

Virginia PFAS Workgroup Meeting Minutes (Final)

April 29, 2021 – 1:00 pm. to 3:30 p.m.

WebEx platform

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

Workgroup Members /Alternate Attendees:

Chris Harbin (City of Norfolk, Dept. of Public Utilities, waterworks > 50,000 consumers)
Jillian Terhune (City of Norfolk, Dept. of Public Utilities, waterworks > 50,000 consumers)
David Jurgens, (City of Chesapeake, Dept of Public Utilities, waterworks> 50,000 consumers)
Jamie Hedges (Fairfax Water, waterworks > 50,000 consumers)
Mike Hotaling (Newport News, waterworks > 50,000 consumers)
Jessica Edwards (Loudoun Water, waterworks > 50,000 consumers)
Russ Navratil (Virginia Chapter, American Water Works Association, advocacy group)
Geneva Hudgins (VA AWWA (alternate), advocacy group)
Mark Estes (Halifax County PSA, Community Waterworks serving <50,000 consumers)
Wendy Eikenberry (Augusta County Service Authority, waterworks < 1,000 consumers)
Steve Rissoto (American Chemistry Council, manufacturer with chemical experience)
Paul Nyffeler (Chem Law, represents Waterworks, alternate)
Henry Bryndza (DuPont (retired), manufacturer with chemical experience)
Phillip Musegaas (Potomac Riverkeeper, environmental organization)
Christopher Leyen (VALCV, environmental organization, alternate)
Erin Reilly (James River Association, environmental organization)
Jeff Steers (Virginia Department of Environmental Quality)
Dr. William Mann (Consumer of Public Drinking Water)
Dwight Flammia (VDH, State Toxicologist, Health & Toxicology Subgroup Lead)
Tony Singh (VDH, Office of Drinking Water, PFAS Workgroup Lead)

ODW Staff Supporting the Meeting:

Dwayne Roadcap (VDH Office of Drinking Water)
Robert Edelman (VDH, Office of Drinking Water, Monitoring & Occurrence Subgroup Lead)
Nelson Daniel (VDH Office of Drinking Water, Policy & Regulation Subgroup Lead)
Dan Horne (VDH, Office of Drinking Water, Treatment Technology Subgroup Lead)
Christine Latino (VDH Office of Drinking Water)

Guest Speaker

Mitchell McAdoo U.S. Geological Survey (USGS) Virginia and West Virginia Water Science Center

1. Call to Order

The Virginia Department of Health (VDH) Office of Drinking Water (ODW) Deputy Director, Tony Singh, Ph.D. called the meeting to order 1:02 p.m. ODW held the meeting via electronic communication means due to the public health emergency associated with the coronavirus

pandemic. ODW recorded the meeting and will post minutes on the Town Hall website (<https://townhall.virginia.gov>). The recording will be available at the VDH-ODW PFAS webpage <https://www.vdh.virginia.gov/drinking-water/pfas/>

2. Meeting minutes from March 4, 2021

Workgroup members did not have any comments or corrections to the minutes from the March 4, 2021 meeting. ODW will post the March 04, 2021 meeting minutes as final on Town Hall.

3. U.S. Geological Survey PFAS Study in West Virginia

Mitch McAdoo is a hydrologist with the U.S. Geological Survey's Virginia and West Virginia Water Science Center. He currently oversees a cooperative program between the USGS, West Virginia Department of Environmental Protection (WVDEP), and West Virginia Department of Health and Human Resources (WVDHHR) to sample per and polyfluoroalkyl substances (PFAS) in West Virginia public source water supplies. His research interests include identifying the occurrence of PFAS in the environment, characterizing water quality in abandoned underground coalmine aquifers and using environmental tracers to understand aquifer vulnerability.

Mr. McAdoo spoke about the study of PFAS contamination in West Virginia drinking water sources. He said the study involved collecting raw water samples from each community water system and school that operates a water system in West Virginia (roughly 280 sample sites). USGS personnel collected all of the samples to ensure consistent methodology. Sample collection should be completed this month (April 2021). USGS expects to release results in a peer-reviewed data release later this year and complete its report by June 2022. The data set will include field parameters (pH, dissolved oxygen, turbidity, etc.) major inorganics, nutrients, trace metals, and PFAS to get better information about water quality statewide. However, funding was not sufficient to include radionuclides and VOCs.

To date, preliminary results indicate PFAS (perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS)) at levels above 70 parts per trillion (ppt), the U.S. Environmental Protection Agency's (EPA) lifetime health advisory level for PFOA + PFOS, at 5 sites. Due to the known contamination sources close by, the USGS was expecting PFAS results of greater than 70 ppt at 4 sites prior to sampling.

Following the presentation, PFAS Workgroup members had an opportunity to ask questions, including:

- Did you consider sampling for radionuclides / radium?
 - o *The list of analytes was limited by funding and the study parameters WVDEP and WVDHHR established.*
- The FY2020 National Defense Authorization Act (NDAA) required USGS to survey for ecological exposure to PFAS, with priority in determining direct human exposure through drinking water. Was this project part of the NDAA mandate? What else is USGS doing under the NDAA mandate?

- *The USGS involvement in those projects is more focused at a regional level instead of a state level so the project is not part of the NDAA mandate.*
- What analytical method is being used for PFAS?
 - *The contract lab is using modified version of EPA Method 537 and 537.1 since both are designed for finished water and the sampling program is collecting raw water samples. The average MDL is 5.3 ng/L (nanograms per liter).*
- Mr. McAdoo indicated that the USGS had to adapt sample collection procedures for differences at water systems (in part based on the sample point). There were 8 teams collecting samples so quality assurance methods were based on the number of teams, project budget, and site conditions. They collected duplicates, field blanks, equipment blanks, etc. at approximately 15% of the sample sites.
- The budget for the project is \$1.69 million with funding from WVDEP, WVDHHR, and the USGS.

4. VA PFAS Workgroup Updates:

Dr. Singh provided updates on ODW and Workgroup actions since the last meeting on March 4, 2021. Dr. Singh's presentation follows the meeting minutes. In addition to the information in the presentation, Dr. Singh highlighted:

- Old Dominion University (ODU) is conducting a literature review and adding reports to the database of information about PFAS. Information about the literature review is on the PFAS SharePoint site. The ODU researchers are currently looking into any human/animal studies and have provided a complete excel reference list that is updated every Thursday.
- ODW scheduled and conducted a webinar to provide training on PFAS sample collection procedures. The video with sampling instructions is available under the tab "VA PFAS Sampling" at: <https://www.vdh.virginia.gov/drinking-water/pfas/>
- ODW communicated with waterworks about the PFAS sampling study and requested acknowledgements from them; ODW has received 27 acknowledgments, 1 waterworks declined to participate in the study and another is not using the proposed sample collection point so it also dropped out.
- ODW revised and submitted the Quality Assurance Project Plan (QAPP) for EPA approval, EPA wanted more information about the analytical method for raw water samples (Department of Defense method); while ODW works to resolve this, sampling will occur in 2 phases: Phase 1 will focus on finished water (groundwater sources and entry point samples at 17 large waterworks); Phase 2 will focus on surface water sources (raw water samples).
- ODW is currently compiling a list of Waterworks that will be included in Phase 1 and will send that to the lab so they can prepare and ship sampling kits. Waterworks should open the test kits only when they are ready to sample. Please do not collect and ship samples on Fridays because the lab does not accept delivery on the weekends. Once the sample is sent to lab, results will be sent to ODW and the waterworks at the same time.

- Once ODW receives results from the lab, they will go through a data validation process to ensure the lab followed proper analytical procedures, to look for signs of contamination or qualifiers, etc. (see presentation).
- ODW will maintain validated results in a searchable database, but not in the Safe Drinking Water Information System (SDWIS) database that ODW uses for monitoring results waterworks submit for compliance with requirements in the Waterworks Regulations.

ODW is developing a PFAS Communication Toolkit for waterworks that participate in the Sampling Study and health officials in the communities where those waterworks are located. The Toolkit contains guidance for waterworks on how to respond to results that indicate PFOA and/or PFOS are present, communication templates, fact sheets, and available resources. ODW shared a draft of the Communication Toolkit with VA PFAS Workgroup members so they can review and provide feedback. ODW requests comments by May 6, 2021.

5. Subgroup Reports:

Health & Toxicology

Subgroup leader Dwight Flammia said the toxicology subgroup is reviewing each of the six PFAS named in HB586 individually, starting with PFOS. Subgroup members looked at states that had established regulatory limits for PFOS and what technical supporting documentation they relied on to establish a maximum contaminant limit (MCL). For PFOS, the subgroup found a lot of literature but focused on three research papers. The next month, the subgroup focused on PFOA and noticed there was more literature, pertinent animal studies to get their MCLs range from 8 ppt to 20 ppt. The subgroup also reviewed the EPA relative source contribution decision tree and discussed exposure factors. Based on research and literature, it appears most exposure to PFAS comes from sources other than drinking water. All the Subgroup's research documents are saved on the PFAS Workgroup SharePoint site.

Future meetings will be on the second Wednesday of each month. The slide Dr. Flammia used for his portion of the meeting follows the minutes.

Occurrence and Monitoring

Robert Edelman provided an update on the Occurrence and Monitoring Subgroup activities. His presentation follows the meeting minutes.

During his comments about what to expect after sampling, VA PFAS Workgroup members asked what happens if a waterworks detects PFAS? Mr. Edelman referred to the recommendations in the Communication Toolkit. Jeff Steers (DEQ) said that DEQ can provide assistance if the PFOA/PFOS concentration in source water is above 70 ppt.

Policy and Regulation

Nelson Daniel provided an update on the Policy and Regulation Subgroup activities. His presentation follows the meeting minutes.

Paul Nyffeler expanded on the difference between the acid and anionic salt names of the PFAS listed in HB 586, saying that the different forms have different properties in the environment, and cautioned against generalizations.

Treatment Technologies

Dan Horne provided an update on the Treatment Technologies Subgroup activities. His presentation follows the meeting minutes.

After evaluating several different technologies, the Subgroup is focusing on the three that are generally considered the best available treatment technologies (BATT): Granulated Activated Carbon (GAC) Filtration, Ion Exchange Filtration, and Reverse Osmosis. The Treatment Technologies Subgroup's next step is to develop a template to use in preparing summaries/measurements of the treatment process, identify information gaps, and complete the summaries. Mr. Horne noted that treatment alternatives may be affected by what DEQ will or will not allow in discharges to wastewater treatment facilities or surface water.

The Subgroup meets on the fourth Thursday of the month at 10 am.

6. Moving Forward: April through June 2021

Dr. Singh provided a summary of upcoming activities for ODW and the Workgroup:

- PFAS sampling related activities are underway.
- PFAS Communications Toolkit is in development.
- PFAS Webpage: <https://www.vdh.virginia.gov/drinking-water/pfas/>
- VDH is required to submit reports to the Governor and General Assembly on PFAS in Drinking Water in Virginia (for HB586) by December 1, 2021 and the status of MCLs for PFOA, PFOS, 1,4-Dioxane, and Chromium (VI) by October 1, 2021 (HB1257). For both reports, ODW will need to have a draft ready for internal review and approval approximately 45 days before the deadline.
- ODW estimates to receive all the PFAS results by July 2021.

7. Public Comment

Dr. Singh invited members of the public at the meeting to provide comments. One person asked if the 2 waterworks that were not going to be part of the Sampling Study would be replaced. Dr. Singh said that ODW intends to replace them with new sampling sites.

The same person also asked about the making recordings of meetings available on the PFAS website. Dr. Singh said that ODW would update the website with the recordings.

8. Conclude Meeting

Following public comment, Dr. Singh concluded the meeting. The next VA PFAS Workgroup meeting will be in late June or July, 2021. Anyone who is interested in attending a subgroup meeting, please contact Christine.Latino@vdh.virginia.gov for login information. Meeting dates are posted on the Town Hall website.

Virginia PFAS Workgroup Meeting

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

WebEx (Virtual)
Thursday, April 29, 2021
1:00 p.m. – 3:30 p.m.

DRAFT AGENDA

Subject	Time
Connect to WebEx and Meeting Instructions	12:50 – 1:00 PM
Call To Order Meeting minutes from March 04, 2021 Meeting Overview of Agenda	1:00 – 1:10 PM
Other State Perspective on Regulating the PFAS in Drinking Water - Q&A Session	1:10 – 1:40 PM
VDH Updates & Discussion	1:40 – 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 proposed Time – June 2021)	3:30 PM

Establishing Regulatory Limits for PFAS in Virginia Drinking Water

Tony Singh, Ph.D., MPH, PE, BCCE

Meeting Agenda – April 29, 2021

- Introductions
 - VA Workgroup Members & VDH team
- Agenda adoption - Overview
 - Today's External Speaker
 - VDH Updates & VA PFAS Communication Toolkit
 - Subgroup Reports
 - Next Steps & Open Discussion
- Review/Approval of Meeting Minutes _March 04, 2021

Housekeeping

- Please use chat feature generously for any discussions and questions
- Please contact Christina Latino (Christina.Latino @vdh.virginia.gov) for any technical issues with WebEx platform
- There will be a public comment period at the end of the meeting

Mitchell McAdoo

Mitch McAdoo is a hydrologist with the U.S. Geological Survey's Virginia and West Virginia Water Science Center. He currently oversees a cooperative program between the USGS, WVDEP, and WVDHHR to sample per and polyfluoroalkyl substances (PFAS) in West Virginia's public source water supplies. His research interests include identifying the occurrence of PFAS in the environment, characterizing water quality in abandoned underground coal mine aquifers, and using environmental tracers to understand aquifer vulnerability.



VDH Updates – April 29, 2021

PFAS Literature Review – ODU Team

Gathered 1062 articles/reports and counting

- Federal/state agencies, animal/human studies, monitoring and occurrence, and treatment technology
- Literature available at the VA PFAS SharePoint Site under “PFAS Literature”
- Complete Excel reference list – updated weekly on Thursdays

Currently working on summarizing articles/reports on:

- Animal and Human studies are in progress
- State MCL summaries are almost complete
- Next will be PFAS Treatment Methods Economic and Feasibility analysis

Please contact Dr. Anna Jeng (hjeng@odu.edu) or Jacqueline D. (jdifu001@odu.edu) with any literature (article/reports/publications) requests.

Quick Updates

- PFAS subgroup meeting minutes are on the VA townhall website
- Potential Funding –
 - EPA PWSS for Emerging Contaminants: \$207,000
 - General funding of \$60,000
- PFAS Sampling webinar available <https://www.vdh.virginia.gov/drinking-water/pfas/>
- So far 28 Waterworks have responded as “Yes” to PFAS sampling; 1 Declined; 1 Requested more time; 1 VDH withdrew request; Other waiting

Where we are after March 04, 2021

VA PFAS Sampling Logistic Updates

- **Phase 1** VA PFAS Sampling will consist of Entry Point sampling and groundwater systems
- **Phase II** will focus on source water sampling; analytical method issue
- Recommended sampling on the week of May 10th 2021;
- The Lab will start shipping PFAS sampling kits on April 30, 2021; Return shipping label will be included in the kits.
- If you plan on taking sample at a later time, please do not open the test kits till you are ready for sampling;
- PFAS sampling test kits are good at room temperature for up to 2 months (VDH-ODW do not recommended this)
- Please do not collect PFAS samples on Friday; Saturday lab deliveries are not accepted.
- What if already have existing PFAS sampling results in last 6 months?

VA PFAS Communication Toolkit

Preparation

- VDH guidance to waterworks including communication templates
- PFAS Fact Sheets
- Talking Points (one pager)

Review Process

- VDH review (VDH-ODW)
- VA PFAS Workgroup review (Feedback on May 06, 2021)

Distribution

- PFAS Communication toolkit will be shared with all the waterworks selected for sampling, Local Health Directors (LHDs), VDH-ODW Regional Field Offices, and VDH Office of Communication
- “PFAS Fact Sheets” and “Talking Points” will be available for the general public on the VDH-ODW PFAS webpage

PFAS Sampling Study: Data Review, Verification, and Validation

Data review will begin with comparison of the laboratory reports (received as .pdf files) and Electronic Data Deliverable (EDD) files

ODW will:

- review each sample report for data qualifiers indicating a data quality problem.
- review the field reagent blanks associated with each water sample to confirm the field reagent blank is clean.
- review the recovery of analytes near or at the Method Recovery Limit (MRL) to confirm results are within method limits.
- compare the chain of custody information in the data with the contents of the laboratory report to confirm sample location, sample collection time and date, and evaluate sample hold times for compliance with the method requirements.
- review the case narrative for data qualifiers.

In addition, ODW will conduct in-depth review on at least 20% of the water samples for quality assurance purposes.

In-depth Data Validation

Reviewing laboratory records

Method 533 requirements:

- Preservation and holding times;

- Instrument performance check;

- Initial calibration;

- Quality Control of Samples;

- Continuing Calibration Check

- Field Duplicates;

- Field Reagent Blanks;

- Laboratory Fortified Sample Matrix;

Blanks

Surrogate Analyte Standard percent recovery

Laboratory Fortified Blank

Matrix spike and matrix spike duplicate analysis

Internal Standard

Target Analyte Identification

Target Analyte Quantification

System Performance

Performance Evaluation Sample

Regional Quality Assurance and Quality Control

Overall Assessment of Data

Data Handling & Management

Sampling Results

- Laboratory reports emailed to ODW and waterworks
- Electronic Data Deliverable (EDD) emailed to ODW

ODW will maintain results in a searchable database

- Reports for Subgroup & Workgroup Meetings
- Not in SDWIS; Not available on Drinking Water Watch (DWW)

Quality Assurance Project Plan (QAPP)

- Specifies project quality assurance requirements
- Evaluate if data meets Quality Control (QC) criteria
- Evaluate usability and bias of data not meeting criteria
- Discard data if it fails QA/QC requirements

PFAS Sampling Results: Guidelines for Publication

- Lab will share results with waterworks and VDH-ODW at the same time; Results will be labeled as “**Provisional**” prior to QA/QC evaluation
- All the results will go through extensive QA/QC review process
- VDH propose that PFAS sample results from Phase 1 and Phase 2 will be released together after the sampling event is complete (July 2021)

PFAS Sampling Results: Guidelines for Publication

VDH will provide a technical contact information to assist the participating waterworks with the media inquiries.

If VDH receives a request for records (i.e., sampling results) before making the data available to the public, under Virginia's Freedom of Information Act (FOIA), VDH is required to provide the records unless they are subject to an exemption. Because VDH does not anticipate that the sampling results will qualify for a recognized exemption, ODW will notify the associated waterworks as soon as practicable (typically within 24 hours) when a FOIA request is received so the waterworks can prepare.

Drinking Water Assessment, Prevention, and Response Toolbox for Waterworks

Proactive Approach

- Understand basics and health risks of PFAS
- Assess risk to source water
- Implement measures to reduce risk
- Sample finished water and at risk sources for PFAS

Sample results ≤ 70 ppt (PFOA+PFOS)

- Notify customers
- Evaluate risk to source water and implement BMPs
- Strategies on how to minimize exposure
- Take additional source and/or entry point samples, if needed

Sample results > 70 ppt (PFOA+PFOS)

Notify ODW as soon as practicable

Resample – to verify levels

Reduce exposure risk by notifying affected customers using the Public Notification template, CCR

Removing any source(s) with levels above the health advisory

Identify strategies for quickly decreasing levels in water (e.g., operational, alternate sources, blending)

PFAS Fact Sheets

What these Fact sheet contain

Additional Resources

Technical Support

Available Funding Opportunities

General information on PFAS

Other States Resources

PFAS Sampling Study: Data Review, Verification, and Validation

CHECK

Subgroup Reports – April 29, 2021

PFAS Health and Toxicology

- Reviewed the MCL process
- Reviewed PFOS technical/supporting documentation available from states with an MCL for PFOS
 - MCLs range from 10 ppt to 20 ppt
- Reviewed PFOA technical/supporting documentation available from states with an MCL for PFOA
 - MCLs range from 8 ppt to 20 ppt
- Reviewed EPA relative source contribution decision tree
- Discussed exposure factors (e.g.; body weight, drinking water consumption)
- Ongoing discussion of Health & Toxicology workgroup expectations from larger group

Virginia PFAS Workgroup

Monitoring and Occurrence Subgroup Report

Robert D. Edelman, PE
Virginia Department of Health
April 29, 2021

What to expect after sampling

Laboratory turn-around time is 10 business days from receipt

Laboratory Reports:

- Laboratory reports (PDF) emailed to ODW and waterworks
- Electronic Data Deliverable (EDD) emailed to ODW

ODW will file PDF reports

ODW will maintain results in a searchable database

- Reports for Virginia PFAS Workgroup
- Not in the Safe Drinking Water Information System (SDWIS) database
- Not available on Drinking Water Watch on ODW's website

What to expect after sampling

ODW Envisions data will become public through:

- Freedom of Information Act (FOIA) Requests
 - ODW will notify utilities of data requests
- ODW's publicly-facing website
 - ODW will notify utilities in advance of making this public
 - Envisioning a clickable map that will display data
 - Possible PFD or Excel spreadsheet of data
- Report to the General Assembly
 - ODW will share the data table with utilities as part of the drafting
 - Draft by August

Data Handling

Quality Assurance Project Plan (QAPP)

- Specifies project quality assurance requirements
- ALL Data will undergo data validation before use/publication
- Selected data will undergo in-depth data validation

Should not use data that fails method quality control criteria

- Evaluate if data meets Quality Control (QC) criteria
- Evaluate usability and bias of data not meeting criteria

Data Reporting

EPA Method 533 – for each analyte:

Practical Quantitation
Limit (PQL)

Limit of Quantification (LOQ)
goal is 4 ng/L

PQL is the LOQ for this project

Method Detection Limit (MDL)

Minimum Reporting Level (MRL)
goal is 1 ng/L

MDL is the MRL for this project

Values between PQL and MDL are considered “estimated”

VDH is considering showing values below the PQL as “< PQL” in public facing reports and documents

What will happen if PFAS is detected at a waterworks?

EPA Health Advisory for PFOA plus PFOS of > 70 ppt

- Finished Water: PFOA plus PFOS > 70 ppt => confirmation sample
- Source Water: PFOA plus PFOS > 70 ppt => ODW will request a sample of the finished water.
- PFAS > MRL - ODW may request a confirmation sample
 - Consider analytes detected, individual levels, total concentration
 - Compare to the EPA PFOA plus PFOS Health Advisory Levels
 - Compare to other available health based levels
 - Budgetary constraints
- Average confirmation and original sample. If average of PFOA plus PFOS > 70 ppt => corrective actions

Must a waterworks share PFAS sample results?

- The PFAS sampling is not mandated by VDH ODW
- The *Waterworks Regulations* do not require owners to notify customers of monitoring for analytes that are not mandated.

However:

- PFAS sample results at VDH ODW are public documents, subject to Freedom of Information Act (FOIA) requests

Therefore:

- Recommend sharing sample results through the CCR or other consumer notifications

Subgroup Comments and Suggestions

- VDH fact sheets on PFAS should be in place prior to releasing any data.
- A fact sheet explaining how to interpret the laboratory reports would be helpful.
- A VDH contact to direct the media to would be helpful if there are questions about the study itself.
- Request VDH to notify the water utilities when a FOIA request is received so the utilities can be prepared.
- Request VDH to notify the water utilities in advance of publication of documents that VDH creates (maps, spreadsheets, draft report).

Have any Question, Comment or Suggestion, contact Us

Robert D. Edelman

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PFAS Policy and Regulations Subgroup Update

Nelson Daniel

Virginia Department of Health
April 29, 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:

- | | | |
|------------------------------------|---------------------------------|---------|
| - [Perfluorooctanoate] | <u>Perfluorooctanoic acid</u> | (PFOA) |
| - <u>Perfluorooctane sulfonate</u> | [Perfluorooctane sulfonic acid] | (PFOS) |
| - <u>Perfluorobutyrate</u> | [Pentafluorobutanoic acid] | (PFBA) |
| - [Perfluoroheptanoate] | <u>Perfluoroheptanoic acid</u> | (PFHpA) |
| - <u>Perfluorohexane sulfonate</u> | [Perfluorohexane sulfonic acid] | (PFHxS) |
| - [Perfluorononanoate] | <u>Perfluorononanoic acid</u> | (PFNA) |

Other PFAS “as deemed necessary”

PFAS Policy Subgroup Meetings

December 14, 2020 - overview, approach

January 14, 2021 - member reports on research from other states, EPA

February 22, 2021 - updates, needs from other Subgroups

- Recommended following a rulemaking process that is consistent with SDWA

March 15, 2021 - EPA process to develop an MCL

- Reviewing and releasing sample results (policy issues)

April 19, 2021 - Communication with the Public

- Reviewing the Communication Toolkit
- Understanding Data Validation

February - Questions for Other Subgroups

From Treatment Technologies:

- What is efficacy of current treatment technology?
- Is the current technology capable of removing all PFAS? How much removal?
- What is relative cost, *i.e.*, for removal to 10 ppt, v. 5 ppt (10 v. 5 is not important, but representative of the issue)?
- What are capital costs, along with ongoing O&M costs?

From Toxicology:

- Is there information about consensus within the scientific community on limits for the entire family of PFAS or groups of PFAS an alternative to separate limits for individual compounds?

March Meeting: Feb 22, 2021 EPA News Release

Today, the U.S. Environmental Protection Agency (EPA) issued two actions to protect public health by addressing per- and polyfluoroalkyl substances (PFAS) in drinking water ...

Taken together, these two actions will support the agency's efforts to better understand and ultimately reduce the potential risks caused by this broad class of chemicals. EPA is repropounding the Fifth Unregulated Contaminant Monitoring Rule (UCMR 5) to collect new data on PFAS in drinking water and the agency is reissuing final regulatory determinations for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) under the Safe Drinking Water Act (SDWA). After a thorough review in accordance with Biden-Harris administration executive orders and other directives, the agency is reissuing these actions...

With the final Regulatory Determinations for PFOA and PFOS, EPA will move forward to implement the national primary drinking water regulation development process for these two PFAS...

Additionally, the proposed UCMR 5 would provide new data that is critically needed to improve EPA's understanding of the frequency that 29 PFAS are found in the nation's drinking water systems and at what levels...

For more information, visit www.epa.gov/safewater.

Final Regulatory Determinations for CCL 4

March 3, 2021 - Publication of EPA's final regulatory determinations for eight of the 109 contaminants listed on the Fourth Contaminant Candidate List (CCL 4) in the *Federal Register* (86 FR 12272, pages 12272-12291 (20 pages))

“The Agency is making a determination to regulate [perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS)] with a NPDWR. EPA has determined that PFOA and PFOS may have adverse health effects; that PFOA and PFOS occur in public water systems with a frequency and at levels of public health concern; and that, in the sole judgment of the Administrator, regulation of PFOA and PFOS presents a meaningful opportunity for health risk reduction for persons served by public water systems.” (86 FR 12276)

Final Regulatory Determinations for CCL 4

EPA will not regulate 1,1-dichloroethane, acetochlor, methyl bromide (bromomethane), metolachlor, nitrobenzene, and RDX

86 FR 12272

Revisions to UCMR 5 - Public Comment Period

March 11, 2021 - Publication of EPA's proposal to require waterworks to collect national occurrence data for 29 per- and polyfluoroalkyl substances (PFAS) (using EPA Methods 533 and 537.1) in the *Federal Register*

Opened a 60-day public comment period
- ends May 19, 2021

86 FR 13846 (pages 13846-13872 (27 pages))

Revisions to UCMR 5 - 86 FR 13857

Exhibit 7: Proposed Timeline of UCMR 5 Activities

2022	2023	2024	2025	2026
Pre-sampling Activity by EPA <ul style="list-style-type: none"> • Manage Lab Approval Program • Organize Partnership Agreements and State Monitoring Plans • Begin PWS SDWARS registration/inventory • Review GWRMP submittals • Conduct outreach/trainings 	<div> <div>←</div> <div>Sampling Period</div> <div>→</div> </div> <div> EPA Implementation Activities <ul style="list-style-type: none"> • Provide compliance assistance • Implement small system monitoring • Post data quarterly to NCOD </div> <div> PWS Sample Collection; Laboratory Analysis; Reporting <ul style="list-style-type: none"> • All large systems serving more than 10,000 people • All small systems serving between 3,300 and 10,000 people • 800 small systems serving fewer than 3,300 people </div>			Post-sampling Activity <div> PWSs, Laboratories <ul style="list-style-type: none"> • Complete resampling, as needed • Conclude data reporting </div> <div> EPA <ul style="list-style-type: none"> • Complete upload of UCMR 5 data to NCOD </div>

Revisions to UCMR 5 - 86 FR 13857

EXHIBIT 8—SYSTEMS TO PARTICIPATE IN UCMR 5 MONITORING

System size (number of people served)	National Sample: Assessment monitoring design	Total number of systems per size category
	List 1 Chemicals	
<i>Small Systems</i> ¹ (25—3,299)	800 randomly selected systems (CWSs and NTNCWSs)	800
<i>Small Systems</i> ² (3,300—10,000)	All systems (CWSs and NTNCWSs)	5,147
<i>Large Systems</i> ³ (10,001 and over)	All systems (CWSs and NTNCWSs)	4,364
Total	10,311

¹ EPA pays for all analytical costs associated with monitoring at small systems.

² Small system counts are approximate. EPA pays for all analytical costs associated with monitoring at small systems.

³ Large system counts are approximate.

March - Steps EPA follows to develop an MCL

The SDWA specifies the following three requirements for making a Regulatory Determination regarding MCL development:

- The chemical **may have an adverse effect on the health of persons;**
- The chemical is known to occur or there is a substantial likelihood that it **will occur in PWSs with a frequency and at levels of public health concern;** and
- In the sole judgment of the EPA administrator, **regulating the contaminant presents a meaningful opportunity for health risk reductions for persons served by PWSs.**

Final Regulatory Determinations for CCL 4

March 3, 2021

“The Agency is making a determination to regulate [perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS)] with a NPDWR. EPA has determined that PFOA and PFOS **may have adverse health effects**; that PFOA and PFOS **occur in public water systems with a frequency and at levels of public health concern**; and that, in the sole judgment of the Administrator, **regulation of PFOA and PFOS presents a meaningful opportunity for health risk reduction** for persons served by public water systems.” (86 FR 12276)

EPA steps in developing an MCL

After reviewing health effects data, EPA sets a maximum contaminant level goal (MCLG). **The MCLG is the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, allowing an adequate margin of safety.** 42 USC 300 g-1 (b)(4)(A).

MCLGs are non-enforceable public health goals. **MCLGs consider only public health and not the limits of detection and treatment technology effectiveness.**

When determining an MCLG, EPA considers the adverse health risk to sensitive subpopulations:

- Infants
- Children
- The elderly
- Those with compromised immune systems and chronic diseases

EPA steps in developing an MCL

For chemical contaminants that are carcinogens, EPA sets the MCLG at zero if both of these are the case:

- there is evidence that a chemical may cause cancer
- there is no dose below which the chemical is considered safe.

If a chemical is carcinogenic and a safe dose can be determined, EPA sets the MCLG at a level above zero that is safe.

For chemical contaminants that are non-carcinogens but can cause adverse non-cancer health effects (for example, reproductive effects), the MCLG is based on the **reference dose (RfD)** - 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.**

EPA steps in developing an MCL

Once the MCLG is determined, EPA sets an enforceable standard - generally a maximum contaminant level (MCL) - **the maximum level allowed of a contaminant in water which is delivered to any user of a public water system.**

When there is no reliable method that is economically and technically feasible to measure a contaminant at concentrations to indicate there is not a public health concern, EPA sets a **“treatment technique”** - an enforceable procedure or level of technological performance which public water systems must follow to ensure control of a contaminant.

EPA steps in developing an MCL

The MCL is set as close to the MCLG as feasible. Taking cost into consideration,* EPA must determine the **feasible** MCL or treatment technique. This is defined by SDWA as the level that may be achieved with:

- use of the best available technology or treatment approaches
- other means which EPA finds are available (after examination for efficiency under field conditions, not solely under laboratory conditions).

42 USC 300g-1 (b)(4)(B) - (D)

As a part of the rule analysis, SDWA also requires EPA to prepare a health risk reduction and cost analysis (HRRCA) in support of any NPDWR.

*<https://www.epa.gov/sdwa/sdwa-economic-analysis>

EPA steps in developing an MCL

Feasible technologies -

Each national primary drinking water regulation which establishes a MCL shall list the technology, treatment techniques, and other means which are feasible to meet the MCL*

For small systems, EPA (in consultation with the States) shall include in the list any technology ... that is affordable for waterworks serving—

(I) $< 10,000 > 3,300$;

(II) $\leq 3,300 > 500$; and

(III) $\leq 500 > 25$;

and that achieves compliance with the MCL or treatment technique, **including packaged or modular systems and point-of-entry or point-of-use treatment units.**

42 USC 300 g-1 (b)(4)(E)(ii)

*(but regs shall not require that any specified technology... to meet the MCL)

§ 32.1-169. (Effective January 1, 2022) Supervision by Board.

B. The Board shall adopt regulations establishing maximum contaminant levels (MCLs) in all water supplies and waterworks in the Commonwealth for (i) perfluorooctanoic acid and perfluorooctane sulfonate, and for such other perfluoroalkyl and polyfluoroalkyl substances as the Board deems necessary; (ii) chromium-6; and (iii) 1,4-dioxane. **Each MCL shall be protective of public health, including of vulnerable subpopulations, including pregnant and nursing mothers, infants, children, and the elderly, and shall not exceed any MCL or health advisory for the same contaminant adopted by the U.S. Environmental Protection Agency.** In establishing such MCLs, the Board shall review MCLs adopted by other states, studies and scientific evidence reviewed by such states, material in the Agency for Toxic Substances and Disease Registry of the U.S. Department of Health, and current peer-reviewed scientific studies produced independently or by government agencies.

Va. Code § 32.1-169 v. SDWA § 1412 (42 USC 300g-1)

Each MCL shall be:

- protective of public health, including vulnerable subpopulations (pregnant and nursing mothers, infants, children, and the elderly)
- shall not exceed any MCL or health advisory for the same contaminant adopted by the U.S. EPA

Each MCL shall be:

- Set as close to the MCLG as possible
- taking cost into consideration
- feasible technologies (shall list the technology, treatment techniques, and other means which are feasible to meet the MCL)
- considerations for small systems

Updates from April Policy Subgroup Meeting

Michigan: recently issued press release about compliance - summary of 1st round of sampling; most utilities are in compliance, some lag in getting data from smaller PWS, NTNCs... MI has \$500M grant program to help utilities with compliance issues (PFAS + other issues); compliance is based on running average, similar to DPBs v. individual test results.

https://www.michigan.gov/pfasresponse/0,9038,7-365-86513_96296-557120--,00.html

Minnesota: “Minnesota’s PFAS Blueprint” - a broad program to address PFAS, including risk assessment for water, air emissions, landfills, etc.; designate all PFAS as hazardous; require companies to disclose use of PFAS; focus on remediation at landfills, etc.

<https://www.pca.state.mn.us/sites/default/files/p-gen1-22.pdf>

April - Important information to convey re PFAS

PFAS stands for perfluoroalkyl and polyfluoroalkyl substances.

Clarify that while there are many compounds that fall within the PFAS category, VDH is currently studying the occurrence of six specific PFAS:

- perfluorooctanoic acid (PFOA)
- perfluorooctaine sulfonate (PFOS)
- perfluorobutyrate (PFBA)
- perfluoroheptanoic acid (PFHpA)
- perfluorohexane sulfonate (PFHxS), and
- perfluoronanoic acid (PFNA).

VDH has been tasked with assessing whether and at what level a regulatory standard (known as a maximum contaminant level or MCL) should be set for the presence of these six PFAS constituents in drinking water.

April - Information for Waterworks re PFAS

There is no regulatory limit on the concentration of PFAS in drinking water.

EPA has established a voluntary health advisory threshold for the sum of two of the PFAS chemicals, PFOS and PFOA, at 70 parts per trillion.

The science in this area is still evolving, and there is no consensus among states as to the appropriate MCL value.

This data will also be used to assess issues associated with application of the analytical method, concerns about cross contamination during sample collection, and other considerations to be applied when VDH develops an MCL. [Sampling instructions concerns about the potential for cross contamination] [also to explain to the public the widespread nature of PFAS]

Once the sampling results are collected, VDH will consider the establishment of an MCL, as well as the regulatory requirements that result from an exceedance of that MCL.

VDH is also closely tracking EPA's efforts to develop a federal MCL.

Nelson Daniel

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PFAS Treatment Technologies Subgroup Update

Dan Horne

VDH - Office of Drinking Water
April 29, 2021

Subgroup Members

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

Treatment Technologies Subgroup - Objectives

Evaluate commonly available treatment technologies for PFAS Removal

- Review conventional and advanced treatment
 - Identify potential Best Available Treatment Technologies (BATT)
- Limitations on BATT
 - Removal performance limitations
 - Waste discharge limitations
- Potential design guidelines, treatment goals, operational monitoring
- Capital and operating costs
- Information needs and gaps

PFAS Treatment Technologies Subgroup Meetings

Subgroup meets on the fourth Thursday of the month – 10:00 a.m.

January 28, 2021

February 25, 2021

March 25, 2021

April 22, 2021

Evaluation of Potential BATT

- “Conventional Treatment” (usual coagulation/settling/filtration, oxidation, aeration, etc.) NOT effective for PFAS Removal
- “Advanced Oxidation Processes” (UV-Ozone, H₂O₂-UV, etc.) NOT effective
- Have not considered experimental technologies – most of those are still in bench-top scale studies – a couple are moving towards very small-scale pilot testing
- Really looking at Activated Carbon, Ion Exchange, and high pressure (Nanofiltration/Reverse Osmosis) technologies

Granular Activated Carbon Filtration

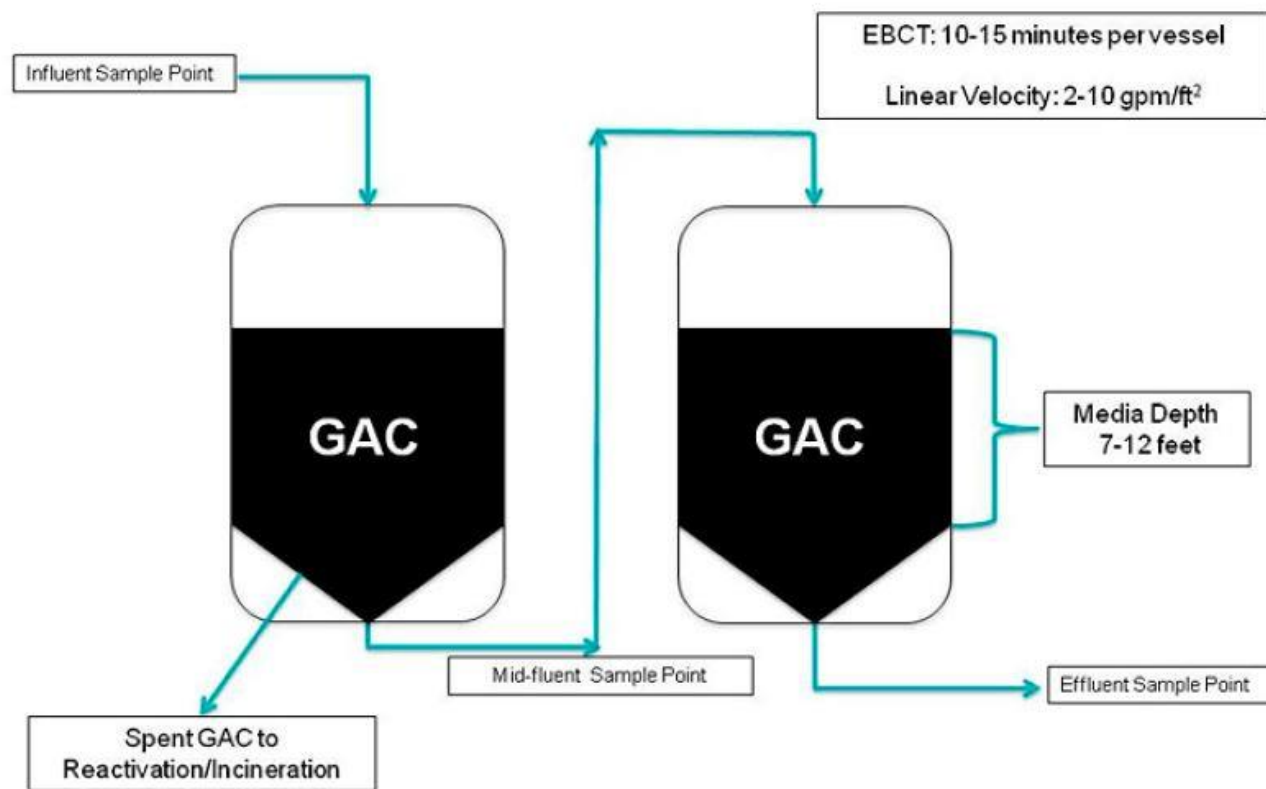


Figure 12-2. Typical GAC treatment system process flow diagram.

Source: Used with permission from Calgon Carbon Corporation.

Source: ITRC PFAS Technical and Regulatory Guidance, Document, Chapter 12

Ion Exchange Filtration

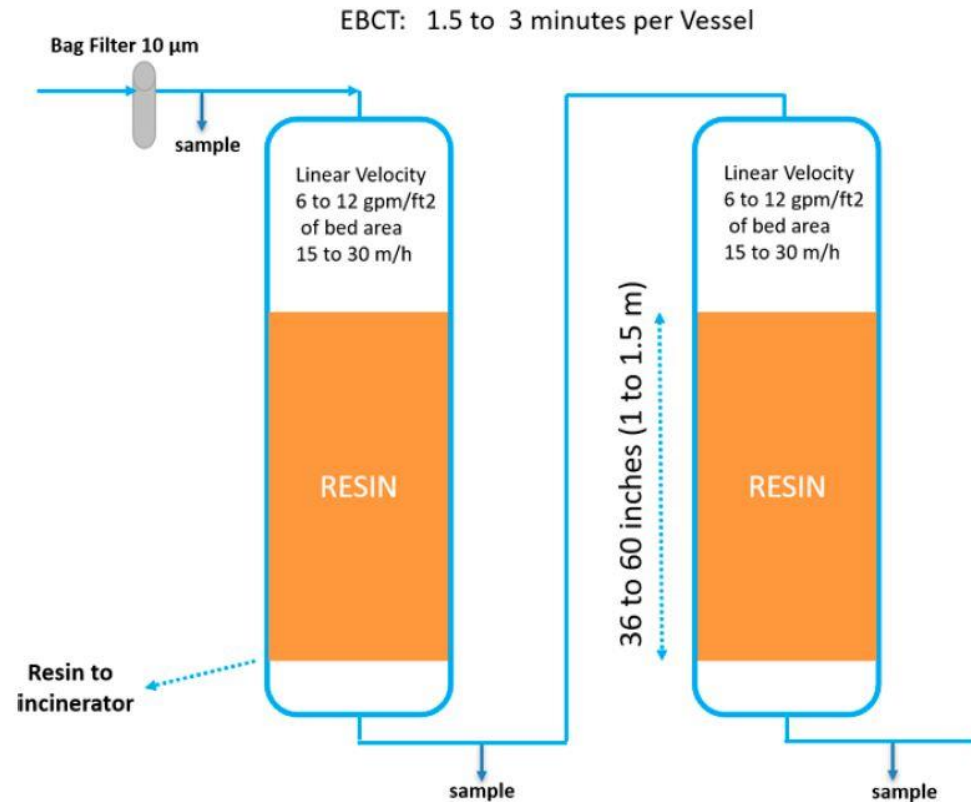
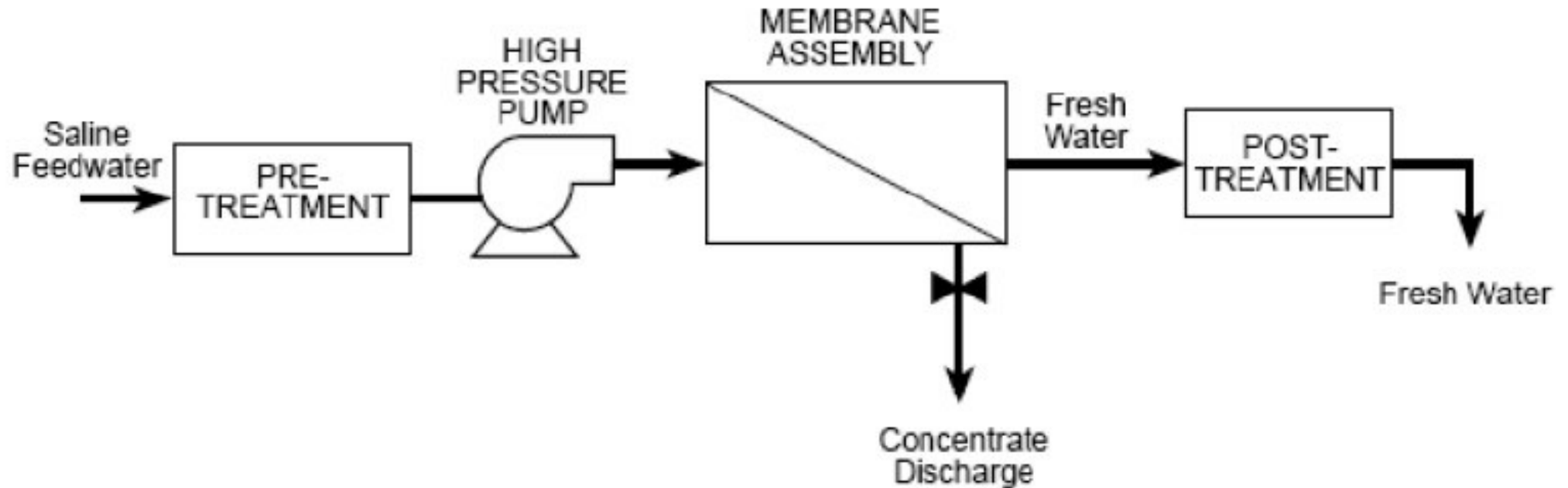


Figure 12-5. Single-use IX process flow diagram.
Source: Used with permission from Purolite Corporation.

Source: ITRC PFAS Technical and Regulatory Guidance, Document, Chapter 12

Reverse Osmosis Filtration



Source: “Renewable Energy Powered Desalination Systems”, Eltawil & Zhao, via ResearchGate.net

Subgroup Discussions

Reviews of GAC, IX, RO processes:

- General applicability
- Process limitations
- Case histories
- Applicability to small systems
- Wastes/disposal options
- Some discussion of costs

Haven't really discussed the role of Powdered Activated Carbon (PAC) in conventional treatment process trains

Treatment Technologies Subgroup - Next Steps

- Develop a template to use in preparing summaries/assessments of the treatment processes
- Identify information gaps
- Complete the summaries

What's Next - ?

Moving forward; April - June 2021

- PFAS sampling related activities are underway
- PFAS Communication Toolkit under preparation
- PFAS webpage - <https://www.vdh.virginia.gov/drinking-water/pfas/>
- PFAS report due to the VA General Assembly by October 01, 2021 (HB1257 - VDH internal deadline August 15, 2021) and December 01, 2021 (HB586 - VDH internal deadline September 15, 2021)
- VDH-ODW expects to have the PFAS results by July 2021

Open Discussions

Public Comment

Proposed Next meeting – July 2021

Thank you

VA PFAS Workgroup members
VDH Team

Have any Question, Comment or Suggestion, contact Us

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Virginia PFAS Workgroup Meeting Minutes (Final)

March 4, 2021 - 2:00 pm. to 3:00 p.m.

WebEx platform

Virginia Department of Health (VDH) Office of Drinking Water (ODW)

109 Governor Street 6th Floor, Richmond, VA 23219

Workgroup Members /Alternate Attendees:

Chris Harbin (City of Norfolk, Dept. of Public Utilities, waterworks > 50,000 consumers)
Jillian Terhune (City of Norfolk, Dept. of Public Utilities, 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)
Russ Navratil (Virginia Chapter, American Water Works Association, advocacy group)
Geneva Hudgins (VA AWWA (alternate), advocacy group)
John Aulbach (Aqua Virginia, waterworks < 50,000 consumers)
Wendy Eikenberry (Augusta County Service Authority, waterworks < 1,000 consumers)
Andrea W. Wortzel (Mission H2O, Advocacy group)
Steve Rissoto (American Chemistry Council, manufacturer with chemical experience)
Henry Bryndza (DuPont (retired), manufacturer with chemical experience)
Erin Rielly (James River Association, environmental organization)
Jeff Steers (Virginia Department of Environmental Quality)
Benjamin Hollard (Alternate, Virginia Department of Environmental Quality)
Dwight Flammia (VDH, State Toxicologist, Health & Toxicology Subgroup Lead)
Tony Singh (VDH, Office of Drinking Water, PFAS Workgroup Lead)

ODW Staff Supporting the Meeting:

Dwayne Roadcap (VDH Office of Drinking Water)
Robert Edelman (VDH, Office of Drinking Water, Monitoring & Occurrence Subgroup Lead)
Nelson Daniel (VDH Office of Drinking Water, Policy & Regulation Subgroup Lead)
Dan Horne (VDH, Office of Drinking Water, Treatment Technology Subgroup Lead)
Christine Latino (VDH Office of Drinking Water)

Guest

Anna Jeng (Old Dominion University)

1. Call to Order

VDH Office of Drinking Water (ODW) Deputy Director, Tony Singh, Ph.D. called the meeting to order 2:01 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>). ODW held the meeting via electronic communication means due to the public health emergency associated with the coronavirus pandemic. The meeting was recorded.

2. Meeting minutes from January 19, 2021

Workgroup members did not have any comments or corrections to the minutes from January 19, 2021 meeting. ODW will post the minutes as final on Town Hall.

3. PFAS Literature Review Work – Introduction

Dr. Singh introduced Dr. Anna Jeng, Professor of Environmental Health at Old Dominion University, School of Community and Environmental Health in Norfolk, Virginia. Dr. Jeng has more than 20 years' experience in public health assessment, epidemiology and toxicology related to health effects of organic compounds and metals in air and water. She has published more than 60 peer-reviewed articles and directed 18+ research projects. Currently, she serves as a member of the Virginia State Board of Health, a grant reviewer for the National Institutes of Health, a co-chair of the Hampton Roads Wastewater Surveillance for COVID Workgroup, a member of the Virginia Public Health Advisory Council, and numerous committees at ODU. Dr. Jeng will work on the PFAS literature review work.

4. Updates

Dr. Singh updated the Workgroup on several items:

- A. Minutes and presentations from PFAS Subgroup Meetings have been posted and are available for viewing on Town Hall.
- B. The budget that the General Assembly passed includes \$60,000 in additional funding for PFAS sampling. If the Governor approves the budget, the funding for PFAS sampling will be available in July 2021.
- C. ODW has received three quotes from laboratories for the proposed PFAS sampling. More details on these quotes will follow in the Monitoring and Occurrence Subgroup meeting.
- D. To be consistent with the Environmental Protection Agency's (EPA) sampling requirements for Method 533, field reagent blanks (FRBs) will be submitted with each PFAS sample collected as part of the sampling study.
- E. ODW will retain flexibility to make minor modifications and amendments to the PFAS Sampling Plan as the agency implements it. Minor modifications could include specifying field reagent blanks for all samples, adding EPA's guidelines for responding to situations where PFAS levels (perfluorooctanoic acid (PFOA) + perfluorooctanesulfonic acid (PFOS)) exceed 70 ppt, and replacing one sampling site with another if a waterworks would decline the request to collect a sample or not be using a source or entry point that is currently identified in the plan. ODW will not make substantive changes to the plan without informing the Workgroup.

5. VA PFAS Sampling Study Design

The Occurrence and Monitoring Subgroup looked at several approaches to sample waterworks and water sources for PFAS. The Subgroup recommended a hybrid approach that will sample

finished water from the 17 largest waterworks, then select water sources and waterworks that have the greatest potential for PFAS contaminants in raw water based on their proximity to locations where PFAS may have been used or disposed of, taking geographic distribution into account. The Virginia Department of Environmental Quality (DEQ) provided location data for unlined landfills, airports, publicly owned treatment works, and surface water discharge permit locations for industries (based on standard industrial classification (SIC) codes) which the Subgroup used to identify the remaining sample locations.

ODW will contact the waterworks identified in the Sampling Plan to let them know about the PFAS Workgroup, the study required by HB586 (2020), planned PFAS sample collection/analysis, and to get their concurrence to collect samples – which will be collected and submitted to the lab by the waterworks' operators. ODW/lab will provide training on sample collection for the waterworks operators and all testing, sample collection equipment, analysis will be paid for by ODW using funds from EPA.

A number of Workgroup Members offered comments on the Sampling Plan, or asked questions during the meeting:

A Workgroup member stated that there are at least two military facilities included in the plan and asked, if the Department of Defense (DoD) has already sampled these sites, whether we need to look at them further and if the PFAS group currently has the data. If we do, can we replace these systems with other systems? Dr. Singh said that he met with DEQ and DoD officials about PFAS on military facilities and the DoD said they would share sample results if they have data that is applicable to this study.

Sampling source water also came up for discussion. Workgroup members asked if it is necessary – since none of the waterworks uses activated carbon for PFAS treatment, the PFAS content in intake and finished water should be the same. Dr. Singh indicated that, because the language of the bill [HB586], there is a need to consider source water also, noting that Virginia does not have a lot of data on PFAS in water.

Workgroup members also expressed concerns about how ODW will release and publish test results, what will happen if PFAS are found, and requirements for waterworks to undertake corrective action if PFAS is detected at some level. In response, Dr. Singh emphasized that the purpose of the Sampling Plan is to get data collection (sampling and analysis started) and acknowledged that ODW and the Workgroup need to develop guidelines for communicating results that are consistent with public records requirements under Virginia's Freedom of Information Act (FOIA). Dr. Singh told Workgroup members that ODW has a webpage dedicated to PFAS on the VDH website (<https://www.vdh.virginia.gov/drinking-water/pfas/>) where ODW makes information available to the public. He expects this will include sample results, once they have undergone appropriate quality assurance/quality control (QA/QC) review. DEQ representatives noted that if waterworks find PFAS, DEQ may require monitoring at potential sources through its VPDES program [Virginia Pollutant Discharge Elimination System (discharge permits)].

A Workgroup member asked if corrective action would be limited to the presence of PFOA and PFOS? Dr. Singh responded that EPA guidance is currently limited to PFOA and PFOS, and without further guidance at this point, ODW would have to consider other PFAS on a case by case basis.

A Workgroup member also brought up the fact that [private] wells were not considered as part of the study. That leaves many people (served by these wells) not included in the study. Dr. Singh acknowledged this, but stated that the enabling legislation limits the scope of the study.

Dr. Singh asked Workgroup members to indicate whether or not they supported ODW going forward with the Sampling Plan, subject to the updates noted at the beginning of the presentation. Nelson Daniel polled individual Workgroup members who responded as follows (other meeting participants also voiced support for the Sampling Plan):

Chris Harbin –	support
Jamie Hedges –	support
Mike Hotaling –	support
Mike McEvoy –	support
Jessica Edwards -	approve
Russ Navrital -	support
Geneva Hudgins –	support
John Aulbach –	support
Wendy Eikenberry –	agree
Andrea Wortzel –	concerns regarding results – support sampling plan
Steve Risotto –	support
Henry Bryndza –	support not voting member
Phillip Masegaas –	support (not present at the meeting, but sent an email to Nelson Daniel prior to the meeting stating support for the plan)
Jeff Steers –	support
Dwight Flammia –	yes
Erin Reilly for Anna Killius -	yes
Ben Hollard –	support
Jack Hinshelwood –	support
Anthony Creech –	support
Bob Edelman –	supports

Following the poll of Workgroup members' support for the Sampling Plan, Dr. Singh acknowledged their concerns about how test results will be released and agreed to set up a specific conversation on best practices for data sharing. Dwayne Roadcap, ODW Director, added that VDH must comply with requirements of FOIA, but noted there is flexibility on how the agency shares the information as we get it, review it, and ensure it is valid data.

Dr. Singh presented a timeline for sampling (shown in the presentation that follows the minutes).

Workgroup members asked about specific training to collect samples. Dr. Singh responded that ODW will have discussions with labs and have some training materials, written instructions and

videos that we will share with the waterworks and confirm that they have the resources to conduct sampling.

6. Public Comments

Dr. Singh invited members of the public to share any comments they had. No one commented.

7. Conclusion

ODW will move ahead with the Sampling Plan, with revisions as noted in the presentation and discussed with Workgroup members during the meeting today. ODW will discuss communications with waterworks related to sample results at a future meeting.

The next regularly scheduled Workgroup meeting will be in late April. Details to follow.

The meeting concluded at 2:55 pm.