PFAS Health & Toxicology Subgroup

Meeting Notes

WebEx, Office of Drinking Water, 109 Governor Street 6th Floor, Richmond, VA 23219

December 17, 2020 from 2:30 – 4:30 p.m.
2 hours (appx)

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1. **General Remarks**

   VDH State Toxicologist, Dwight Flammia, Ph.D. called the meeting to order at 2:30 p.m. Dr. Flammia welcomed everyone, discussed using Google Drive for file sharing. He said the meeting is open to the public and recorded; minutes will be posted on Town Hall. He also discussed the importance of not corresponding through emails with other members regarding subgroup business - to avoid violating public meeting requirements.

2. **Member Introduction**

   Workgroup Members /Alternates Participating:

   Dwight Flammia, VDH
   Jillian Terhune, City of Norfolk
   Kelly Ryan, VA American Water
   Mark Estes, Halifax County
   David Jergen, City of Chesapeake
   Erin Riley, James River Assoc
   Steve Risotto, American Chemistry Assoc
   Steve Herzog, Hanover County
   Paul Nyffeler, Chem-Law
   Chistopher Leyen (Sub for Mike Town)

   Guests

   Dr. Mann
   Emily Reillly

   ODW Participants

   Tony Singh, ODW
   Christine Latino, ODW

3. **Review VA General Assembly Bills and subgroup purpose**

House Bill 586 in part states that "the Commissioner of Health shall convene a work group to study the occurrence of perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS),

perfluorobutyrate (PFBA), perfluoroheptanoic acid (PFHpA), perfluorohexane sulfonate (PFHxS), perfluorononanoic acid (PFNA), and other perfluoroalkyl and polyfluoroalkyl substances (PFAS), as deemed necessary, in the Commonwealth's public drinking water and may develop recommendations for specific maximum contaminant levels for PFOA, PFOS, PFBA, PFHpA, PFHxS, PFNA, and other PFAS, as deemed necessary, for inclusion in regulations of the Board of Health applicable to waterworks… ”

This workgroup’s goals will be to work on maximum containment levels of the above referenced chemicals and make recommendations for specific MCLs to determine public health risks of these PFAS levels in the Commonwealth of Virginia. This group will evaluate the methods used by other states and determine how best to analyze their findings. If necessary, that will consider the needs for additional experts to assist.

Dwight estimates that the members will spend 5 to 10 hours a month to research and report to the workgroup.

4. Current toxicological knowledge of PFAS in drinking water

The group needs to determine the methodology that will be used for the group. Dwight proposed several different methods:

Review other state and federal agency PFAS standards

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

5. Best approach for setting a drinking water standard

The group discussed the chemicals that should be studied and determined that they would focus on those only listed in the house bill with the understanding that later studies may include additional PFAS.

The group also discussed if the individual chemicals should be studied as a unit or separately.

They are interested in collecting data from multiple locations including state studies, literature currently available and universities.

Steve Risotto, Tony Singh and Paul Nyffeler have offered to share some data. Dwight will share with the group soon.

Members of the group have some concerns of overlapping information and suggest streamlining groups to avoid the problem.

6. Closing items

Dwight is hoping to send all research provided from Paul, Steve and Tony soon. He would like the group can pick a section of the research including the states and let him know what they have chosen. Dwight will begin a spreadsheet that he can start documenting the discoveries. He is estimating that all information be turned in to him no later than January 8, 2020.

He is sending out a poll to determine the best days to meet and will announce to the members during the next meetings.

PFAS Health & Toxicology Subgroup

Draft Meeting Agenda

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2 hours (appx)

1. General Remarks
2. Member Introduction
3. Review VA General Assembly Bills and subgroup purpose
4. Current toxicological knowledge of PFAS in drinking water
5. Best approach for setting a drinking water standard
6. Closing items

Establishing Regulatory Limits for PFAS in Virginia Drinking Water

PFAS Toxicology Regulatory Subgroup

Dwight Flammia, Ph.D.
State Public Health Toxicologist
Virginia Department of Health

December 17, 2020

PFAS Workgroup Meeting Overview

Meeting Overview

- General information
- Introductions
- Expectations
- Objectives
- Discussion
- Deliverables
- Public Comment
- Next Meeting

General **Information**

Facilitator – Dwight Flammia

Support – Tony Sing and ODW staff

Admin support – Office of Drinking Water (ODW) staff

Decision process – consensus or if not by consensus, vote by members

Data sharing – An electronic file sharing platform (Google Drive)

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

Meeting Schedule - Monthly (or as needed)

Meeting format - Virtual via Webex, VDH will post meeting minutes, agendas, handouts, etc. on Town Hall

Email - Communications to Members – **do not reply-all**

Introductions

Jillian Terhune (City of Norfolk)
Kelly Ryan (VA American Water)
Mark Estes (Halifax County Service Authority)
David Jurgens (City of Chesapeake)
Erin Reilly (James River Association)
Chris Leyen (VCLV)
Steve Risotto (ACC)
DoD/Navy Representative (To be determined (TBD))
DEQ representative (TBD)
Subject Matter Expert-1 (TBD)
Subject Matter Expert-2 (TBD)
Dwight Flammia (VDH, State Toxicologist) Lead*
Andrea Wortzel (Mission H2O)
Steve Herzog (Hanover County)
Paul Nyffeler

General **Information**

HB586 In part

That the Commissioner of Health shall convene a work group to study the occurrence of perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), perfluorobutyrate (PFBA), perfluoroheptanoic acid (PFHpA), perfluorohexane sulfonate (PFHxS), perfluorononanoic acid (PFNA), and other perfluoroalkyl and polyfluoroalkyl substances (PFAS), as deemed necessary, in the Commonwealth's public drinking water and may **develop recommendations for specific maximum contaminant levels for PFOA, PFOS, PFBA, PFHpA, PFHxS, PFNA, and other PFAS, as deemed necessary, for inclusion in regulations of the Board of Health applicable to waterworks…**

General **Information**

HB586 in part continued

…In completing its work, …and (c) **evaluate existing approaches to regulating PFOA, PFOS, PFBA, PFHpA, PFHxS, PFNA, and other PFAS, as deemed necessary, in drinking water, including regulatory approaches adopted by other states and the federal government, and (ii) may develop recommendations for specific maximum contaminant levels for PFOA, PFOS, PFBA, PFHpA, PFHxS, PFNA, and other PFAS, as deemed necessary**, to be included in regulations of the Board of Health applicable to waterworks. The work group shall report its findings …by December 1, 2021.

Expectations

- VDH Office of Drinking Water – meeting logistics, notifications, research needs, data repository, etc…
- Workgroup members - participate and contribute to this sub-workgroup; and commitment of 5-10 hours per month to study, review, interpret and develop new documents / guidelines / recommendations

Virginia PFAS Workgroup – Objectives

- Evaluate PFAS occurrence and concentrations in Virginia public waterworks and assess the public health risk of these chemicals using an evolving toxicological database
- Evaluate the health/toxicological methodologies/models adopted by EPA and the states alongside current peer reviewed studies
- Consider the need for additional experts in the field of toxicology and epidemiology to assist with these efforts
- Make recommendations for specific maximum contaminant levels (MCLs)
  - Six specific PFAS, including:
  - Perfluorooctanoic acid (PFOA)
  - Perfluorooctane sulfonate (PFOS)
  - Perfluorobutyrate (or-butanoic acid) (PFBA) vs. Perfluorobutane Sulfonic Acid (PFBS)
  - Perfluoroheptanoic acid (PFHpA)
  - Perfluorohexane sulfonate (PFHxS)
  - Perfluorononanoic acid (PFNA)
  - Other PFAS “as deemed necessary”

PFOS and PFOA toxicological findings

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

EPA steps in developing an MCL

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

PFNA MCL Recommendation

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Suggested review approach

Review other state and federal agency PFAS standards

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

States that have taken action to regulate PFAS

State	Drinking Water Action	Compound	Level (ppt)
California	Response Levels	PFOA	10
		PFOS	40
	Notification Levels	PFOA	5.1
		PFOS	6.5
Colorado			
Connecticut	Action Level	∑ (PFOA, PFOS, PFNA, PFHxS, PFHpA)	70
Massachusetts	Adopted Regulation 9/16/20	∑ (PFOA, PFOS, PFNA, PFHxS, PFHpA, PFDA)	20
Michigan	Adopted Regulation 8/3/20	PFOA	8
		PFOS	16
		PFNA	6
		PFHxS	51
		PFBS	420
		PFHxA	400K
		GenX	370

States that have taken action to regulate PFAS

State	Drinking Water Action	Compound	Level (ppt)
Minnesota	Health Based Guidance-Water	PFOA	35
		PFOS	15
		PFHxS	47
New Hampshire	Adopted Regulation 10/1/19	PFOA	12
		PFOS	15
		PFHxS	18
		PFNA	11
New Jersey	Adopted Regulation	PFNA	13
		PFOA	14
	Adopted Regulations 6/1/20	PFOS	13
New York	Adopted Regulation 7/30/20	PFOA	10
		PFOS	10
North Carolina	Health Advisory	GenX	140
	Proposed legislation (HB1175)		
Vermont	Adopted Regulation 3/17/20	∑ (PFOA, PFOS, PFNA, PFHxS, PFHpA)	20
Virginia	HB1257/HB586		

Discussion

What does workgroup need to develop drinking water standard for VA

What should be the workgroup's approach

Challenges to developing drinking water standards in VA

What PFAS have been found in VA drinking water

What do we know about source contribution

States differ in drinking water standards and PFAS evaluated

Are the health effects additive or synergistic

Can a representative PFAS be used

What other toxicological information/resources exist

Deliverables and proposed timeline

December 22, 2020

VDH to provide material to be reviewed

January 8, 2021

Discuss other state and federal PFAS drinking water standards

Discuss need for additional expertise and contracting a university to do a literature search

Determine which PFAS should be analyzed in drinking water in Virginia

…share any information that compares the toxicity of Perfluorobutyrate (PFBA) to Perfluorobutane Sulfonic Acid (PFBS) that could be a technical basis for selecting PFBS to be monitored as part of the occurrence study

Meet monthly

TBD

Final Recommendation/Report-TBD

Provide recommendations for maximum contaminant levels for PFOA, PFOS, PFBA, PFHpA, PFHxS, PFNA, and other PFAS, as deemed necessary

Public Comment

Next meeting

Before or on January 8, 2020

Information to review and any assignments will be made available by December 22, 2020