

PFAS Treatment Technologies Subgroup
Virginia Department of Health Office of Drinking
Water Meeting Minutes (FINAL)
January 29, 2021
(10:00 a.m. – 11:30 a.m.)

1. Member Introductions

ODW Southeast Virginia Field Office (SEVFO) Director, Dan Horne called the meeting to order 10:02 am. He advised that meetings would be conducted as a public meeting under FOIA guidance, and will be recorded. Minutes and meeting materials will be posted on Town Hall.

The members of the subgroup who were present each introduced themselves, and mentioned their interest in and experience with PFAS:

The members present:

Henry Bryndza (Dupont)
Jessica Edwards (Loudoun Water)
Wendy Eikenberry (Augusta County Service Authority)
Mark Estes (Halifax County Service Authority)
Chris Harbin (City of Norfolk)
Jamie Bain Hedges (Fairfax Water)
Mike Hotaling (Newport News Water)
Russ Navratil (Virginia Section AWWA)
Kelly Ryan (Virginia American Water)
Dan Horne (VDH-ODW)

(Note: member Mike McEvoy (Western Virginia Water Authority) joined the meeting late due to a conflict.)

Dan mentioned that SEVFO is the only ODW Field Office that has dealt with PFAS issues (so far), with several having found PFAS in the groundwater underlying the facilities (all being military or other federal facilities). One Navy facility has already installed PFAS removal treatment, another NASA facility is wrapping up installation of treatment, and another Navy facility is in early stages of investigating the extent of groundwater contamination and design of treatment. He also noted that EPA has issued a final decision to regulate PFOA and PFOS under the Safe Drinking Water Act (<https://www.epa.gov/ccl/regulatory-determination-4>)

Other attendees from VDH-ODW were:

Tony Singh

Nelson Daniel
Bob Edelman
Kris Latino

Other attendees:

Paul Nyffeler
Carroll Courtney
Joel Thompson

2. Subgroup – Objectives, Milestones, Logistics and Ground rules

Dan discussed the intended operations of the subgroup. He will serve as the meeting facilitator, and other members of ODW may attend. The subgroup will not make final decisions, but will make recommendations to the Full Workgroup. The intent is for the subgroup to work by consensus, but votes may occur if consensus can't be reached. Email communication will be by bcc, to prevent FOIA issues.

Tony Singh mentioned the Sharepoint site that has been developed for Workgroup (and subgroup) members to share information, and the ODW PFAS webpage that will host information, so that records are available to the public. The expectation is for all subgroup members to participate and contribute, dedicating time to research, study, and provide input to the subgroup.

The PFAS workgroup was developed to comply with House Bill 586 and House Bill 1257 to conduct a detailed investigation, conduct a PFAS occurrence study and to discover the presence of PFAS in the state of Virginia. The Treatment Technology subgroup's primary focus is to:

- Review and Recommend the 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,
- Report on the Subgroup Findings

The Subgroup members will have access to ODW's PFAS Sharepoint site and can forward any documents to Dan Horne (Daniel.Horne@vdh.virginia.gov) or Kris Latino (Christine.Latino@vdh.virginia.gov) to be added to the Treatment Technology folder.

Dan also discussed the Objectives of the group, which include:

- Review and recommend the best available treatment technologies (BAT) for PFAS removal
 - o Technical and economic feasibility analysis
 - Conventional treatment

- Advanced treatment
- Limitations on BATT
 - Removal performance limitations
 - Effectiveness against specific PFAS species.
 - Waste discharge limitations
- Potential design guidelines, treatment goals, operational monitoring
 - Is pilot testing needed
- Capital and operating costs
- Information needs and gaps

3. Subgroup Schedule, Expectations, and Deliverables:

The group will need to provide a status report by the next scheduled workgroup meeting in April. The schedule is as follows:

- a. Review PFAS Treatment Technologies applied in other States – Jan-Mar 2021
- b. Dan suggested that all members look at PFAS materials developed by the Interstate Technology Regulatory Council (ITRC), as a way to get some quick updates on treatment technologies. Many of the materials are posted on the ODW SharePoint site. Dan will provide a link to it, along with the ITRC website.
- c. Dan also asked for information regarding vendors (manufacturers) that have equipment for PFAS removal. Mark Estes and Russ Navratil volunteered to look into this information, and will report back next time. If members are aware of specific vendors of such equipment, please let Dan know, and he will share with the group.
- d. Members should also check other states who have PFAS removal equipment already installed. They can provide operating and capital costs.
- e. Review design criteria, capital & operating costs for existing applications. – Feb/Apr
- f. Review operating characteristics, performance criteria (ongoing performance monitoring?) – date TBD
- g. Develop recommendations for applying PFAS Treatment Technologies in Virginia – date TBD
- h. Potential cost estimates for PFAS removal system installed in VA – date TBD

Comments from subgroup:

Mike Hotaling suggested conducting a sensitivity analysis. He suggested that any Maximum Contaminant Levels (MCLs) for PFOA and PFOS will probably be well below the current EPA Lifetime Health Advisory of 70 parts per trillion (ppt).

Paul Nyffeler – Landfill costs and wastewater treatment costs should be considered within any solution. He suggested that the sensitivity analysis look at what the cost would be if the MCL went to 1 ppt. He noted that how PFAS removal may impact wastewater treatment is not yet known, but he noted that EPA's preference for

orthophosphate treatment for corrosion control under the Lead & Copper Rule Revisions may have significant impacts on wastewater treatment costs (nutrient control).

Wendy Eikenberry noted there may be issues with targeting a 1 ppt MCL, because analytical techniques may not be able to consistently and accurately measure that low. Tony Singh advised that he has some literature available that addresses this issue. He may have a report from the Department of Defense that specifically talks about this. Tony will get this document and make it available.

Next Meeting:

Since the PFAS Workgroup has four subgroups, ODW is suggesting that each subgroup have a recurring meeting time, in order to prevent conflicting/competing meetings. Dan suggested that the Treatment Technology group meet the 4th week of the month. The consensus of the group is to meet on the fourth Thursdays @ 10 a.m.

4. Public Comments:

There were no public comments.

The next meeting will be Thursday, February 25, 2021, at 10:00 a.m. The WebEx log-in information will be provided.

The meeting adjourned at 11:00 a.m.

PFAS Treatment Technologies Subgroup
Virginia Department of Health Office of Drinking Water
DRAFT Meeting Agenda
January 29, 2021
1.5 hours (10:00 a.m. – 11:30 a.m.)

1. Member Introductions
2. Subgroup – Objectives, Milestones, Logistics and Ground rules
3. Subgroup Schedule, Expectations, and Deliverables:
 - a. Review PFAS Treatment Technologies applied in other States – Jan-Mar 2021
 - b. Review design criteria, capital & operating costs for existing applications – Feb/Apr
 - c. Review operating characteristics, performance criteria (ongoing performance monitoring?) – date TBD
 - d. Develop recommendations for applying PFAS Treatment Technologies in Virginia – date TBD
 - e. Potential cost estimates for PFAS removal system installed in VA – date TBD
4. Public Comments

Next Meeting TBD (to be discussed at this meeting)

Establishing Regulatory Limits for PFAS in Virginia Drinking Water

Treatment Technology Subgroup

Dan Horne

Virginia Department of Health

January 29, 2021

PFAS Subgroup Meeting Overview

Meeting Overview/Agenda

- Member Introductions
- Subgroup – Objectives, Milestones, Logistics and Ground Rules
- Schedule, Expectations and Deliverables
- Public Comments
- Next Meeting



Subgroup Member Introductions

Henry Bryndza (DuPont)

Jessica Edwards (Loudoun Water)

Wendy Eikenberry (Augusta County Service Authority)

Mark Estes (Halifax County Service Authority)

Chris Harbin (City of Norfolk)

Jamie Bain Hedges (Fairfax Water)

Jack Hinshelwood (VDH - ODW)

Mike Hotaling (Newport News Water Works)

Mike McEvoy (Western Virginia Water Authority)

Russ Navratil (Virginia Section AWWA)

Kelly Ryan (Virginia American Water)

Dan Horne (VDH - ODW) Team lead

Subgroup Structure

Dan Horne will act as facilitator

Other ODW representatives may attend

We will report back to the Workgroup on findings and recommendations

Members will have assignments

Make decisions by consensus or if not by consensus, vote by members

ODW will post meeting minutes, agendas, handouts, etc. on Town Hall

We will provide time for public comments

Subgroup Logistics

Data sharing - An electronic file sharing platform (Sharepoint site)

Meeting information on Town Hall (www.townhall.virginia.gov).

Admin support - Office of Drinking Water (ODW) staff

Meeting Schedule - Monthly (as needed)

Meetings - Virtual via Webex

Meetings - Will be recorded

Meetings - Are considered meetings of a public body under Virginia FOIA

Email - Communications to Members - sent via blindcopy (so can't "reply-all")

PFAS Subgroup Member Expectations

- Participate and contribute to this subgroup
- Commitment of 5-10 hours per month to study, review, interpret and develop new documents / guidelines / recommendations

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

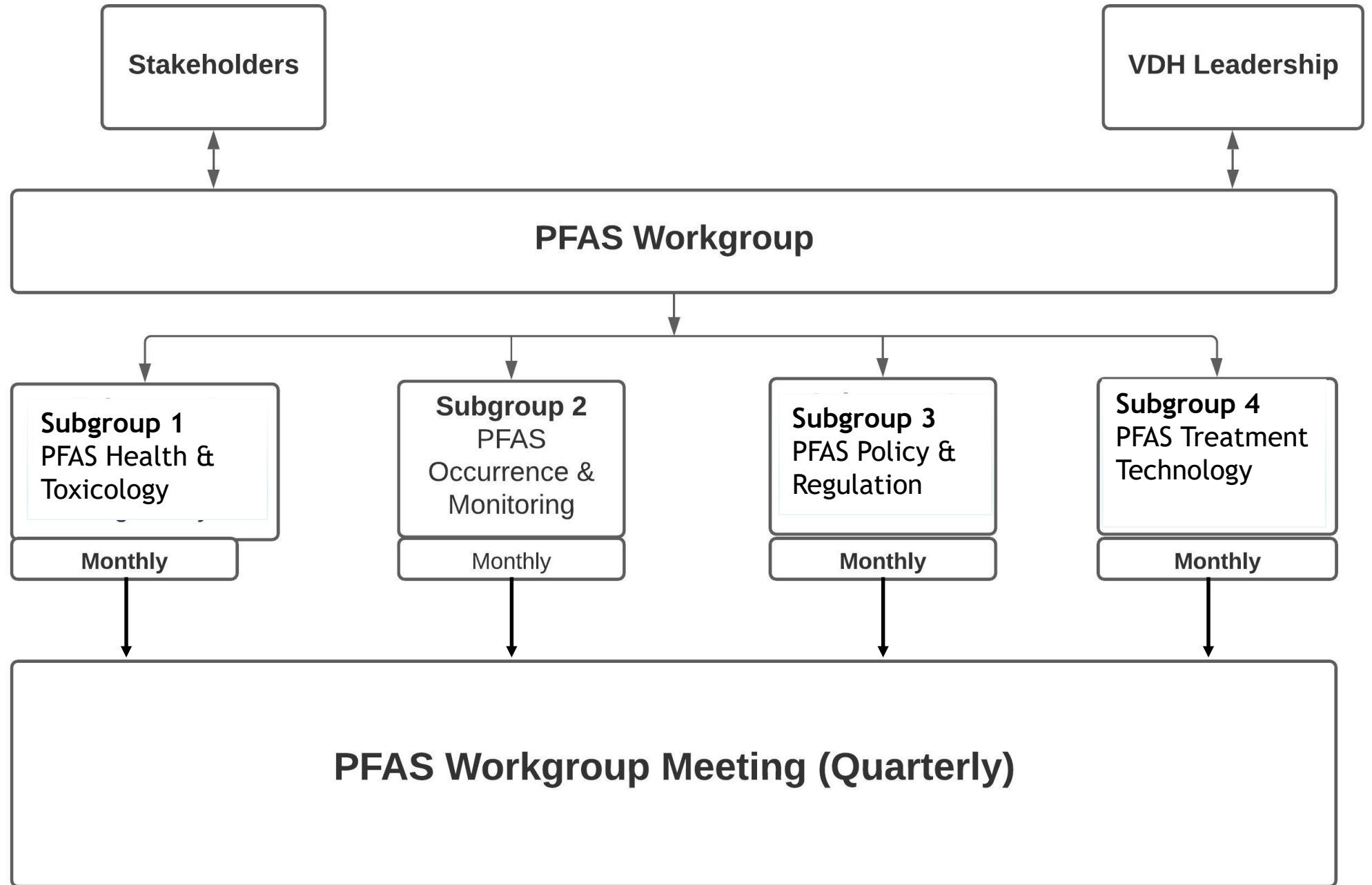
Patron: Delegate Rasoul (GA 2020)

- Establish MCLs for PFOA, PFOS, and other PFAS compounds, 1,4-Dioxane, and Chromium (VI)
- Provide status report by 11/1/20
- Provide detailed report by 10/1/21
- Effective Date: 1/1/22

Potential Issues:

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

PFAS Subgroup Functioning



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

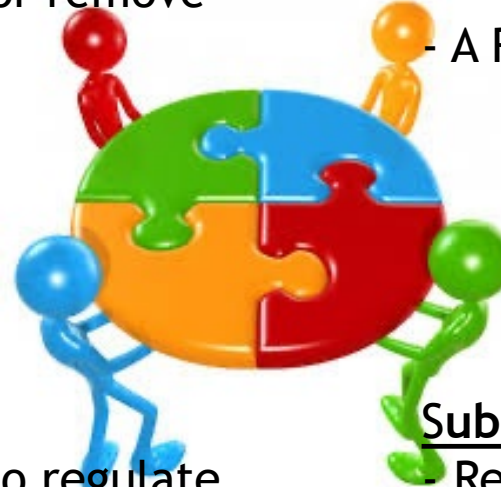
- What methodology did other States follow to regulate such PFAS chemicals in their drinking water (How)?
- Based on what info/resources we have in VA, What framework would be best suited?
- What will be the path moving forward
- A Report on the Subgroup Findings

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 Subgroup - Objectives

Review and recommend Best Available Treatment Technologies (BAT) for PFAS Removal

- Technical and economic feasibility analysis
 - Conventional treatment
 - Advanced treatment
- Limitations on BATT
 - Removal performance limitations
 - Effectiveness against specific PFAS species
 - Waste discharge limitations
- Potential design guidelines, treatment goals, operational monitoring
 - Is pilot testing needed (ever? always?)
- Capital and operating costs
- Information needs and gaps

Subgroup Deliverables

1. Quarterly status reports to Full Workgroup
2. Final report to Full Workgroup - date TBD
 - Need to address the objectives in previous slide

States With Numerical PFAS Limits

Washington

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

Vermont

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

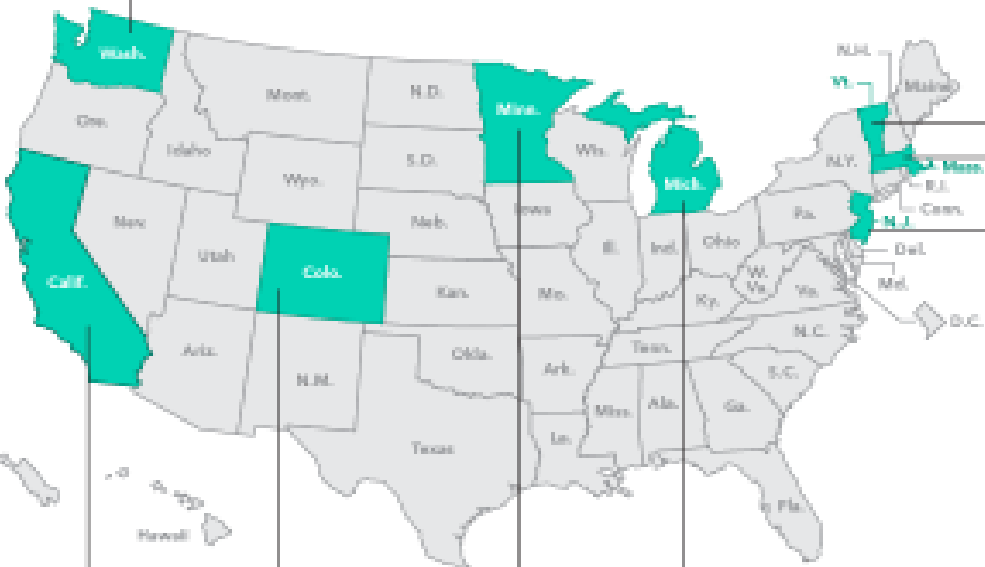
Massachusetts

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

New Jersey

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

- New Jersey
- Connecticut
- Maine
- Michigan
- Pennsylvania
- Colorado
- California
- Massachusetts



California

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

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

Michigan

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

Next Meeting of Subgroup

- ODW trying to avoid “competing meetings” by establishing a schedule of recurring meetings for each subgroup
- Suggestion: Each subgroup meeting in a specified week, one meeting per week
 - Health and Toxicology - second Friday of the month through May, then second Wednesday

Decision: Meet on fourth Thursday of the month, at 10:00 a.m.

Next meeting: February 25, 2021

Assignments for next Subgroup meeting

- All subgroup members please start reviewing ITRC documents on PFAS treatment technology
- Identify vendors/manufacturers of equipment/processes that targets PFAS removal: **Volunteers: Mark Estes and Russ Navratil**

Public Comments

Have any Questions, Comments, or Suggestions? Contact

Daniel B. Horne

Daniel.Horne@vdh.Virginia.gov

757-683-2000 x 102