

Virginia PFAS Workgroup Meeting Minutes (Final)

September 10, 2021 – 1:00 pm. to 3:30 p.m.

In-person meeting with WebEx, access

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

Workgroup Members /Alternate Attendees present at the meeting (In person/Virtual):

Chris Harbin & Jillian Terhune (Norfolk, waterworks > 50,000 consumers)
David Jurgens (Chesapeake, waterworks > 50,000 consumers)
Jamie Bain Hedges (Fairfax Water, waterworks > 50,000 consumers)
Mike Hotaling (Newport News, waterworks > 50,000 consumers)
Jessica Edwards-Brandt (Loudoun Water, waterworks > 50,000 consumers)
Mike McEvoy (Western Virginia Water Authority, waterworks > 50,000 consumers)
Russ Navratil (Virginia Chapter, American Water Works Association, advocacy group)
John Aulbach (Aqua Virginia, waterworks < 50,000 consumers)
Wendy Eikenberry & Phil Martin (Augusta County Service Authority, waterworks < 1,000 consumers)
Paul Nyffeler (for Steve Herzog, Virginia Water Environment Association, advocacy group)
Andrea Wortzel (Mission H2O, advocacy group)
Steve Rissoto (American Chemistry Council, manufacturer with chemical experience)
Henry Bryndza (DuPont (retired), manufacturer with chemical experience)
Anna Killius & Erin Reilly (James River Association, environmental organization)
Phillip Musegaas (Potomac Riverkeeper, environmental organization)
Jeff Steers (Virginia Department of Environmental Quality (DEQ))
Dr. William Mann (consumer of public drinking water)
Dwight Flammia, Ph.D. (VDH, State Toxicologist, Health & Toxicology Subgroup Lead)
Tony Singh (VDH, Office of Drinking Water, PFAS Workgroup Lead)
Dr. Noelle Bissell (VDH, Director, New River Health District)

VDH Staff Supporting the Meeting:

Nelson Daniel (VDH Office of Drinking Water, Policy & Regulation Subgroup Lead)
Dan Horne (VDH, Office of Drinking Water, Treatment Technology Subgroup Lead)
Robert Edelman (VDH, Office of Drinking Water, Occurrence & Monitoring Subgroup Lead)
Jack Hinshelwood (VDH Office of Drinking Water)
Scott Vogel (VDH Office of Environmental Health Services)

1. Call to Order

ODW Deputy Director, Tony Singh, Ph.D., called the meeting to order 1:05 p.m. The meeting was held in-person at the Madison Building, 109 Governor Street, Richmond, VA and was available to Workgroup members and the public by electronic communication means (WebEx) due to the continued spread of the coronavirus that causes COVID-19. ODW recorded the meeting and the recording will be available at the VDH-ODW PFAS webpage:

<https://www.vdh.virginia.gov/drinking-water/pfas/>.

Dr. Singh went over the meeting agenda. Workgroup members did not ask for or recommend any changes to the agenda.

2. Meeting minutes from July 27, 2021

Workgroup members did not have any comments or corrections to the minutes from the July 27, 2021 meeting. ODW posted the July 27, 2021 meeting minutes as final on Town Hall.

3. Virginia PFAS Sample Study Results

Literature review: Dr. Singh asked workgroup members to submit their feedback on the Draft PFAS literature review report, “The Study of the Occurrence of Per- and Polyfluoroalkyl Substances (PFAS) in the Commonwealth’s Public Drinking Water,” and any additional literature for the workgroup to consider by September 17, 2021. Information in the literature review will be used in the reports to the General Assembly that are required by 2020 Acts of Assembly Chapters 1097 (House Bill (HB) 1257) and 611 (HB586). Dr. Singh noted that some workgroup members had already provided their comments to ODW and that one Workgroup member had provided additional references to consider in the literature review.

VA PFAS Sample Study: Dr. Singh provided an overview of the VA PFAS Sample Study (Sample Study) results. The plan for the sample study included 72 sampling locations at 50 waterworks. After contacting each of the 50 waterworks to ask them to participate in the study, 38 of the 50 waterworks agreed; 12 waterworks either declined to participate or did not respond to ODW’s request. ODW followed-up by contacting additional waterworks and 7 agreed to participate in the study. In the end, 45 waterworks provided samples from 63 sampling locations. Following quality assurance/quality control (QA/QC) review of the 63 sample results, ODW asked 4 waterworks to re-sample at 4 locations because of data irregularities. The laboratory used EPA method 533 for finished water samples and a comparable Department of Defense (DoD) method for raw (untreated) water samples.

Dr. Singh mentioned the number of locations that had PFAS detections above the practical quantitation level (PQL - the minimum concentration of an analyte that can be measured with high confidence (99%)) and the number of locations that had PFAS detections above 10 parts per trillion (ppt) and 20 ppt. Dr. Singh discussed the frequency of detection of individual PFAS in VA drinking water along with the range of concentrations. The ODW team that compiled the sampling data observed that all of the samples that had PFAS present above the PQL were from surface water sources and all, except one, were entry point samples (i.e., samples collected at the entry point to the waterworks’ distribution system – as opposed to source water (untreated) samples). Neither ODW nor DEQ have collected additional samples to identify potential sources of PFAS contamination.

A workgroup member (via chat) asked what “Entry Point” means? Bob Edelman and Dr. Singh clarified this.

Jeff Steers (DEQ) observed that at the one sampling location with the GenX detection of 51 ppt, there were no other PFAS detected at that site. Bob Edelman confirmed that ODW asked the waterworks to collect another sample (and field reagent blank) from the site. ODW has not received results from the re-sample at the time of the Workgroup meeting.

Dr. Mann asked if any of the sampling locations in this study were from military facilities in the Tidewater area. He noted that the DoD has reported groundwater contamination in at military

facilities in the Tidewater area. Dr. Singh stated that the Sample Study did not collect new data from these areas.

Jamie Hedges (Fairfax Waters) noted the following with respect to the Sample Study results:

- Include a one or two sentence summary stating the outcome of the Sample Study, such as, “All the samples were below the U.S. Environmental Protection Agency’s lifetime health advisory level of 70 ppt and all of the current maximum contaminant limits established by individual states.”
- A written summary needs to mention the limited nature of the Sample Study, and the budget constraints to provide context to the findings.
- A written summary should note that not every waterworks in VA was sampled in this sampling event and that this was one-time sampling event.
- Terms such as “PQL” should be defined for better understanding.
- References to 10 ppt and 20 ppt are misleading and may create confusion since these are not statutory or regulatory thresholds or limits in Virginia.
- A written summary should not conclude the source of PFAS contamination based on the limited study; i.e., remove references to the Potomac River and Occoquan Reservoir.

4. PFAS Sample Study Next Steps

Dr. Singh discussed the process for releasing the PFAS Sample Study Summary to the public. After seeking feedback from the VA PFAS Workgroup, ODW will share the Sample Study Summary with the participating waterworks, local health districts (LHDs), and ODW regional field offices before releasing this to the general public. The information in the Sample Study Summary will be available on the VDH-ODW PFAS webpage after the draft is circulated for review and comment.

- A Workgroup member asked (via chat) if there could be some PFAS removal with the already installed GAC systems. Nelson Daniel clarified that the Sample Study did not take that into consideration (i.e., it did not include raw and finished water samples from the same water treatment plant).
- Another member asked if ODW had investigated the source of the GenX detection. Dr. Singh mentioned that, at this time, ODW hasn’t done an investigation. Jeff Steers provided some details about the site, but said that DEQ had not done an investigation either.
- A Workgroup member suggested that ODW should develop a map that shows where there were PFAS detections. Dr. Singh said that ODW plans to do this.
- Related to the map, a Workgroup member suggested the map should focus on the study objective of limited budget, capturing population served as much as possible, without going into as much detail about GIS layers, etc.

Phase 2 Sampling event: The General Assembly appropriated \$60,000 in fiscal year 2022 for VDH to continue PFAS sampling efforts. Dr. Singh invited Workgroup members to submit recommendations and considerations for the next phase of sampling to ODW via email. A Workgroup member asked about the budget for the recently completed Sample Study. Bob Edelman confirmed the analytical budget was about \$42,000; Nelson Daniel noted that the cost does not include anything for actual sample collection since personnel at each participating waterworks collected the samples during this event.

Dr. Singh noted the cost to analyze a single sample for PFAS using the methods ODW used in the Sample Study is around \$300-\$350 per sample. This does not include sample collection.

During the discussion about future sampling efforts, Workgroup members provided additional comments about the Sample Study Summary that ODW is preparing:

- Be more specific about the number of samples that did not have analytes above the PQL;
- Define/explain PQL, below PQL, entry point v. raw water so the general public and drinking water consumers understand these terms;
- Note that the Sample Study only includes 5 groundwater samples;
- Do not include the sum of PFAS in any of the results, in part because there were results below the PQL that could contribute to the sum, but would not be listed in a table or results since they are not as statistically reliable and may cause additional confusion; and
- Regarding the result of 51 ppt for GenX, emphasize that the quality assurance/quality control review did not identify any irregularities, and state that there were no other PFAS detected above the PQL in the sample.

5. Subgroup Reports:

Subgroup leaders provided an update on activity since the last Workgroup meeting in April.

PFAS Health and Toxicology: State Toxicologist, Dr. Dwight Flammia reported that based on the prior meetings, the toxicology subgroup observed that they, collectively, do not have the expertise necessary to evaluate the scientific literature and recommend a maximum contaminant level (MCL) or MCL goal (MCLG). The Subgroup has met on a monthly basis since the PFAS Workgroup meeting in April 2021 and reviewed the toxicity of PFBA, PFHpA, PFHxS, and PFNA, their occurrence in Virginia based on the Sample Study. The Subgroup discussed whether they should consider proposing an MCLG for any of the 4 PFAS (PFBA, PFHpA, PFHxS, PFNA) given the following:

- no other state or EPA has established an MCLs or MCLG for PFBA;
- PFNA was not detected in any of the samples from the Study; and
- the approach used by states to develop MCLs for the other two PFAS (PFHpA, PFHxS) were based on limited toxicological data and some used a “read across” approach.

The Toxicology Subgroup discussed preparing a summary for the Workgroup stating that there is sufficient toxicological data to move forward with an MCL for PFOS and PFOA. However, Subgroup members did feel they had adequate time or resources (primarily expertise) to suggest or recommend an MCLG, reference dose, or health-based value for PFOA or PFOS for the Workgroup to consider. Further, the Subgroup did not feel there was adequate toxicological information on PFBA, PFHpA, PFHxS, and PFNA to derive an MCLG, or health based value.

PFAS Occurrence and Monitoring: ODW Division of Technical Services Director Robert Edelman reported the Subgroup did discuss what is next in PAFS monitoring – addressing issues such as:

- Do we have enough occurrence data? No, we sampled only 45 out of 2800 waterworks.
- Where should the next sample event take place? Need temporal data (over time) + more samples, particularly groundwater systems (only sampled 5); also look at the Environmental Working Group and Department of Defense sample results.

- Sample at community and/or noncommunity waterworks? Focus on community.
- Raw v. finished water for sampling? Bob noted differences between analysis and results for raw v. finished water samples. Some subgroup members mentioned not to write off raw water, but Bob noted raw water had more dilution issues, meaning higher PQL. There were suggestions to sample both raw and finished from the same waterworks.
- No position with respect to test methods.
- Discussed who samples – waterworks staff or dedicated personnel? One said more sampling if waterworks collect samples, but more consistency if dedicated samplers. Some data irregularities appeared to be related to sample collection.

Dr. Singh mentioned that all the items the Occurrence and Monitoring Subgroup discussed will require additional funding and added that the U.S. Geological Survey, which has supported PFAS investigations in other states may be involved in a future study in Virginia if their budget permits.

PFAS Treatment Technologies: Southeast Virginia Field Office Director Dan Horne provided an update on the Treatment Technologies Subgroup. Dan mentioned that the Subgroup has not met recently. An assignment has been made to prepare three Treatment Technology Summaries – one each for Granular Activated Carbon (GAC), Ion Exchange (IX), and Reverse Osmosis (RO). The Subgroup developed a template to use in preparing these summaries, addressing a number of areas of concern. Once the summaries have been drafted, the Subgroup will review and finalize them, and share them with the Workgroup. During the Workgroup meeting on September 10, members of the Workgroup suggested providing a range of cost estimates for each of the three technologies, to be based on three potential removal targets (i.e., established MCLs). It was noted that costs will vary significantly, depending on which PFAS chemicals might be present (long-chain vs. short-chain, carboxylic vs. sulfonated vs. other variants, and the presence of competing contaminants).

Dwight Flammia mentioned that some other states presented a tiered approach for such treatment technology evaluation.

PFAS Policy and Regulations: Nelson Daniel provided an update on the Policy and Regulations Subgroup. The Subgroup has been meeting on the third Monday of the month, at 11:00 a.m. The most recent meetings were on July 27, 2021, following the PFAS Workgroup meeting, and August 16, 2021. If needed, the next Subgroup meeting will be on September 20, 2021. Subgroup discussions during the last two meetings focused on preparing summaries of laws/regulations in states that have established MCLs, and drafting an outline for the report required by 2020 Acts of Assembly Chapter 611 (HB586). Subgroup members thought that the report should address whether the sample study results suggest that the list of 6 compounds in HB586 should be expanded, or if it addresses the appropriate contaminants. They also thought states should be grouped or viewed in context of the extent or type of restrictions that are in place considering the following:

- Established maximum contaminant limits (MCLs), advisory levels, reporting levels, proposed legislation;
- Nationally, regulation of PFAS is inconsistent, but consider how states arrived at an MCL and what, if anything, they did to support waterworks achieving the MCL (e.g., Minnesota is using part of an \$850,000,000 settlement with 3M to support its PFAS program (paying for research, testing, treatment));

- The majority of states have not taken action – compare that to the number of states that are doing studies without taking action to set MCLs; and with respect to treatment technologies, does one type of treatment result in uniform removal of PFAS, is it compound-specific, or otherwise limiting?

Next steps for Subgroup members include reviewing and providing feedback on the draft report and possibly discussing whether to ask the PFAS Workgroup to recommend MCLs for any, some, or all of the PFAS specified in HB586, taking recommendations from other subgroups into consideration.

6. Drafting the Report Required for HB586:

House Bill 586 (2020) requires the Workgroup to report its findings to the General Assembly by December 1, 2021. Dr. Singh talked about the timeline to develop the required report and asked Workgroup members to provide suggestions and feedback on the draft outline. He then provided an overview of the draft outline and discussed the major report topics. To allow sufficient time for the Department of Health leadership team to review and approve the report, ODW needs to complete the draft by October 15, 2021. Dr. Singh said he intends to share a draft of the report with Workgroup members by the end of September so that they have 5 days to review the draft and provide feedback for ODW to consider before submitting it for internal review/approval. Workgroup members had the following feedback and questions on the HB586 report:

- Jamie Hedges (Fairfax) – Where does literature review fit in? Dr. Singh mentioned that this was one of the asks in HB586. It will be addressed in the findings and probably included as an appendix along with the VA PFAS Sample Study Design and the PFAS Communication Toolkit.
- State Toxicologist Dr. Flammia commented on the structure of the HB586 report. He suggested a shorter version of the report would be better and asked if the Toxicological Subgroup should write their own summary report and include that as an appendix in the HB586 report? Dr. Singh suggested that HB586 report is from VA PFAS Workgroup and should include contributions from subgroups in the larger context of the report.
- A comment via chat noted that “this was a limited study with limited budget and resources.”
- Responding to a question about including a design or recommendation for the next phase of sampling in the report, Dr. Singh mentioned that, due to lack of time and resources, it would not be possible to develop and include a study design within in the report. Moreover, the next phase of sampling will be a separate effort, not a part of the requirements outlined in HB586. However, the report could (or should) include recommendations from the Workgroup on the next phase of PFAS sampling.
- Jeff Steers (DEQ) mentioned that DEQ finds that brevity is important in that agency’s reports to the General Assembly, but also thinks it would be good to have key high points/findings/recommendations from subgroups, then, if desired, have more substantial reports in an appendix.
- Dr. Flammia suggested including the MCL process in the introduction of the report. Jeff Steers (DEQ) mentioned the need to include the national standard/scenario on regulating PFAS.

- Nelson Daniel clarified the HB586 report structure. Dr. Singh mentioned that introduction will be to educate the reader about the broader PFAS topic in the environment but then narrow scope to drinking water only in the rest for the report.
- Phillip Musegaas (Potomac Riverkeepers Association) suggested that information about cost comparison for treatment options would be helpful. Also, he thought it may be helpful if the Workgroup recommends the General Assembly provide more resources to do additional sampling. He thought the Workgroup's efforts (in terms of PFAS sampling) only provide a snapshot of PFAS occurrence in drinking water are may not be representative of what is occurring statewide.
- Dr. Flammia asked about the objective of additional sampling? Bob Edelman explained that the Sample Study was limited in scope – sampling 45 waterworks out of more than 2800 in the state and most of the samples were surface water sources, but most waterworks rely on groundwater.
- Phillip Musegaas mentioned that it should be noted that PFAS is in VA drinking water, no matter at what concentrations and VA has an opportunity to do something in this regard.
- Responding to the comment about the scale of the sample study in Virginia, Dr. Singh compared it to studies in Pennsylvania, New York, and Delaware, which were much larger (in terms of scope, number of samples, sample locations, and funding).
- Anna Killius (James River Association) noted that ODW has talked about the results from the Sample Study, by themselves, did not prompt any immediate actions, but reminded the Workgroup that there are still lots of unanswered questions about sources, concentrations, seasonal variations – which push us forward to learn more and pursue the remainder of the regulatory process – rather than stopping here.
- Jeff Steers mentioned that DEQ is learning more about sources, including Department of Defense facilities that have releases, that haven't gotten past borders. He compared the process to peeling an onion. He also mentioned DEQ plans to move forward with POTW and VPDES survey and other possible actions to identify sources of PFAS contamination.
- Dr. Singh mentioned that EPA is moving ahead with rulemaking for PFOA and PFOS. David Jurgens asked, if EPA is doing rulemaking, and the Workgroup has a comparable recommendation, is it worth using state resources to do something concurrent with EPA? Anna Killius mentioned that it is not redundant and suggested that the Board of Health (through its rulemaking process) may find that a level lower than EPA's is necessary to be protective of human health. We can be optimistic that EPA gets something done in a timely manner, but we can't control that so the state should move forward. Jamie Hedges disagreed with the comment and mentioned that could EPA establish a MCL that is lower than what the Board of Health might set.
- Dr. Flammia asked about the typical timeline for the Department of Health to establish an MCL. Nelson Daniel provided an overview of the VA rulemaking process, as established in the Administrative Process Act (APA), Code of Virginia § 2.2-4000 et seq.
- Jeff Steers (DEQ) mentioned the need for VDH to establish a Regulatory Advisory Panel.
- Dr. Singh asked, what if Virginia sets a MCL that differs from EPA's? Nelson Daniel gave an overview of the process to follow in such case. If EPA's MCL is lower than Virginia's, for Virginia (and VDH) to maintain primacy, VDH would need to amend the Waterworks Regulations so they are "no less stringent" than the national standard.

Nelson noted that there is an exemption in the APA that allows VDH to make an amendment that is necessary to meet the requirements of federal law or regulations (i.e., to change an MCL to be consistent with EPA's if Virginia's MCL was higher), provided such regulations do not differ materially from those required by federal law or regulation – which does not involve the standard APA rulemaking process. (See Code of Virginia § 2.2-4006 A.4.c.)

- Phillip Musegaas mentioned that difference between the state rulemaking process (under the APA) and the process EPA follows under the Safe Drinking Water Act and asked if Virginia/VDH can move forward? He acknowledged it is hard to know what EPA will do and how long it will take. He added that he understands perspective of waterworks, but thinks VDH should move forward and develop MCLs.
- Jessica Edwards-Brandt (Loudoun Water) asked if a level of contamination triggered action in states that are regulating PFAS? She felt the results from the Sample Study do not suggest a high level of PFAS contamination in drinking water in Virginia – at least in the locations sampled. Workgroup members mentioned the relationship between sites where PFAS were manufactured, disposed of, and used and states that have established MCLs – mentioning 3M's plants in Minnesota, GenX manufacturing in North Carolina, chemical plants in Alabama and West Virginia, etc.
- Following a comment about PFAS contamination at Department of Defense facilities in Virginia, Dan Horne talked about known contamination at Langley (NASA), Naval Air Station Oceana, Naval Auxiliary Landing Field Fentress, and Wallops Island (NASA) where the contamination is not affecting drinking water sources used by public water systems (surface waters). He noted that some facilities have installed treatment, connected to regional waterworks, using different wells, and/or extended waterlines to affected areas so they do not have to use wells with contaminated waters for potable purposes. David Jurgens provided information on the water line extension projects in Chesapeake (Fentress).

Dr. Singh reported that he has received feedback from 3 Workgroup members. A common theme is the need for more resources to evaluate and understand the scope of PFAS contamination in drinking water in Virginia and the desire to wait for EPA to complete their work so that Virginia does not have to change its standard to be consistent with EPA. The recommended that if Virginia wants to move forward with the rulemaking process, VDH should only set regulatory limits for PFOA and PFOS and at set the MCL at 70 ppt, EPA's current health advisory level.

Dr. Singh asked if the workgroup would like to meet in October 2021 to discuss the HB586 report. Based on the feedback from workgroup members, the next meeting is scheduled for October 8, 2021 (tentative). This will be an in-person meeting in Richmond VA.

7. Public Comment:

Dr. Singh invited members of the public who were at the meeting to provide comments.

- Paul Nyffeler suggested including a section on environmental justice in the Hb586 report. Anna Killius thinks this is important topic to include, and commented that facilities that contribute to problem of PFAS contamination tend to be closer to communities of color.

- Carrol Courtenay from the Southern Environmental Law Center (SELC) mentioned that Virginia should be proactive in this situation, given uncertainty about when EPA will establish MCLs for PFOA and PFOS, how long it will take for the MCLs to become effective, and what they will be. This is a good opportunity for Virginia to take the lead in this area.
- Dr. Mann suggested Workgroup members look at [House of Representatives Bill 2467](#), particularly with respect to who is responsible for addressing contamination.

8. Conclude Meeting:

Following the public comment period, Dr. Singh concluded the meeting at 3:45 p.m.

Establishing Regulatory Limits for PFAS in Virginia Drinking Water

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

Housekeeping

- Please use chat feature generously for any discussions and questions
- Please contact Nelson Daniel via email
(nelson.daniel@vdh.virginia.gov) for technical issues with WebEx platform
- Please keep your phone line on Mute if you are not speaking
- There will be a public comment period at the end of the meeting

Meeting Agenda – September 10, 2021

- **Call to Order**
- **Introductions**
 - VA Workgroup Members & VDH team
- **September 10, 2021 Agenda adoption - Overview**
 - VA PFAS Sampling Study Results
 - Subgroup Reports
 - HB586 Report & Recommendations
- **Review/Approval** of VA PFAS Workgroup Meeting Minutes - July 27, 2021

PFAS Literature Review Document

PFAS Literature Review - Status

DRAFT PFAS Literature Report

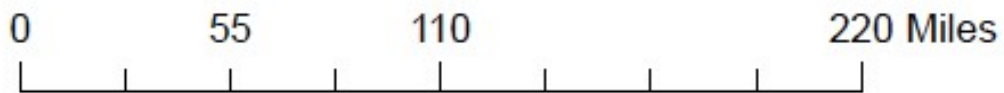
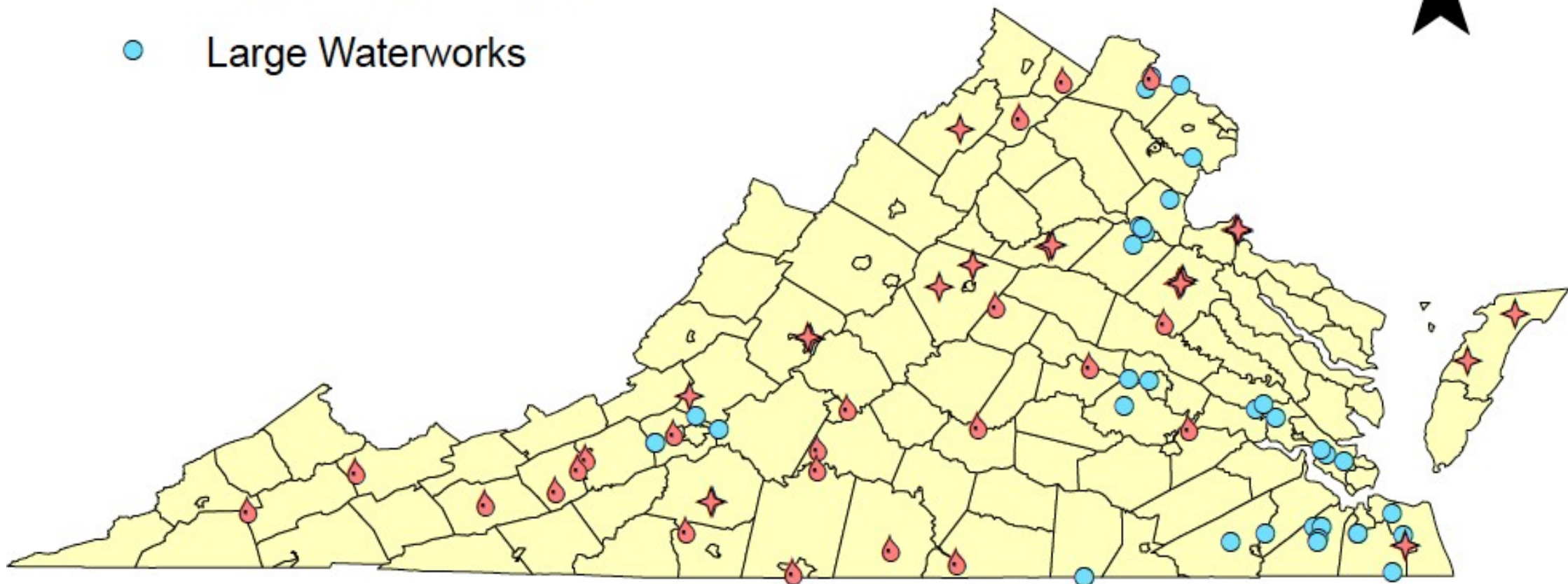
- Members are encouraged to share their review, feedback, and any additional information they would like the workgroup to consider.
- Duration for this review will be **10 days (Deadline September 17, 2021)**
- This literature review information will be used for the HB586 legislative report that is due on December 01, 2021 (October 15, 2021 internal deadline)



VA PFAS Sampling Study Summary

VA PFAS Sampling Sites

- ✦ Groundwater Systems
- 💧 Source Water Intakes
- Large Waterworks



Hybrid Approach Summary



	# Samples	# Systems	Population
17 Large Waterworks	31	17	4,541,619
GW – Potential High Risk	6		13,329
GW – Potential Medium Risk	13	11	2,124
Major Water Sources	22	22	
Total	72	50	4,557,072

VA PFAS Sampling Study

Water systems participating:	45 vs 50 as planned
Total sampling points:	63 vs 72 as planned
Re sampling:	4 locations
Method used (Drinking Water):	EPA Method 533
Method used (Source Water):	DoD Method

VA PFAS Sampling Results High Level Summary

- At least one PFAS was found in quantities above the practical quantitation level (PQL) at 15 of the 63 sample locations.
- Of these, one or more samples from 5 waterworks had one or more types of PFAS detected at a concentration equal to or greater than 10 parts per trillion (ppt).
- All other detections were 20 ppt or less.
- The highest detected concentration of a compound was 51 ppt of hexafluoropropylene oxide-dimer acid (HPFO-DA), which is commonly known as GenX

VA PFAS Sampling Results Summary

- PFOA was measured above the 3.5 ppt PQL at **four** sample locations. Measured concentrations were between 4.2 and 5.5 ppt.
- PFOS was measured above the 3.5 ppt PQL at **seven** sample locations. Measured concentrations were between 3.9 and 7.1 ppt.
- Perfluorobutyrate (PFBA) was measured above the 3.5 ppt PQL at **ten** sample locations. Measured concentrations were between 3.7 and 12 ppt.
- Perfluoroheptanoic acid (PFHpA) was measured above the 3.5 ppt PQL at **three** sample locations. Measured concentrations were between 4.1 and 5.5 ppt.

VA PFAS Sampling Results Summary

- Perfluorohexane sulfonate (PFHxS) was measured above the 3.5 ppt PQL at **one** sample location. The concentration was 4.9 ppt.
- **Perfluorononanoic acid (PFNA) was not detected in any samples at a concentration above the PQL.**
- Four (4) additional PFAS that are not listed in HB586 were measured above their respective PQLs in samples. They include
 - HPFO-DA - Range: **4.0 – 51 ppt**
 - Perfluorohexanoic acid (PFHxA) – Range **6.8 – 12 ppt**
 - Perfluoropentanoic acid (PFPeA) – Range **7.4 – 14 ppt**
 - Perfluorobutanesulfonic acid (PFBS) – Range **4.2 -5.6 ppt**

VA PFAS Sampling Results Findings

- All of the samples that had PFAS present above the PQL were from **surface water sources** and all, except one, were entry point samples
- ODW nor DEQ have collected additional samples to identify potential sources of PFAS contamination
- Ten samples from waterworks in the Northern Virginia region had at least one PFAS present in a quantity above the PQL, but none were above EPA's HA level of 70 ppt for PFOA and PFOS (individually or combined) and none exceeded any of the MCLs established by other states, which range from 8 ppt to 14 ppt
-

VA PFAS Sampling Results

Waterworks Name	Virginia American Water Co. - Alexandria District		Arlington County	Fairfax County Water Authority		Loudoun Water - Central System		Stafford County Utilities		Prince William County Service Authority – East
City/County	City of Alexandria		Arlington County	Fairfax County		Loudoun County		Stafford County		Prince William County
Sample Location	From Fairfax Water		From Washington Aqueduct	Griffith WTP	From Washington Aqueduct	Trap Rock WTP	From Fairfax County Water Authority	Smith Lake WTP	Lake Mooney WTP	From Fairfax County Water Authority
Water Type	Finished	Finished	Finished	Finished	Finished	Finished	Finished	Finished	Finished	Finished
PFOA	*	4.2	*	5.5	*	*	4.5	*	*	5.5
PFOS	*	3.9	*	5.1	*	*	*	6.4	*	4.1
PFBA	7.7	9.2	*	7.7	4.3	4.0	4.6	*	5.9	12
PFHxA	*	*	*	4.4	*	*	5.5	*	*	4.1
PFHxS	*	*	*	*	*	*	*	*	*	*
PFNA	*	*	*	*	*	*	*	*	*	*
	*	*	*	*	*	*	*	*	*	*
HPFO-DA (Gen-x)	*	*	*	*	*	*	*	*	*	*
PFHxA	6.8	9.3	3.7	12	4.4	*	*	*	4.2	11
PFPeA	7.4	10	4.1	14	4.2	*	*	*	5.5	12
PFBS	*	4.2	*	5.6	*	*	*	*	*	4.8

VA PFAS Sampling Results Contd.

Waterworks Name	City of Newport News		Town of Altavista	Western Virginia Water Authority	Washington County Service Authority
City/County	City of Newport News		Campbell County	Roanoke County	Washington County
Sample Location	Harwoods Mill WTP	Lee Hall WTP	Staunton River + Reed Creek	Spring Hollow WTP	Middle Fork Water Treatment Plant
Water Type	Finished	Finished	Raw Intake	Finished	Finished
PFOA	*	*	*	*	*
PFOS	7.1	4.4	*	*	5.2
PFBA	4.3	4.3	*	*	*
PFHpA	*	*	*	*	*
PFHxS	4.9	*	*	*	*
PFNA	*	*	*	*	*
	*	*	*	*	*
HPFO-DA (Gen-x)	*	*	4.0	51	*
PFHxA	*	6.1	*	*	*
PFPeA	*	4.5	*	*	*
PFBS	*	*	*	*	*

PFAS Sampling Study: Next Steps

HB586 Report – Due December 01, 2021 (October 15, 2021 internal deadline)

- Study findings & workgroup recommendations will be part of the report
- Review process
- PFAS Sampling results summary release for the Public
 - ODW –PFAS webpage
 - When ?
- Phase 2 Sampling event suggestions/comments

Subgroup Updates

PFAS Health and Toxicology

PFAS Occurrence & Monitoring

PFAS Treatment Technologies

PFAS Policy & Regulations

**Followed by break
(resumed ~ 2:25)**

HB586 Report & Recommendations

What We have?

- PFAS Occurrence Data in VA drinking water
- Health & Toxicological data on many PFAS
- Economics and feasibility - Treatment Data
- Other states approaches on regulating PFAS?
- US EPA plan/approach on regulating PFAS in drinking water?

INTRODUCTION

- Background information
- History, development, use of PFAS
- Presence in the environment
- Health effects
- PFAS in Virginia (prior to legislation) –
- Military facilities, NASA
- UCMR3 [specific to Virginia]
- What we know and what we don't know – information gap
- PFAS Regulatory Approaches in other states

HB586 Implementation & Findings

- PFAS Workgroup – Structure, Logistics & Functioning
- PFAS Literature Review
- VA PFAS Sampling Study
- Limitations
- Conclusions & Recommendations

HB586 Report Outline

HB586 Report Contents - Suggestions

- A section on Limitations
- Concerns on limited occurrence data

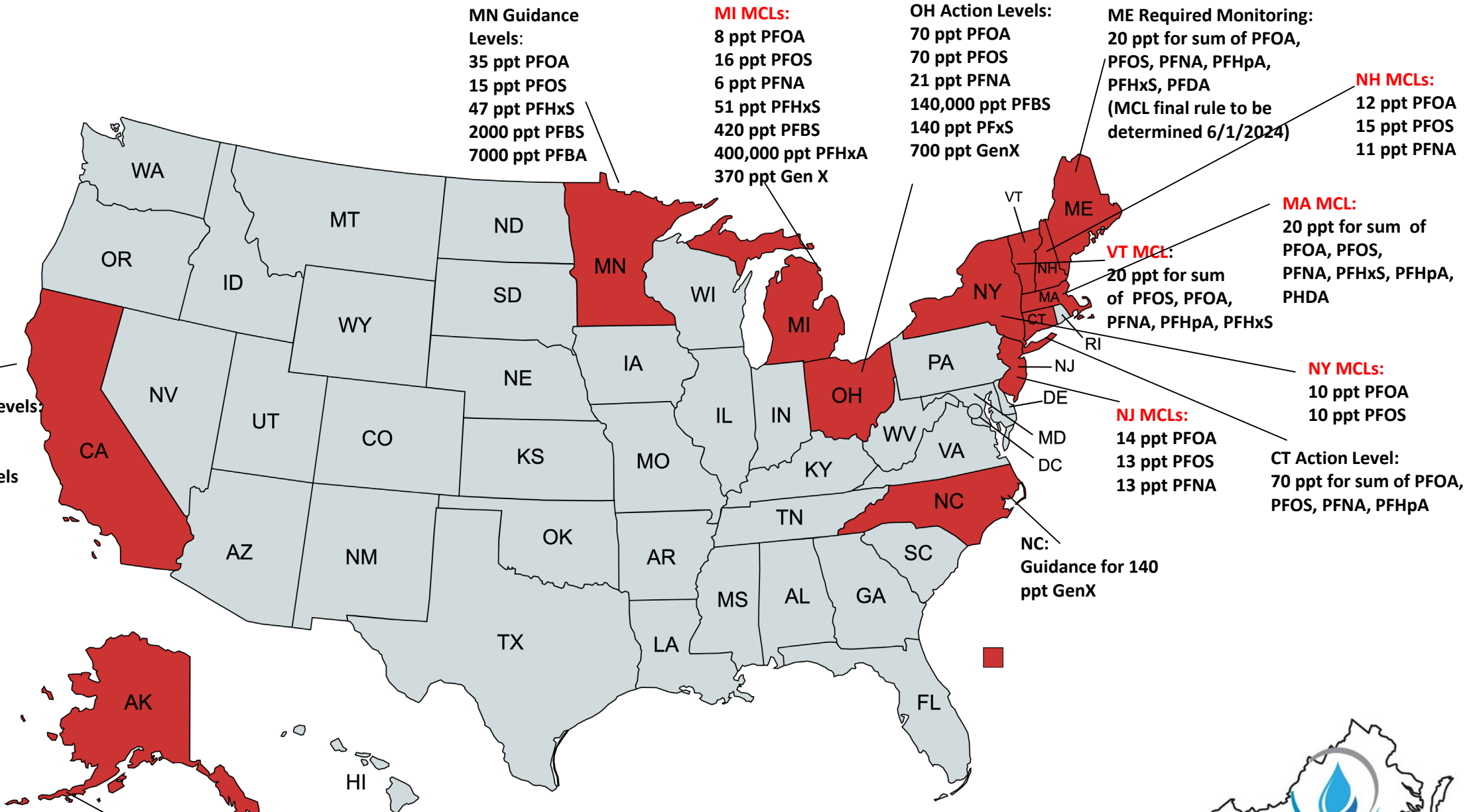
- Deadline: December 01, 2021

Major Discussion Questions

- **Are we satisfied** with the VDH-ODW and VA PFAS Workgroup achievements?
- **Do we have** recommendations on future PFAS occurrence Study?
- **Do we agree** if one or more of these chemicals in drinking water have known health effects and can pose danger to public health?
- Do we have enough info on one or more PFAS to move forward on regulating PFAS in VA drinking Water?

Regulating PFAS in VA Drinking Water

Contaminant	Health Effects	Occurrence	BATT	Other State MCLs	EPA Moving Forward / Rulemaking	Workgroup Recommendations
PFOA				Yes	Yes	
PFOS				Yes	Yes	
PFBA				No	No	
PFHpA				Yes	No	
PFHxS				Yes	No	
PFNA				Yes	No	
HPFO-DA (Gen-x)				Yes	No	
PFHxA				Yes	No	
PFPeA				Yes	No	
PFBS				Yes	No	



MN Guidance Levels:
 35 ppt PFOA
 15 ppt PFOS
 47 ppt PFHxS
 2000 ppt PFBS
 7000 ppt PFBA

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

OH Action Levels:
 70 ppt PFOA
 70 ppt PFOS
 21 ppt PFNA
 140,000 ppt PFBS
 140 ppt PFxS
 700 ppt GenX

ME Required Monitoring:
 20 ppt for sum of PFOA, PFOS, PFNA, PFHpA, PFHxS, PFDA
 (MCL final rule to be determined 6/1/2024)

NH MCLs:
 12 ppt PFOA
 15 ppt PFOS
 11 ppt PFNA

MA MCL:
 20 ppt for sum of PFOA, PFOS, PFNA, PFHxS, PFHpA, PHDA

VT MCL:
 20 ppt for sum of PFOS, PFOA, PFNA, PFHpA, PFHxS

NY MCLs:
 10 ppt PFOA
 10 ppt PFOS

NJ MCLs:
 14 ppt PFOA
 13 ppt PFOS
 13 ppt PFNA

CT Action Level:
 70 ppt for sum of PFOA, PFOS, PFNA, PFHpA

CA:
 Notification Levels:
 5.1 ppt PFOA
 6.5 ppt PFOS
 Response Levels
 10 ppt PFOA
 40 ppt PFOS

NC:
 Guidance for 140 ppt GenX

AK Action Level:
 70 ppt for sum of PFOA and PFOS



Updated 7/27/21

Next Steps – HB586 Report

- Workgroup Feedback by September 17, 2021
- Workgroup Review (5 day TAT)

Other Topics

PFAS Next Steps

October 2021 Workgroup meeting

- Report & Recommendations from the workgroup

Future of VA PFAS Workgroup

- Do we continue this workgroup?

PFAS Regulatory Process

- Regulatory Advisory Panel (RAP) for NOIRA

PFAS Sampling Study – Phase 2

Public Comment

Have any Question, Comment or Suggestion, contact Us

Tony S. Singh

Tony.Singh@vdh.Virginia.gov

804-310 3927

Dwayne Roadcap

Dwayne.Roadcap@vdh.virginia.gov

804-864 7522