landfills had to meet RCRA subtitle D requirements). DEQ shared the data with ODW to help identify areas with higher potential PFAS contamination. Mr. Steers noted that, at this time, DEQ does not require PFAS sampling under the VPDES program or groundwater monitoring associated with corrective action plans at most of the unlined landfills.

Workgroup members asked about including CERCLA/superfund sites in the list and which SIC codes DEQ used in compiling the tables.

- c. 2021 General Assembly Session – Budget Amendment:** Representative Guzman submitted a budget amendment to continue PFAS work in Virginia (\$60,000 for FY 2021, \$60,000 for FY 2022). See: <https://budget.lis.virginia.gov/amendment/2021/1/HB1800/Introduced/MR/307/2h/>
- d. Sharepoint:** Dr. Singh announced that the PFAS Workgroup will be able to access and share data through Sharepoint. Workgroup members should have received an email with information about access to the Sharepoint site shortly before the meeting. If Workgroup members would like to add any documents, please send them to Tony Singh (Tony.Singh@vdh.virginia.gov), Nelson Daniel (Nelson.Daniel@vdh.virginia.gov) or Christine Latino: (Christine.Latino@vdh.virginia.gov).

5. Subgroup Reports

Three of the four subgroups met in December and January to work on the information outlined above. Each group discussed their findings. Their presentations follow the meeting minutes.

- a. **Health & Toxicology Subgroup:** The Lead of the Toxicology subgroup, Dwight Flammia, discussed the steps EPA follows to develop an MCL. His subgroup was tasked with investigating other states and the processes they took to develop their MCLs. The subgroup decided that Method 537.1 would be best because it incorporated the entire list of chemicals requested by the General Assembly.

The group is evaluating the material distributed after the December meeting and determining what to provide to the Occurrence and Monitoring workgroup. The group will start by researching each chemical individually per month based on amount of data available and report their findings, starting with PFOA then PFOS, PFNA, PFHxS, PFBA and finishing with PFHpA.

- b. **Occurrence & Monitoring Subgroup:** The Lead of the Occurrence subgroup, Bob Edelman, discussed the approaches necessary to look for PFAS in drinking water throughout the Commonwealth. The group researched other states and compared the differences and similarities between each. Some of the topics they investigated were: EPA method, water sampled, who would sample, location, number of samples, summary, and financial.

Based on the limitation of 50 sampling sites within Virginia, the subgroup is considering a hybrid approach that would sample 17 of the largest waterworks, groundwater systems based on risk potential for PFAS contamination using DEQ's risk information, and major water supplies.

The subgroup is still working out the exact sampling techniques, location at the major water sources, where to sample, potential locations based on risk and other details. Bob welcomes any suggestions. His email address is Robert.Edelman@vdh.virginia.gov.

- c. **Policy & Regulations Subgroup:** The Lead of the Policy subgroup, Nelson Daniel, discussed the initial regulatory determination from the EPA and the specific information from each state.

Subgroup members researched the statutory/regulatory requirements in states that have imposed limits on PFAS in drinking water. Nelson provided a summary of the findings that subgroup members presented during their January meeting. Once the Workgroup has occurrence data for PFAS in Virginia, subgroup members expect to use data from other states to make recommendations for regulating and establishing MCLs for specific PFAS in Virginia.

- d. **Treatment Technologies Subgroup:** The Lead of the Treatment Subgroup, Dan Horne, is working to schedule this subgroup's first meeting, possibly during the last week of January 2021. Without information about PFAS occurrence in Virginia, there has been less need to start considering treatment alternatives. This subgroup did not have a presentation.

6. Next Steps

The PFAS Workgroup will need to make decisions regarding:

Which PFAS analytical method should be used?

Whether Field Reagent Blanks (FRB) should be tested for each sample?

PFAS Sampling and Monitoring Approach?

Finding a Subject Matter Experts for Toxicology, Risk Assessment and Epidemiologist

7. Public Comment:

Dr. Singh opened the meeting for comments from members of the public in attendance. There were not any public comments.

8. Conclusion:

The VA PFAS Workgroup members indicated willingness to meet next in late February or early March 2021 to discuss and finalize the PFAS sampling methodology. Because of the limited scope of the meeting, Dr. Singh expects it will last approximately 1 hour. Dr. Singh will send out an invitation soon.

Dr. Singh adjourned the meeting at 3:02 p.m.

If there are any suggestions, questions or concerns, please feel free to email Tony Singh, (Tony.Singh@vdh.virginia.gov), Nelson Daniel (Nelson.Daniel@vdh.virginia.gov) or Christine Latino (Christine.Latino@vdh.virginia.gov)

Virginia PFAS Workgroup Meeting

Hosted by the Virginia Department of Health (VDH) - Office of Drinking Water
109 Governor Street, Richmond, VA 23219

WebEx (Virtual)
Tuesday, January 19, 2021
1:00 p.m. – 3:30 p.m.

AGENDA

Subject	Time
Connect to WebEx and Meeting Instructions	12:50 – 1:00 PM
Call To Order Meeting Overview Review/Approve Meeting minutes from October 20, 2020	1:00 – 1:10 PM
Other State's Perspective on Regulating PFAS in Drinking Water - Michigan - Dr. Ian Smith, MI DEQ (followed by Q&A Session)	1:10 – 1:50 PM
VDH Update & Collaborative Work	1:50 – 2:10 PM
Subgroup Reports/Status Updates - PFAS Health & Toxicology (10 minutes) - PFAS Occurrence & Monitoring (10 minutes) - PFAS Policy & Regulation (10 minutes) - PFAS Treatment Technologies (10 minutes)	2:10 – 2:50 PM
PFAS in VA Drinking Water - Next Steps	2:50 – 3:10 PM
Open Discussion Forum	3:10 – 3:25 PM
Public Comment Period	3:25 – 3:30 PM
Conclude Meeting Next Meeting: April 2021 (Date TBD)	3:30 PM

PFAS in Virginia Drinking Water

Tony Singh

Quarterly VA PFAS Workgroup Meeting

Virginia Department of Health

January 19 2021

Workgroup Meeting - Jan 19, 2021

- Welcome All
- Call to Order

Things to Note:

- Workgroup will vote (voice) to finalize any recommendations if needed
- This meeting is being recorded; Recording will be available
- In case of any technical difficulties, please contact Kris Latino
- Public members can share comment during the public comment period
- Please use Chat Window for side discussions and comments

Meeting Agenda - Jan 19, 2021

<p>Call To Order Review & Approve Meeting Agenda Meeting minutes from October 20, 2020 Meeting Overview</p>	1:00 – 1:10 PM
<p>Other State Perspective on Regulating the PFAS in Drinking Water - Michigan Dr. Ian Smith, MI DEQ Q&A Session</p>	1:10 – 1:50 PM
<p>VDH and VDEQ Updates</p>	1:50 – 2:10 PM
<p>Subgroup Reports/Status Updates</p> <ul style="list-style-type: none"> - PFAS Health & Toxicology (10 minutes) - PFAS Occurrence & Monitoring (10 minutes) - PFAS Policy & Regulation (10 minutes) - PFAS Treatment Technologies (10 minutes) 	2:10 – 2:50 PM
<p>PFAS in VA Drinking Water - Next Steps</p>	2:50 – 3:10 PM
<p>Open Discussion Forum</p>	3:10 – 3:25 PM
<p>Public Comment Period</p>	3:25 – 3:30 PM
<p>Conclude Meeting (Next Meeting proposed Time – April 2021)</p>	3:30 PM

October 20, 2020 Workgroup Meeting

- **Meeting Minutes (October 20, 2020)**
 - Posted on the VA Town Hall Website
 - Shared with the Workgroup members via email

Ian Smith, PhD

Emerging Contaminant Unit Manager
MI Department of Environment, Great
Lakes, and Energy (EGLE)



EGLE Drinking Water and Environmental Health Division (DWEHD) Emerging Contaminants Unit is concerned with addressing contaminants and issues of emerging concern related to Michigan's public drinking water, and has played a primary role in the administration of The Michigan PFAS Action Response Team (MPART) and EGLE's statewide public drinking water PFAS survey over the past two and a half years. Utilizing data from this effort, Ian contributed the successful promulgation of EGLE's PFAS Maximum Contaminant Levels (MCLs) in August 2020, and continues to work on the implementation of these rules. Dr. Smith is a graduate of Michigan State University and, prior to his time with EGLE, spent time working as both an environmental consultant and a research scientist.



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

PFAS and Michigan's Public Drinking Water Supplies: From Statewide Survey to PFAS MCLs

Ian Smith, Emerging Contaminants Unit Manager
Drinking Water and Environmental Health Division

(517) 256-2474

Smithi@Michigan.gov

Michigan PFAS Action Response Team (MPART)



- Executive Order 2019-03
- Unique Multi-Agency Approach
- Leads Coordination and Cooperation Among All Levels of Government
- Directs Implementation of State's Action Strategy

Michigan PFAS Action Response Team (MPART)

www.Michigan.gov/PfasResponse



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY



FOR IMMEDIATE RELEASE

March 26, 2019

Contact: BrownT56@michigan.gov

Gov. Whitmer Directs MDEQ To File a Request for Rulemaking to Establish PFAS Drinking Water Standards

LANSING, Mich. –Today Gov. Gretchen Whitmer released the following statement commenting on Michigan’s intent to establish PFAS drinking water standards to further protect Michiganders:

“All Michiganders deserve to know that we are prioritizing their health and are working every day to protect the water that is coming out of their taps.

“As a result, Michigan will begin the process to establish PFAS drinking water standards that protect public health and the environment. Michigan has long advocated that the federal government establish national standards to protect the nation’s water from PFAS contamination, but we can no longer wait for the Trump Administration to act.

“Today I’m directing the Michigan PFAS Action Response Team to form a science advisory workgroup to review both existing and proposed health-based drinking water standards from around the nation to inform the rulemaking process for appropriate Maximum Contaminant Levels (MCL) for Michigan by no later than July 1, 2019. Additionally, I’m directing the Department for Environmental Quality to immediately file a Request for Rulemaking to establish enforceable MCLs for PFAS in our drinking water supplies. The proposed regulations will be completed on an accelerated schedule with input from stakeholders by no later than October 1, 2019.

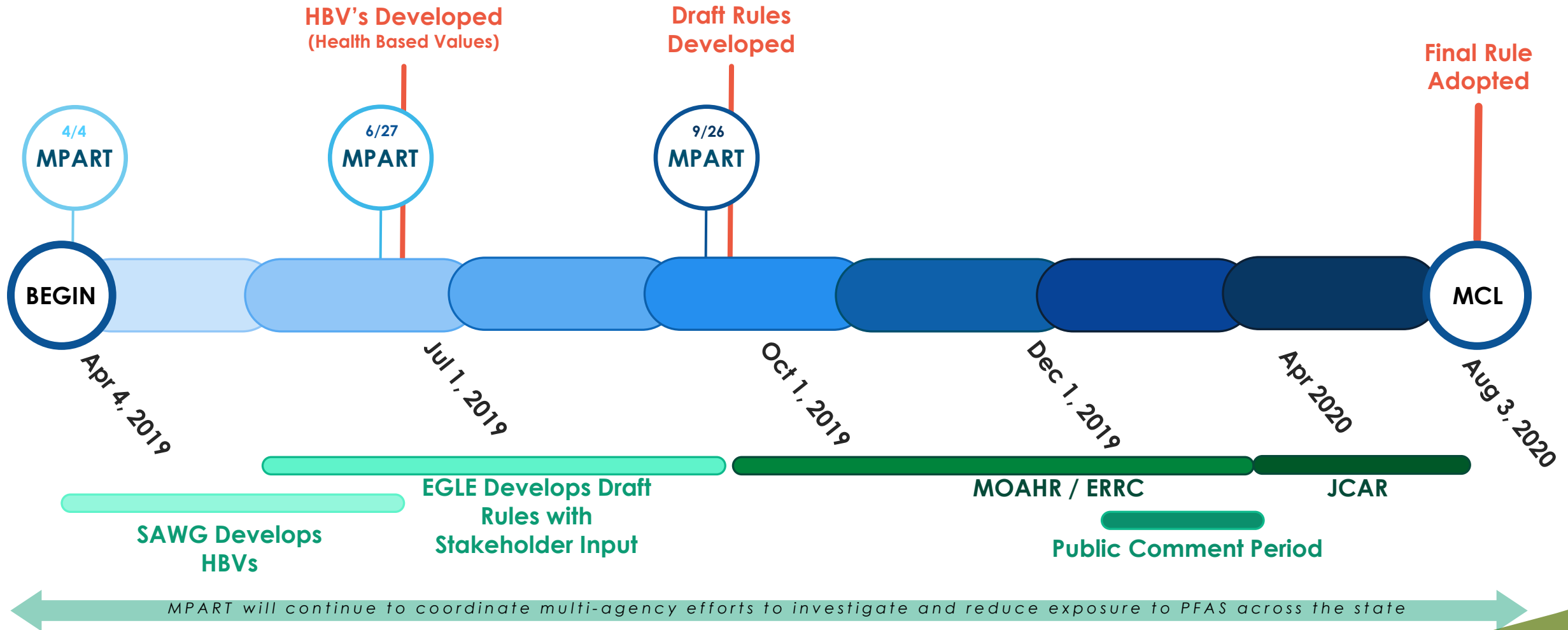
“These actions will move us a step closer towards finding real and permanent solutions to ensuring that all Michiganders know that they can trust their drinking water.”



Drinking Water Standards

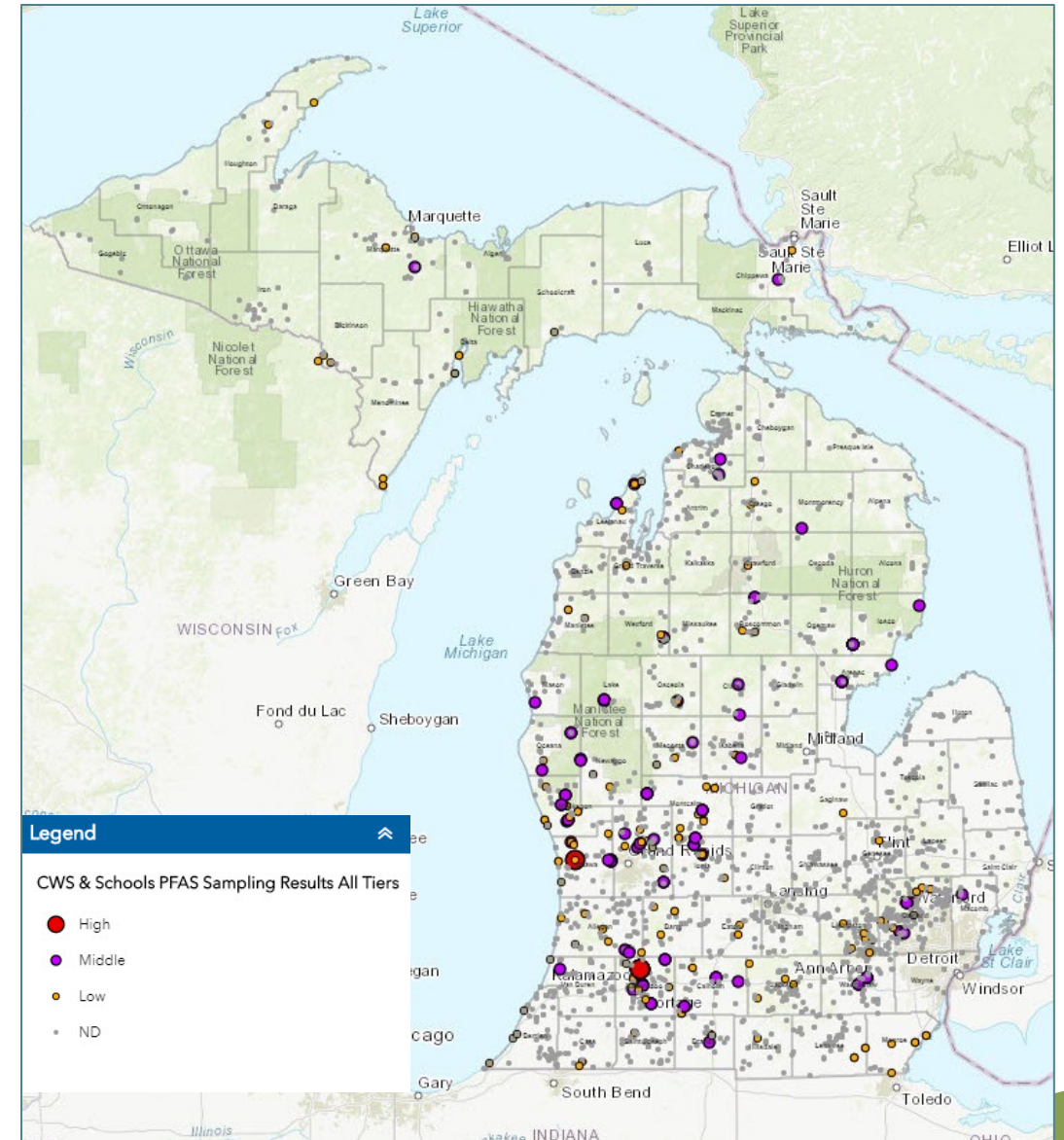
- No Federal Standards to Adopt
- Science Advisory Panel Report, December 2018
 - **70 ppt standard for PFOA/PFAS too high**
 - **Other PFAS should be considered**
- Michigan's Two-Step Approach
 - **Science Advisory Workgroup provided health-based values**
 - **EGLE promulgated standards in rule**

Overview and Timeline of Michigan's MCL Process



Statewide PFAS Survey of Public Water Supplies:

- Type I Community Water Supplies
 - Surface Water Systems
 - Groundwater Systems
 - Combination SW/GW Systems
- Type II Non-transient Non-community Water Supplies
 - Schools
 - Child Care Providers
 - MI Head Start Programs
- Federally-recognized Tribal Water Supplies

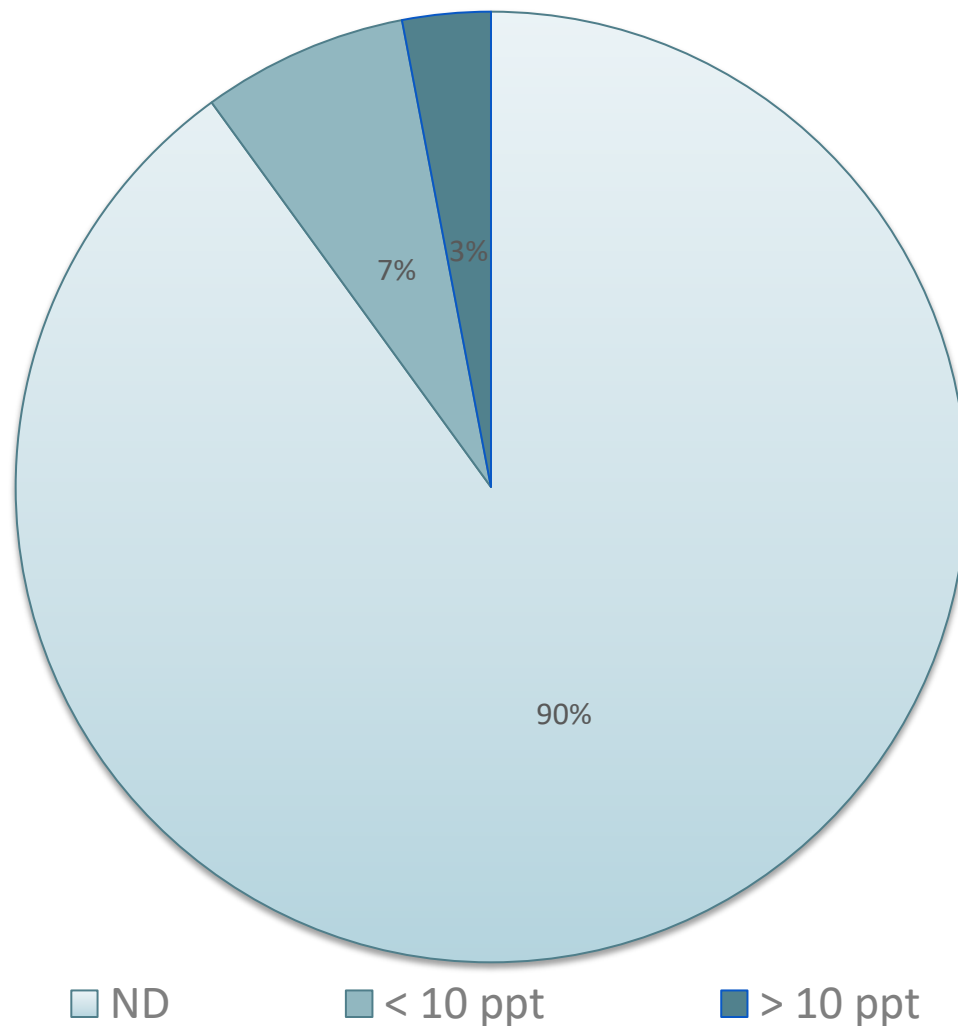


Total PFAS in MI Public Water Supplies

EPA Method 537 Rev 1.1*

NEtFOSA	NMeFOSAA	PFBS
PFDA	PFDoA	PFHpA
PFHxS	PFHxA	PFNA
PFOS	PFOA	PFTA
PFTTrDA	PFUnA	

*Samples in 2020 utilized EPA Method 537.1.
Bold = analyte detected during statewide public water PFAS survey.



How does EGLE use the results of the Statewide Survey?

EGLE has learned that

- PFAS impacts public water supplies across the state.
- This impact is mostly consistent across different types and sizes of PWS.

EGLE utilized the information gathered to

- Perform an assessment of regulatory impact related to PFAS MCLs
- Determine best available treatment technologies for PFAS in PWS
- Effectively communicate the scope of PFAS impact to stakeholder groups
- Determine the need for analytical capacity related to compliance monitoring
- Inform the rulemaking process in general

EGLE Timeline: PFAS MCL Process

- July 2019 – Stakeholder Listening Sessions
- Aug 2019 – EGGLE Drafts Rule
- 18/19 Sep 2019 – Stakeholder Meetings
- 23 – 30 Sep 2019 – EGGLE Revises Rule
- 1 Oct 2019 – Final Draft Rule
- 1 Oct 2019 Forward – MOAHR/JCAR Rule Process (Formal Rulemaking)

Stakeholder Groups Involved

- Industrial Group
- Health Group
- Environmental Group
- Municipalities Group
- MPART Citizens Advisory Work Group

Public Comment Period (12/2019–1/2020)

- > 3,400 comments received (related to proposed rules)
- 76% in favor / 24% neutral / >1% in opposition
- Categories of concern identified
 1. *EGLE must take into account all new data/science in determining the appropriate levels used in developing PFAS MCLs*
 2. *EGLE should consider utilizing a class-based approach in developing a PFAS MCL*
 3. *Michigan must be/is a leader in developing PFAS MCLs*

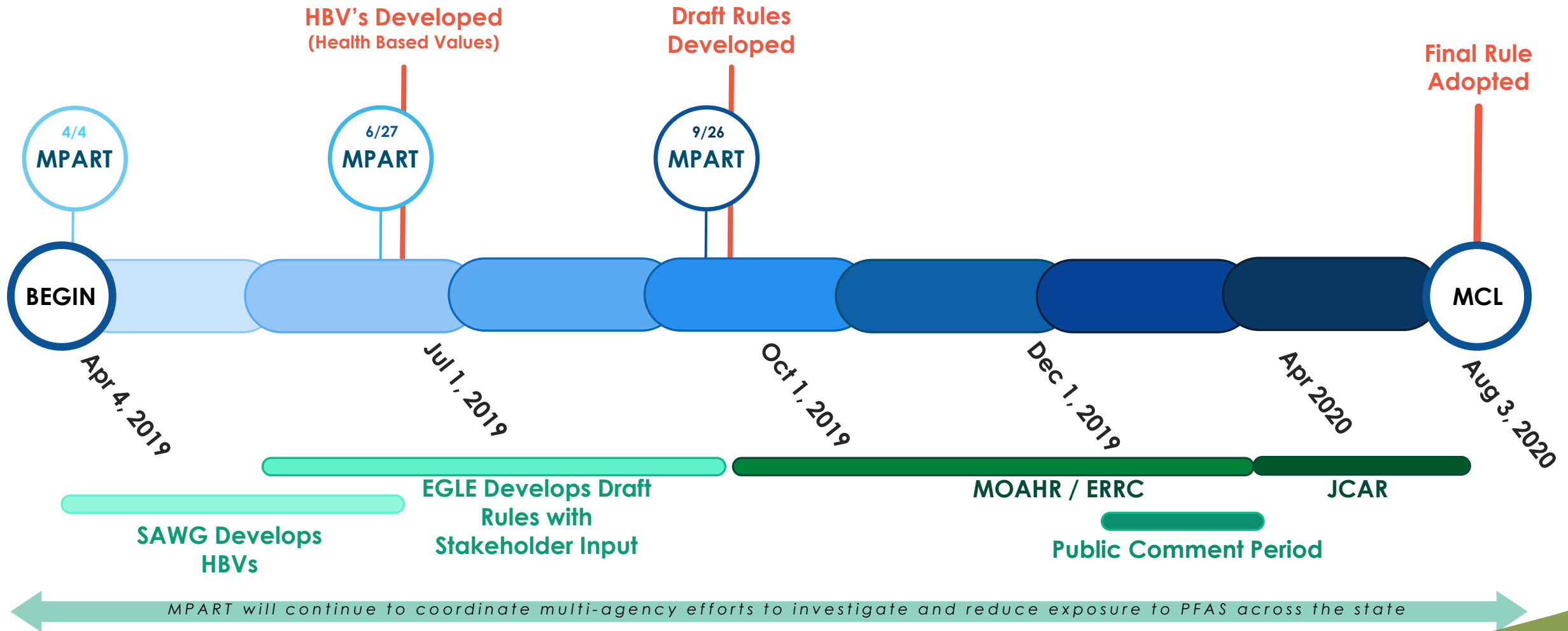
Public Comment Period (12/2019–1/2020)

- Categories of concern identified (continued)
 4. *EGLE should include a combined PFAS MCL, including some or all of the seven compounds proposed*
 5. *Michigan's MCLs must be at a level which is protective of its most vulnerable populations*
 6. *Michigan's MCLs must be protective of public health*
 7. *EGLE must complete rule promulgation more quickly*

Comments re: Regulatory Impact Statement

- One common theme among comments in opposition was to question the appropriateness of the RIS prepared by EGLE-DWEHD.
- Having reviewed these comments, EGLE-DWEHD has deemed that nothing was presented that would change the existing RIS.
- Additional points raised re: Health Based Values were referred back to the Science Advisory Work Group and MPART Human Health Work Group for review.

Overview and Timeline of Michigan's MCL Process



Brief Overview of PFAS MCLs

For complete rule language and detailed guidance, please visit:

Michigan.gov/pfasdrinkingwaterrules

Michigan Drinking Water Standards

- Maximum Contaminant Levels (MCLs)
- August 3, 2020
- 2,700 water systems

Compound	MCL	EPA Recommendation
PFNA	6 ppt	NA
PFOA	8 ppt	70 ppt combined
PFOS	16 ppt	
PFHxS	51 ppt	NA
GenX (HFPO-DA)	370 ppt	NA
PFBS	420 ppt	NA
PFHxA	400,000 ppt	NA

Types of Public Water Supplies (PWS)

Classification	Description
Community Public Water Supply (Type I)	Provides year-round service to not less than 25 residents OR not less than 15 living units
Noncommunity Public Water Supply (Type II) <ul style="list-style-type: none"> • Non-Transient 	Serves not less than 25 of the SAME people for at least six months per year
<ul style="list-style-type: none"> • Transient 	Serves not less than 25 people OR not less than 15 connections for at least 60 DAYS per year
Type III Public Water Supply	Anything not considered a Type I or Type II water supply; serves less than 25 people AND 15 connections; or operates for less than 60 days per year
Private Water Supply	Serves a single living unit

Compliance Monitoring

- Sampling is conducted at all entry points
- Analysis is done using certified labs utilizing EPA Method 537.1
- Reporting of results consistent with existing requirements under the Safe Drinking Water Act
- Initial compliance monitoring based on statewide PFAS survey results
- Compliance monitoring frequency is based on the results of this initial sampling.

Compliance Monitoring

Quarterly Monitoring	Annual Monitoring
<p>Any supply sampled that returns a detection for one of the 7 PFAS analytes with an MCL, during initial sampling.</p> <p>AND</p> <p>Has not demonstrated that ongoing PFAS levels are consistently and reliably below the PFAS MCLs.</p>	<p>Any supply sampled that returns a non-detect for the 7 PFAS analytes with an MCL, during initial sampling.</p> <p>OR</p> <p>Has demonstrated that ongoing PFAS levels are consistently and reliably below the PFAS MCLs.</p>

- Compliance based on a running annual average (RAA) at each sampling point

Any Questions?

Reminder: for complete rule language and detailed guidance, please visit:

Michigan.gov/pfasdrinkingwaterrules

Michigan Department of
Environment, Great Lakes, and Energy

Ian Smith
517-256-2474
SmithI@michigan.gov



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VDH and VDEQ Updates

HB586

Patron: Delegate Guzman (GA 2020)

- The State Health Commissioner to convene a PFAS workgroup,
- Conduct a detailed investigation on current literature and what other states are doing,
- Conduct PFAS occurrence study at no more than 50 waterworks and source waters,
- May develop MCL guidelines
- **Timeline:** December 01, 2021

Potential Issues: No state funding

HB1257

Patron: Delegate Rasoul (GA 2020)

- Establish MCLs for PFOA, PFOS, and other PFAS compounds, 1,4-Dioxane, and Chromium (VI)
- Provide status report by 11/01/2020
- Provide detailed report by 10/01/2021
- Effective Date: 01/01/2022

Potential Issues:

- No comprehensive PFAS, 1,4-dioxane, or Cr(VI) occurrence data in VA
- No funding

Virginia PFAS Workgroup Objective

May develop recommendations for specific maximum contaminant levels (MCLs) for:

- Perfluorooctanoic acid (PFOA)
- Perfluorooctane sulfonate (PFOS)
- Perfluorobutyrate (PFBA)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorohexane sulfonate (PFHxS)
- Perfluorononanoic acid (PFNA)

And other PFAS “as deemed necessary”



VDH Updates - Jan 19, 2021

1. PFAS Subgroup Functioning & Expectations
2. PFAS Occurrence & Monitoring Collaboration with VDEQ
3. Information sharing platform
4. PFAS Literature Review updates
5. Other Topics & Next Steps



"Water is the only drink for a wise man."
-Henry David Thoreau



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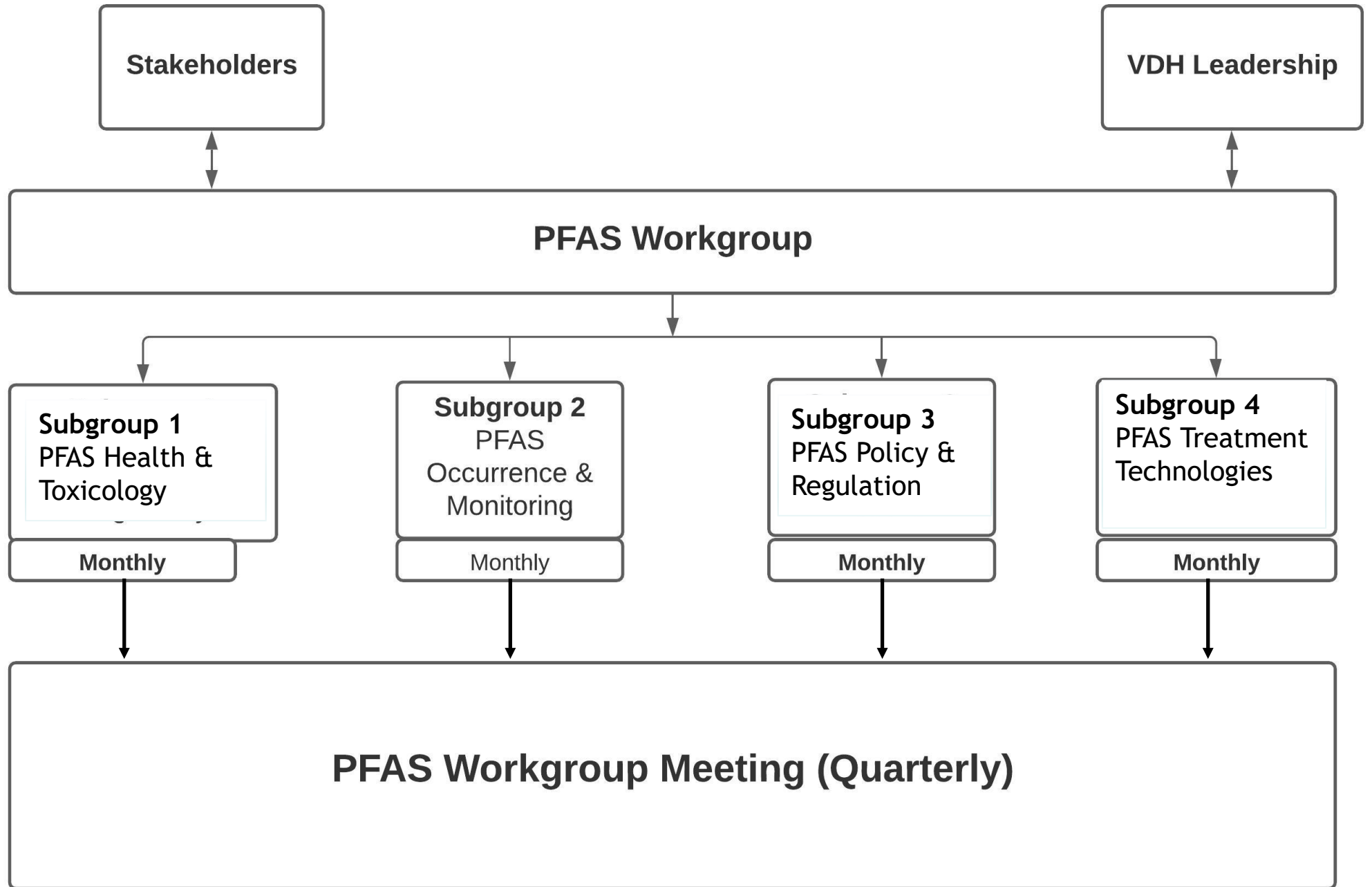
WESTERN VIRGINIA
WATER AUTHORITY
540.853.5700 | info@westernvawater.org



HALIFAX COUNTY
Virginia



PFAS Subgroup Functioning & Expectations



Virginia PFAS Subgroups

- What, Why, & How of the PFAS World

	Dec 2020	Jan 2020
<u>Subgroup 1: PFAS Health & Toxicology</u>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>
<u>Subgroup 2: PFAS Occurrence & Monitoring</u>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>
<u>Subgroup 3: PFAS Policy & Regulatory</u>	✓ <input type="checkbox"/>	✓ <input type="checkbox"/>
<u>Subgroup 4: PFAS Treatment Technology</u>	X	Planned

Subgroup 1: Health & Toxicology

- Review other States information & make recommendations on the What's & Why's?
- These recommendations should accompany with:
 - Rational (Scientific/Toxicological/Tech)? : Why chose these PFAS chemicals or Why add or remove any chemicals for VA?
 - What approach (Past & Future)?
 - What Value (Rational)?
- A Report on the Subgroup Findings

Subgroup 3: Policy & Regulation

- What methodology did other States follow to regulate such PFAS chemicals in their drinking water (How)?
- Based on what info/resources we have in VA, What framework would be best suited?
- What will be the path moving forward
- A Report on the Subgroup Findings

Subgroup 2: Occurrence & Monitoring

- What, Why and How
- Rational & Approach on selecting sampling sites
- Sampling methodology
- Coordinate Sampling effort & Report Results
- A Report on the Subgroup Findings

Subgroup 4: Treatment Technology

- Review & Recommend Best Available Treatment Technologies (BATT) for PFAS removal
- Technical & Economical Feasibility Analysis on the BATT for PFAS removal
- Relevance & Limitations of Treatment Technologies in Virginia Proximity to potential PFAS contamination
- A Report on the Subgroup Findings



Virginia PFAS Subgroups - Thoughts or Questions

Comments

Proposed PFAS Occurrence & Monitoring

VA PFAS Sampling & Monitoring Approaches based on:

- Available funding → number of sampling sites - 50 sites- ✓
- Maximum public health risk reduction - >4.5Million - ✓
- Proximity to potential PFAS contamination - Prioritized Site - ✓



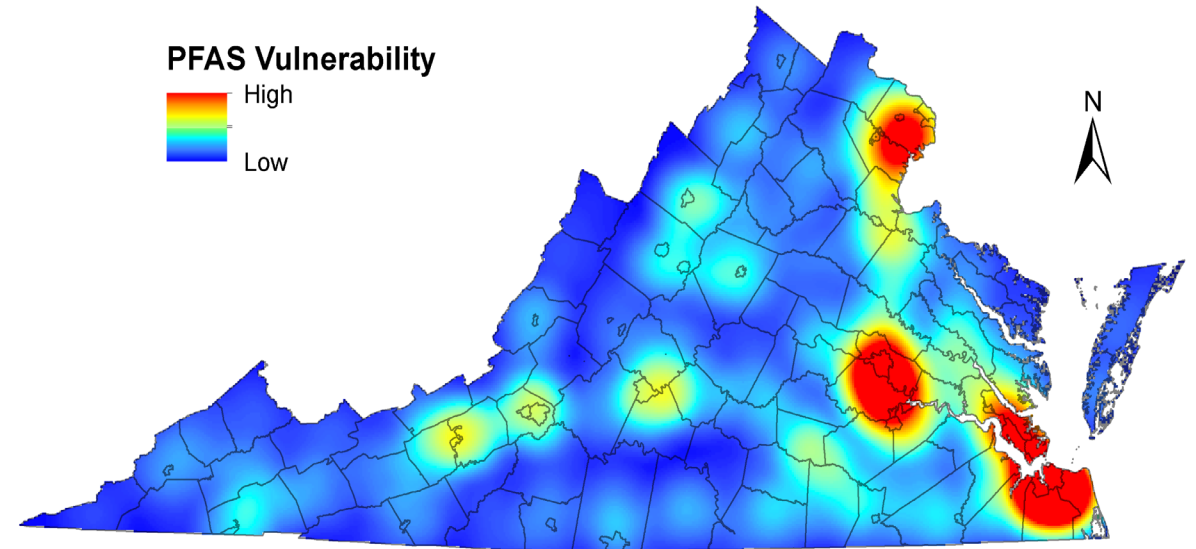
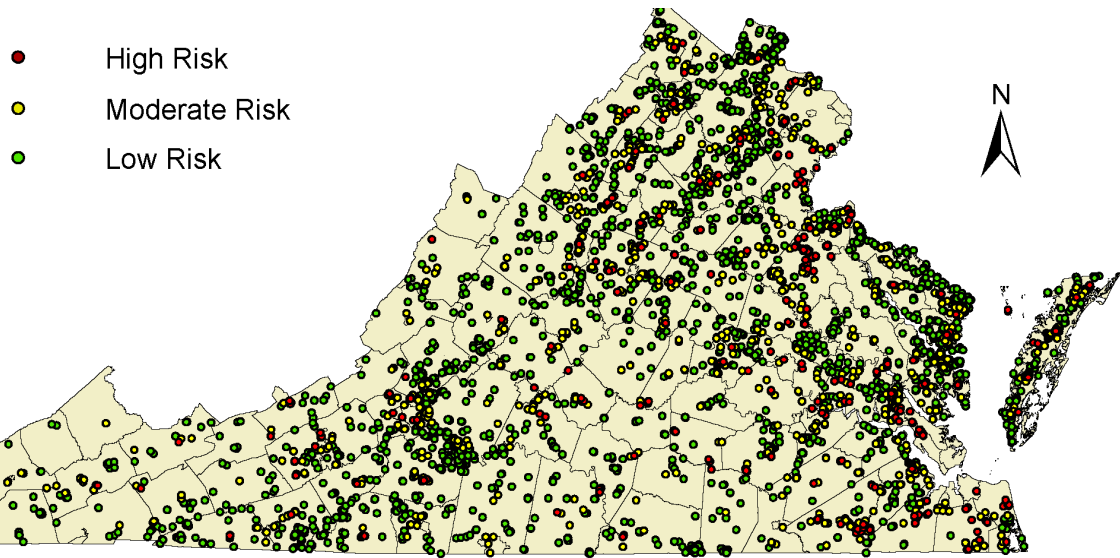
Collaborative Work with VDEQ

Proposed strategy (depends on budget):

1. Largest waterworks (17) in Virginia serve appx. 4.5 million consumers
2. Sampling - based on potential for PFAS contamination - VDH - DEQ data/risk maps
3. Major water supplies/intakes - James River, Potomac River, etc.
4. Hybrid approach ✓

Preliminary PFAS Contamination Heat Maps

- Collaborative effort with Virginia DEQ



0 25 50 100 150 200 Miles

Virginia Department of Health - Office of Drinking Water
This map shows the risk posed by PFAS sources to water sources in Virginia based on the water source's proximity to surrounding PFAS sources.



0 20 40 80 120 160 Miles

Virginia Department of Health - Office of Drinking Water
PFAS Density Map showing the areas at highest risk of PFAS contamination based on clusters of PFAS contaminant sources



VDH-VDEQ Collaborative Work

VA PFAS Sampling & Monitoring Approaches based on:

- Data on Unlined landfills
- VPDES permit discharges
- POTW data

VDH Work - Ongoing & planned

Ongoing PFAS Occurrence & Monitoring activities

- Lab services procurement (RAP) is approved by VDH; RFP will be out soon
- EPA approved VA PFAS QAPP
- 1st phase of sampling is expected between February or early March 2021

- Budget amendment is introduced in GA 2021 for 2021 and 2022 (\$60,000 each FY)

Questions/Comments

Ideas

Information Sharing - Sharepoint Site

Review of Sharepoint site

- Access & Use of Sharepoint site for information exchange
- Benefits of using Sharepoint site
- Share your material with Kris and/or I

TM-VDH Virginia PFAS- Workgroup - External

- Go to [TM-VDH-Virginia-PFAS-Workgroup-External](#)



Sharepoint Demo

TM-VDH Virginia PFAS- Workgroup - External

- Go to [TM-VDH-Virginia-PFAS-Workgroup-External](#)

Questions/Comments

TM-VDH Virginia PFAS- Workgroup - External

- Go to [TM-VDH-Virginia-PFAS-Workgroup-External](#)

PFAS Literature Review

An ongoing effort

- Literature on various aspects of PFAS is available at Sharepoint site
- Major Studies/Reports by States, and Federal agencies on the PFAS in drinking water especially:
 - Toxicological profiles of Perfluoroalkyls
 - Regulatory Considerations utilized in different states
 - PFAS Rulemaking Processes & Toolkits
 - Scientific Studies/Reports
- If you need any specific study/report/publication, please email Kris Latino or I
- Literature review report/update at our next Workgroup meeting

Questions & Comments

Literature review

PFAS Subgroup Updates

Subgroup 1: PFAS Health & Toxicology

Subgroup 2: PFAS Occurrence & Monitoring

Subgroup 3: PFAS Policy & Regulatory

Subgroup 4: PFAS Treatment Technology

PFAS Toxicology Subgroup Update

Dwight Flammia, Ph.D.

State Public Health Toxicologist

Virginia Department of Health

January 19, 2021

EPA steps in developing an MCL

- For **chemical contaminants that are non-carcinogens** the MCLG is based on the reference dose. A **reference dose** (RfD) is an estimate of the amount of a chemical that a person can be exposed to on a daily basis that is not anticipated to cause adverse health effects over a lifetime.
- **To determine** the RfD, the concentration for the non-carcinogenic effects from an epidemiology or toxicology study is divided by uncertainty factors. This provides a margin of safety for consumers of drinking water.
- The RfD is multiplied by body weight and divided by daily water consumption to provide a Drinking Water Equivalent Level (DWEL).
- The DWEL is multiplied by the relative source contribution. The relative source contribution is the percentage of total drinking water exposure for the general population, after considering other exposure routes (for example, food, inhalation).

PFOS and PFOA toxicological findings

- PFOA and PFOS have been shown to cause reproductive and developmental, liver and kidney, and immunological effects in laboratory animals.
- PFOA and PFOS can cause tumors in animals.
- The most consistent findings from human epidemiology studies are increased cholesterol levels among exposed populations, with more limited findings related to:
 - low infant birth weights,
 - effects on the immune system,
 - cancer (for PFOA), and
 - thyroid hormone disruption (for PFOS).

Suggested review approach

Review other state and federal agency PFAS standards

- Animal vs. human study (epidemiological)
- Acute vs. chronic study
- Provide toxicological endpoint
- Safety or uncertainty factors
- Dose calculation
- Drinking water standard per PFAS or for sum of PFAS
- Response, notification, or action level
- PFAS to add or remove to ODW sampling list

Risk Assessment

- 1. Hazard identification
- 2. Dose response assessment
- 3. Exposure assessment
- 4. Risk characterization

1. Hazard Identification

- What findings or studies provides the basis for health concern
- Are there other health endpoints of concern
- Are there epidemiological or clinical data
- What is known about how the chemical adversely affects organisms

2. Dose-response Curve

- What model was used to develop the dose-response curve
- What is the route or administration
- What is the dose administered as compared to human exposure

3. Exposure Assessment

- Significant sources of exposure
- Population assessed
- What was the basis for the exposure assessment
- Any concern about cumulative or multiple exposures

4. Risk Characterization

- The summary of the first three parts of the risk assessment process
- Major conclusions, strengths, limitations, variabilities, and uncertainties
- How the risk compares to past or similar risk assessments with significant differences described

Discussion

- Material distributed after December meeting
- What to provide to Occurrence and Monitoring workgroup
- Start with PFOA,PFOS,PFNA,PFHxS
- PFBA PFHpA not as much data
- Best approach

Determining the Occurrence of PFAS in Virginia Drinking Water

Monitoring and Occurrence Subgroup Report

Bob Edelman

Virginia Department of Health

December 19, 2020

Virginia PFAS Workgroup

Objectives:

- **Determine the occurrence of PFAS in drinking water throughout the Commonwealth,**
- Identify possible sources of PFAS contamination,
- May develop recommendations for specific maximum contaminant levels (MCLs)

Six specific PFAS, including:

- Perfluorooctanoic acid (PFOA)
- Perfluorooctane sulfonate (PFOS)
- Perfluorobutyrate (PFBA)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorohexane sulfonate (PFHxS)
- Perfluorononanoic acid (PFNA)

Other PFAS “as deemed necessary”

Approach:

1. Research PFAS Occurrence/Sampling Studies in other states - internal deliverable Virginia PFAS
2. Sampling Study Plan
3. Organize, tabulate, and summarize Virginia PFAS Occurrence data

State PFAS Monitoring and Occurrence Programs

Summarize the following:

- Scope of sampling
- Sample location selection criteria
- Analytical Methods, target analytes, detection levels
- Sampling Frequency
- Who collected samples
- Summary of occurrence data, PFAS detections
- Source of funding for sampling
- Lessons learned

Massachusetts

Michigan

New Hampshire

Minnesota

California

Colorado

Washington

Virginia

Ohio

Summary of Observations

- Some states have not completed a sampling program after UCMR3
- Washington has proceeded to propose risk based State Action Levels without a occurrence study
- California's approach of targeting wells close to airports, landfills or wells with UCMR3 detections yielded many detections
- Monitoring near military bases with known PFAS releases yielded detections (California, Washington, Virginia)
- Colorado found PFAS in all surface water samples
- EPA Method 537.1 most frequently used
- Only New Hampshire mentions both Methods 537.1 and 533.
- Single sample used in many states

Summary of Observations

- Some states require confirmation samples if PFAS is detected (Michigan, California)
- PWS collected samples in most states
- Contractor collected samples in only a few states (Michigan, Ohio)
- States are frequently paying for occurrence studies, PWSs for compliance samples
- Public Notification requirements differ, depending on state HAs or MCLs.
- Possible seasonal nature to detections (highest number in Q3)
- No detections of PFAS in field blanks in Michigan (contractor sampling)
- NH does not require field blanks

Number of samples per location

- Most state occurrence studies used one sample per location
- Some states used confirmation samples upon detection of PFAS

Recommendation:

- One sample per sample location
- Training for samplers
- Limited FRB, perhaps 20%, target for confirmation samples
- Specify the Method Reporting Limits (MRL) carefully
- At least one confirmation sample upon detection > MRL of PFAS
- Take confirmation samples soon after a detection is reported

Sample Protocol Considerations

- Waterworks personnel to collect samples
- Detailed sampling protocol/instructions
- Proposing a sampling instructional video
- Samples results are sensitive to PPE and clothes worn by sampler
- Feedback:
 - Sampling by waterworks staff of entry point is feasible
 - Keep the sampling instructions simple and to the point
 - ODW review sampling instruction to be provided by laboratory

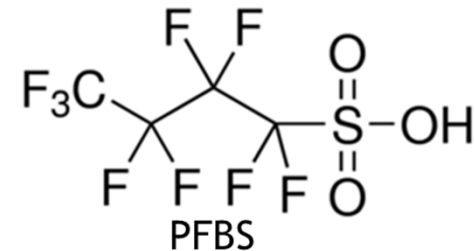
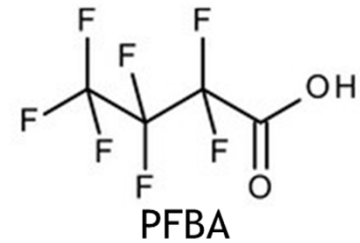
Analytical Method Considerations

Analyte	Abbreviation	CAS	Method 533	Method 537.1
Perfluorooctanoic acid	PFOA	335-67-1	X	X
Perfluorooctanesulfonic acid	PFOS	1763-23-1	X	X
Perfluorobutanoic acid	PFBA	375-22-4	X	
Perfluoroheptanoic acid	PFHpA	375-85-9	X	X
Perfluorohexanesulfonic acid	PFHxS	355-46-4	X	X
Perfluorononanoic acid	PFNA	375-95-1	X	X

Method Selection

Considerations:

- PFBA not in Method 537.1
- EPA Method 537.1 most often selected by states
- EPA Method 533 will detect additional compounds
- Cost - 533 costs \$20-40 more than 537.1
- Method detection limits differ
- Short or long list of analytes?
- Laboratory certification/accreditation



Recommend: Select Method 533, complete list of analytes, subject to meeting NELAC Accreditation requirements

Proposed PFAS Sampling/Monitoring Study

Approaches based on:

- Available funding → number of sampling sites
- Maximum public health risk reduction
- Risk to potential PFAS contamination
- Limited to 50 waterworks and sources of water

**UNDER
CONSIDERATION**

Hybrid Approach:

1. Largest waterworks (17) in Virginia serve appx. 4.5 million consumers
2. Groundwater systems based on risk potential for PFAS contamination - DEQ risk information
3. Major water supplies

17 Largest Waterworks

Surface water systems:

- 23 Raw sources
 - 21 Water Treatment Plants
 - 21 Entry Points at Water Treatment Plants
 - 12 Consecutive Connections
-
- Entry Points + Consecutive Connections = 33 locations

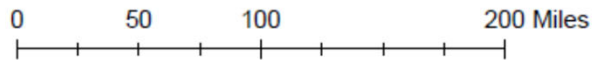
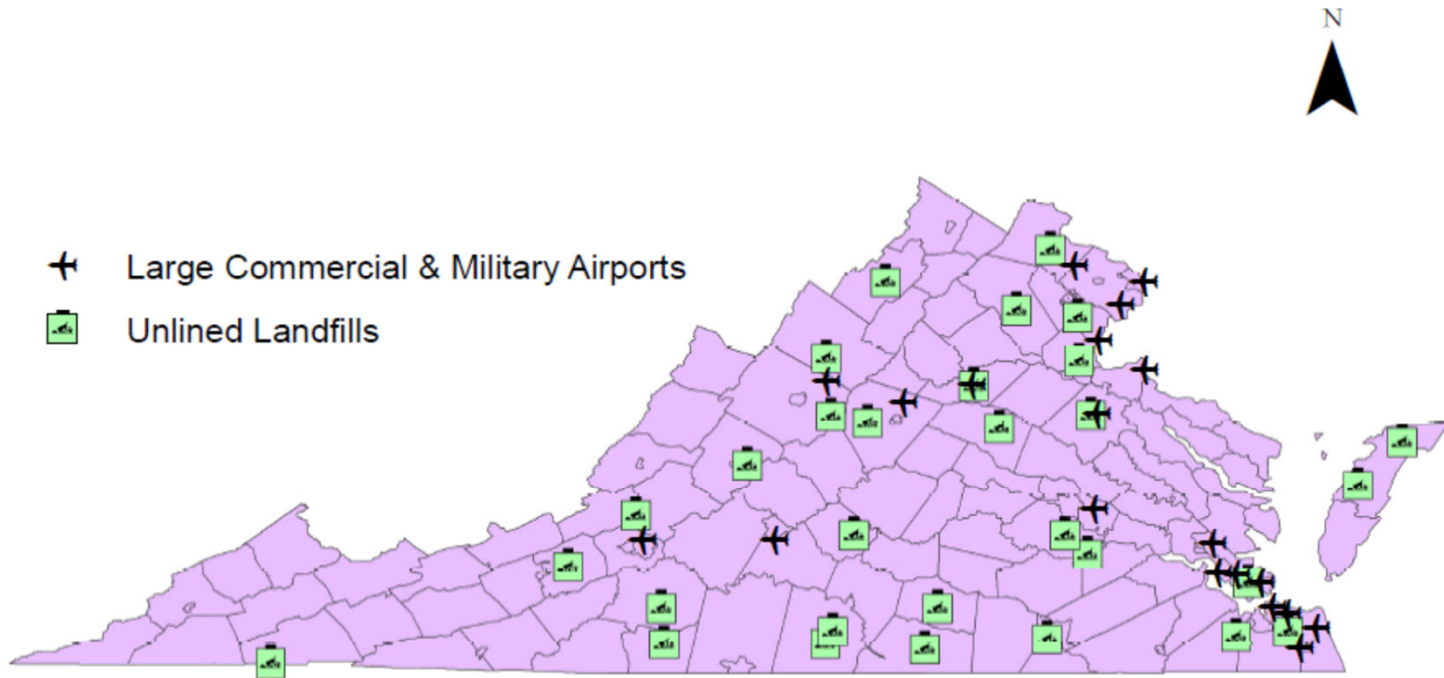
**UNDER
CONSIDERATION**

Potential PFAS Contamination Risk

- New list of unlined landfills from DEQ
- Prioritize based on risk due to proximity to certain activities:
 - Landfills - DEQ List
 - Airports (large) based USGS airport data
- Focus on groundwater sources for community and NTNC waterworks

**UNDER
CONSIDERATION**





**UNDER
CONSIDERATION**

Methodology

**UNDER
CONSIDERATION**

High Risk = within ½ mile of large airport or unlined landfill

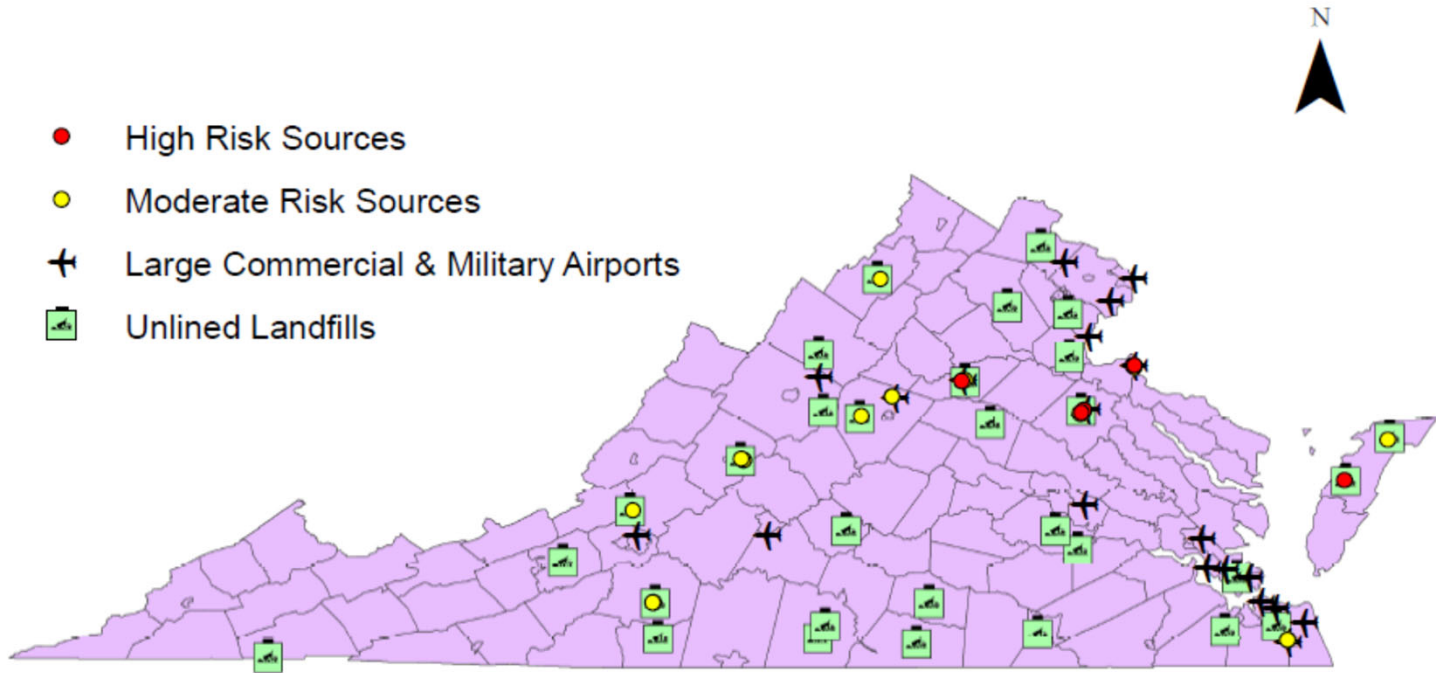
Medium risk = within 1 mile of large airport or unlined landfill

Groundwater sources:

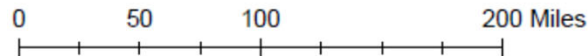
1. Start with list of sources that are ranked as high and medium risk from GIS
2. Select community and NTNC waterworks

6 - High risk wells

15 - Medium risk wells



- High Risk Sources
- Moderate Risk Sources
- ✈ Large Commercial & Military Airports
- 🗑 Unlined Landfills



**UNDER
CONSIDERATION**

Sampling Major Water Sources

**UNDER
CONSIDERATION**

ODW can request:

- Sampling at the water intakes to the Waterworks, prior to treatment
- Sampling at groundwater wells and springs, prior to treatment

This would involve:

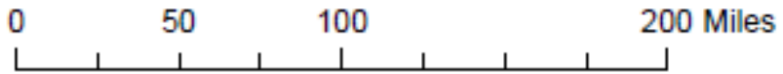
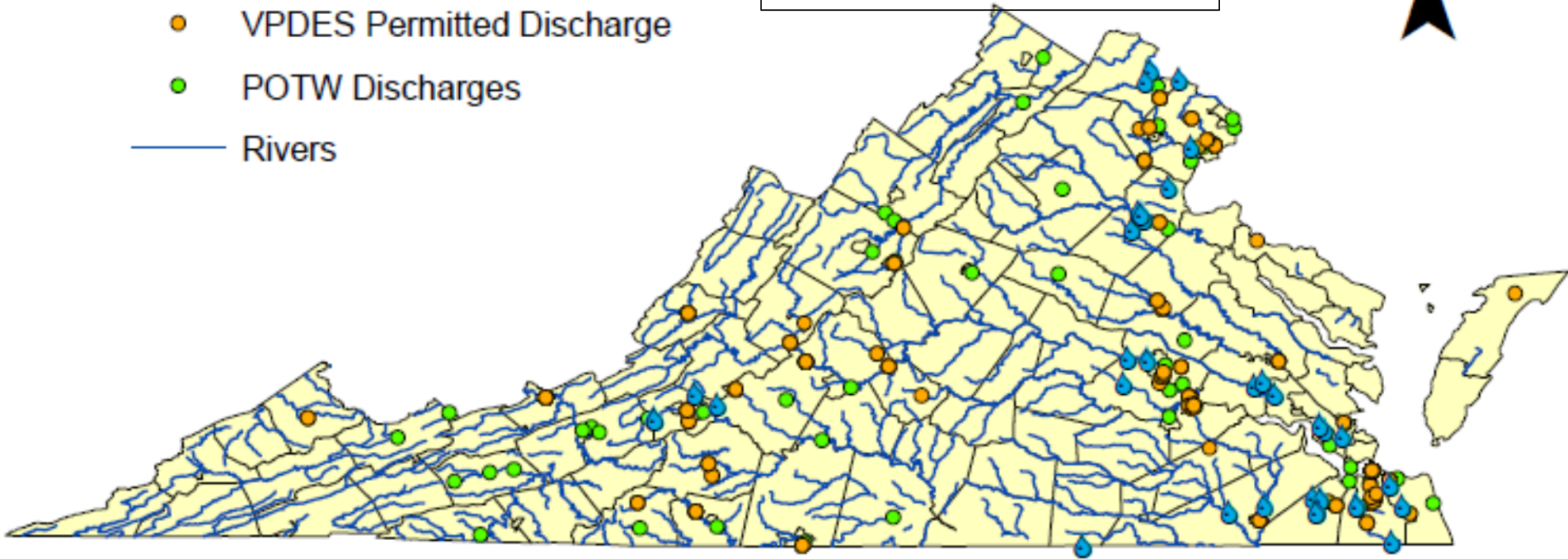
- Utilities staff to collect samples, FRB and ship it back to the Lab for analysis (No cost to the utility; shipping included)
- Sampling instructions and guidance will be provided

Over 120 surface water sources, thousands of wells to select from. What to do?

- Select the largest sources (12 large waterworks, 21 WTPs, 22 sources)
- Select the next group of large waterworks (based on gallons per day or population)
- Select surface sources based on risk (downstream of POTWs with SIUs, Industry)

UNDER CONSIDERATION

- Surface Water Intakes
- VPDES Permitted Discharge
- POTW Discharges
- Rivers



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Major Sources - Risk Based Approach

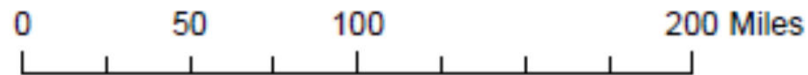
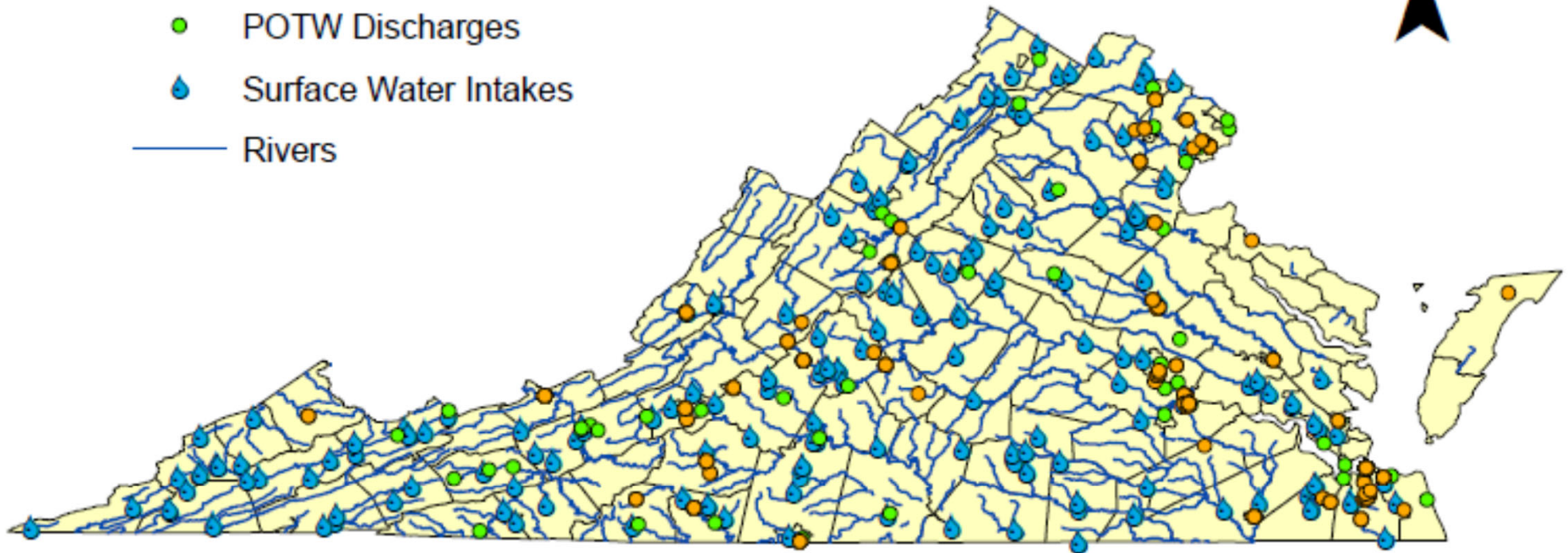
**UNDER
CONSIDERATION**

Surface Water Sources are impacted by discharges by POTWs and VPDES discharges

- DEQ lists of potential sources of PFAS (based on SIC Codes):
 - POTWs with Significant Industrial Users
 - VPDES discharge permits
- Identify Major Sources with risk of PFAS impact

UNDER CONSIDERATION

- VPDES Permitted Discharge
- POTW Discharges
- Surface Water Intakes
- Rivers



Hybrid Approach Summary

**UNDER
CONSIDERATION**

	# Samples	# Systems	Population
17 Large	33	17	4,541,619
High Risk - all	6	5	13,329
Medium Risk - all	15	11	2,124
Source Water	17	17	
17 Large + High + Medium Risk + Source Water	71	50	4,557,072
Maximum	106	50	

Request Existing PFAS Monitoring Data

Criteria from waterworks:

- Sampled/analyzed in 2018 to date
- EPA Method 533 or 537.1
- Entry Points
- Raw Water
- Passes QA/QC

**UNDER
CONSIDERATION**

Virginia already has UCMR3 data

UCMR5 sampling in 2023 - 2025

Consider other data sources of environmental data?

Have any Question, Comment or Suggestion, contact Us

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PFAS Policy and Regulations Subgroup Update

Nelson Daniel

Virginia Department of Health
January 19, 2021



Virginia PFAS Workgroup - Objectives

Determine the occurrence of PFAS in drinking water throughout the Commonwealth,
Identify possible sources of PFAS contamination, and

Evaluate existing approaches to regulating PFAS, including regulatory approaches adopted by other states and the federal government.

Six specific PFAS, including:

- Perfluorooctanoic acid (PFOA)
- Perfluorooctane sulfonate (PFOS)
- Perfluorobutyrate (PFBA) [aka Pentafluorobutanoic acid???]
- Perfluoroheptanoic acid (PFHpA)
- Perfluorohexane sulfonate (PFHxS) [Perfluorohexane sulfonic acid]
- Perfluorononanoic acid (PFNA)

Other PFAS “as deemed necessary”



PFAS Policy Subgroup Meetings

December 14, 2020 - overview, approach

- Gather info from states with restrictions, EPA
- See if other states are developing restrictions
 - Enabling legislation, regulations
 - Rule making process, program status, funding

January 14, 2021 - member reports on research:

- EPA
- CT, MD, NY, MA, MN, NH
- CA, CO, MI, NC, NJ, VT (did not have opportunity for all to report-out)

Future:

- Finish research
- Define additional research needs



PFAS – EPA

PFAS Action Plan

- [Initial Regulatory Determinations](#)
- Validation of testing methods for 11 PFAS chemicals
- Notice of proposed rulemaking - PFAS on Toxics Release Inventory list
- Funding for research on PFAS in agriculture and drinking water
- Interim Guidance on Destruction/Disposal of PFAS and PFAS materials

Interim Strategy for PFAS in Federally Issued NPDES Permits - 11/22/20

Current EPA Health Advisory Limit - 70 ppt

[ATSDR](#) Exposure Assessments and Health Studies



PFAS – Maryland

Maryland Department of the Environment

- Requested DW utilities to sample for PFAS
- DNR fish tissue sampling - fish consumption advisories
- Need for wastewater plants to sample effluent for PFAS
- St. Mary's River - oyster tissue and surface water sampling

Legislation

- HB0619/CH0276 - Prohibits the use of firefighting foam containing PFAS for training or testing purposes - 10/1/21 (Passed in 2020)
- HB0022/SB0195 - (2021) - Would prohibit use, manufacture or sale of firefighting foam, carpeting and food packaging containing PFAS



PFAS – New York

Legislation

- [S.8817/A.4739](#) (2020) - Broad ban on food packaging containing PFAS (effective 2023)
- Clean Water Infrastructure Act (2017) \$2.5 billion for infrastructure upgrades, DW monitoring, landfill leachate assessment

Regulation - [Department of Environmental Conservation](#)

- Public Health Law - Subpart 5-1.52, Section 225 - MCL for PFOS, PFOA at 10 ppt ea. (effective date?)
- 6 NYCRR Part 597 (2017) Listed PFOA and PFOS as haz substances
- Collection and disposal of AFFF



California

Response Levels

PFOA	10
PFOS	40

Notification Levels

PFOA	5.1
PFOS	6.5

Resource page:

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



Colorado

Health advisory 70

<https://cdphe.colorado.gov/pfcs/water>



COLORADO
Department of Public
Health & Environment

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Home About CDPHE > Public information > Data Health > Environment >

Report a concern or emergency

Perfluorinated compounds in drinking water

Connecticut

Regulatory Agencies:

Department of Public Health (DPH)
Department of Energy and
Environmental Protection (DEEP)

Regulatory limit(s) - Advisory Level (2016)

Σ: PFOA, PFOS, PFNA, PFHxS, PFHpA
should not exceed 70 ppt

DPH does not require testing or that
results be made public

<https://portal.ct.gov/DPH/Drinking-Water/DWS/Per--and-Polyfluoroalkyl-Substances>

State Actions:

PFAS Task Force (est. July 2019)

•Task Force produced PFAS Action Plan (Nov 2019)

PFAS Action Plan:

<https://portal.ct.gov/-/media/Office-of-the-Governor/News/20191101-CT-Interagency-PFAS-Task-Force-Action-Plan.pdf>



Potential Legislative/Policy Actions

1. AFFF take-back program
2. AFFF ban
3. Establish Safe Drinking Water Advisory Council (similar to our group now)
4. Require water bottlers to test for PFAS
5. Require disclosure of PFAS containing products on SDS



Massachusetts

320 CMR 22.07G - effective October 2, 2020

- <https://www.mass.gov/regulations/310-CMR-22-the-massachusetts-drinking-water-regulations>
- Massachusetts General Law c. 111, § 160 established authority for DEP to establish more stringent standards than EPA

Regulatory limits established by Massachusetts Department of Environmental Protection (DEP)

- MCL for ΣPFAS6 is 20ng/L
 - PFAS6: PFOS, PFOA, PFHxS, PFNA, PFHpA, PFDA

Other regulatory requirements

- Requires Mass. DEP to conduct a triennial review of science of PFAS in drinking water for purpose of evaluating amendments
- Consecutive systems are exempt from compliance monitoring
- Staggered implementation for initial system monitoring based on system size - started 1/1/21
- Increased sampling required if >10 ppt
- Sample analysis by EPA Method 537 or 537.1
- Public education required for exceedance of MCL

Other

- Mass DEP providing free PFAS testing to PWS's until June 30, 2021
- Massachusetts provided grant funding in October 2020 for assist PWS's with planning and design of treatment systems to remove PFAS
- Mass DEP made PFAS reducing projects a priority in 2021 SRF Loan Program
- Since August 2020, Mass DEP has required quarterly monitoring of PFAS in wastewater residual that are permitted to be land applied
- September 2020 Mass DEP initiated Stakeholder & Technical Advisory meetings to address PFAS in land applied wastewater residuals



Michigan

Adopted Regulation 8/3/20

PFOA	8
PFOS	16
PFNA	6
PFHxS	51
PFBS	420
PFHxA	400,000
GenX	370

Affects ~ 2,700 water systems (Community and NTNC only, not TNC, private wells)

Sampling conducted at all entry points; quarterly initially, may go to annual

Analysis by EPA method 537.1, but allows for development/use of new methods

[Does not include (perfluorobutyrate) PFBA; adds PFBS, PFHxA, GenX]



Minnesota

Began investigating PFAS contamination and effects in 2002 - first guidance issued

- 3M found PFAS in a production well - reported to MPCA and stopped producing PFAS
- Discharged PFAS waste to Mississippi River 1955 - 2002, groundwater at contaminated sites flows to Mississippi River

WQC developed by Minnesota Pollution Control Agency & Department of Health (MPCA/MDH)

- 2006 - 2007: input from STS Consultants
- Criteria vs standard - smaller data set, may use regional data only, less public review, no EPA approval needed
- Focused on fish toxicity and set levels based on water and fish consumption in target areas
- Minnesota Rules Chapter 7050.0218 - specific procedures for determining toxicity in human and aquatic life
 - Questionable data and method deviations not used in analysis - good job!

Regulatory limit(s)

- PFOA - 35 ppt (0.035 ug/L)
- PFOS - 15 ppt (0.015 ug/L)
 - Site-specific lower limits for PFOS - bioaccumulation high in fish, do not eat warnings
- PFHxS - 47 ppt (0.047 ug/L)

2019 - PFOS limit updated and PFHxS added

- Limits are currently being reevaluated using more recent data

New Hampshire

Mandating Statute—NH RSA 485:16-e (2020 N.H. Ch. 30:3, effective 7/23/2020)

- PFOA—MCL 12 ppt
- PFOS—MCL 15 ppt
- PFNA—MCL 11 ppt
- PFHxS—MCL 18 ppt
- No MCLGs

Background information

- MCLs previously established through regulatory process stopped by injunction, Before N.H. Supreme Court could hear appeal, N.H. legislature and governor enacted MCLs by law



New Jersey

Adopted Regulation

PFNA 13

PFOA 14

Adopted Regulations 6/1/20

PFOS 13

NJ established Drinking Water Quality Institute in 1984 to develop standards (MCLs) for hazardous contaminants in drinking water. Work on PFAS started in 2014.

They are conducting water system monitoring in the 1st Qtr of 2021

Appears to have been established so that it is also applicable to private wells



North Carolina

Health Advisory

GenX

140

[Proposed legislation \(HB1175\)](#)

Available information indicates that NC doesn't intend to establish a specific state standard (drinking water MCL); they are waiting on EPA

2019 statewide sampling event at drinking water intakes



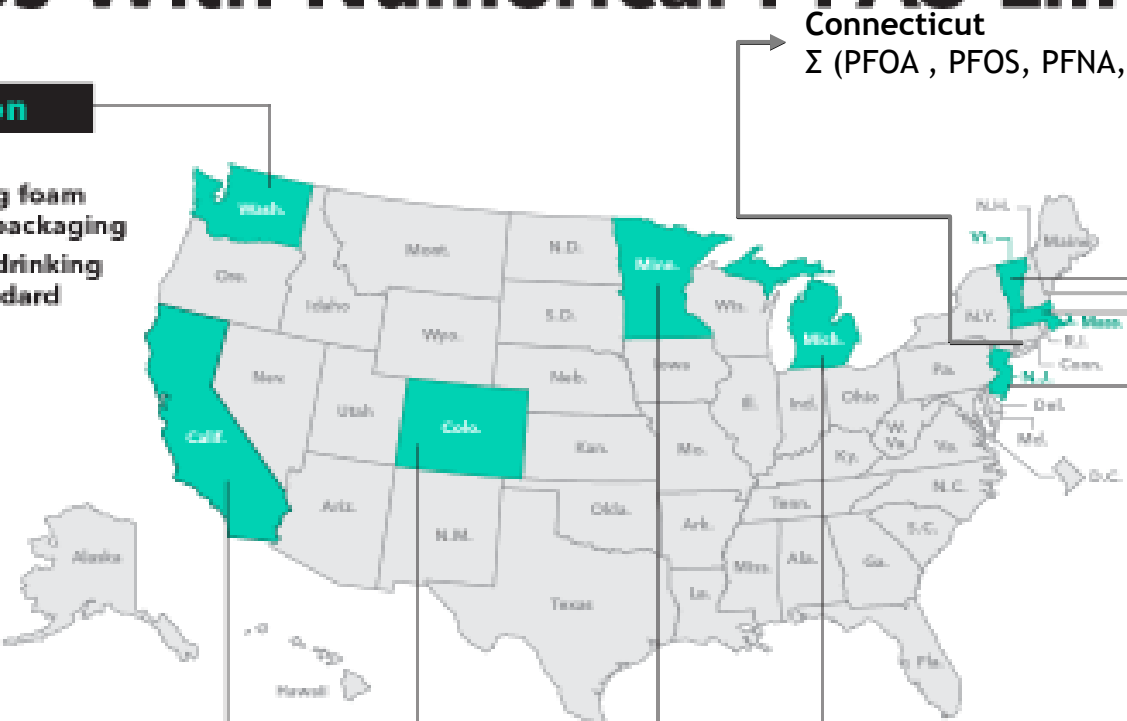
Vermont

[Adopted Regulation 3/17/20](#)

Σ (PFOA, PFOS, PFNA, PFHxS, PFHpA)

20

States With Numerical PFAS Limits



Washington

- Banned in firefighting foam and food packaging
- Proposed drinking water standard

Connecticut
 Σ (PFOA, PFOS, PFNA, PFHxS, PFHpA) < 70ppt

Vermont

- 20 PPT (PFAS)
- Drinking water health advisory for 5 PFAS

New Hampshire
 12 ppt PFOA
 15 ppt PFOS
 11 ppt PFNA
 18 ppt PFHxS

Massachusetts

- ~~70 PPT~~ (PFAS)
- State guidance to concentrations of ~~5~~ PFAS in drinking water

20 ppt Σ (PFOA, PFOS, PFNA, PFHxS, PFHpA, PFDA)

New Jersey

- Set PFNA standard at 13 ppt
- ~~Weighing proposed standards for:~~
 PFOA at 14 ppt
 PFOS at 13 ppt

California

- 14 PPT (PFOA)
- ~~13 PPT (PFOS)~~
- Drinking water notification guidance
 40 ppt PFOS

Colorado

- PFOA/PFAS listed as hazardous waste
- 70 PPT (Combined PFOA/PFOS)
- Groundwater quality standard for El Paso County only

Minnesota

- 35 PPT (PFOA)
- ~~27 PPT (PFOS)~~
- Health-based guidance values
 15 ppt PFOS
 47 ppt PFHxS

Michigan

- ~~70 PPT (Combined PFOA/PFOS)~~
- State standard for c1 in drinking water

8 ppt PFOA
 16 ppt PFOS
 6 ppt PFNA
 51 ppt PFHxS
 420 ppr PFBS
 400,000 PFHxA
 370 ppt Gen X

Bloomberg Environment



Research Needs and Assignments

Additional information to collect (workgroup suggestions):

- ?
- ?
- ?

Timeframe - present findings/recommendations to PFAS Workgroup at April mtg.

Next meeting - week of Feb 15 (tentative)

Discussion Questions for the Workgroup

- **What PFAS chemicals to select for Occurrence study?**
- **Which PFAS analytical method to be used?**
- **What about Field Reagent Blanks (FRBs)?**
- **PFAS Sampling & Monitoring Approach i.e. one point@ entry to the distribution?**

- **We are looking for few more Subject Matter Experts on Toxicology, Risk Assessment and Epidemiologists, any recommendations?**

General Discussion

- Would you like to hear from other speakers on this topic?
- What other changes shall we make to make this group more effective?
- Frequency of the meeting?

Virginia PFAS Activities - Summary

- Form a Workgroup
- Conduct a detailed investigation on current literature and what other states are doing,
- Conduct PFAS occurrence study at no more than 50 waterworks and source waters,
- Develop MCL guidelines/recommendations
- **Completed** ✓
- Ongoing - Conduct via a State University (\$10k)
- Ongoing - Preliminary study design
- **Not yet started**

Public Comments

- Name and Affiliation

Thank you

- Workgroup members and Subgroup Leads (Nelson Daniel, Bob Edelman, Dwight Flammia, and Dan Horne) and Members for their time and participation
- MI EGLE – Eric Oswald and Ian Smith
- ODW – Admin support (Kris Latino) and Facilitation (Dwayne Roadcap)

Have any Question, Comment or Suggestion, contact Us

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