

PFAS Update

New Hampshire Water Quality Standards Advisory Committee,
July 25, 2019

Ken Edwardson
NH Dept. of Environmental Services

Points of PFAS we will touch on in the next few minutes...

- MCLs
- Draft Water Quality Standards Plan Outline



Health-Based Risk Assessment Process

Proposed MCLs based on non-cancer endpoints

Specific PFAS	NHDES Revised MCLs	Animal Health Outcome
PFOA	12 ng/L	Liver toxicity & altered lipid metabolism
PFOS	15 ng/L	Suppressed immune response to vaccines
PFHxS	18 ng/L	Reduced female fertility
PFNA	11 ng/L	Liver toxicity & altered lipid metabolism

6

(Jonathan Ali, Ph.D. (NHDES), Tech. Background Report Summary, July 7, 2019

<https://www4.des.state.nh.us/nh-pfas-investigation/wp-content/uploads/Stakeholder-Talk-07-09-2019.pdf>)

3



Modeled Exposures & Proposed MCLs

Where was NHDES conservative in its health-based risk assessment?

Central Tendency Assumptions	Conservative (High-End) Assumptions
1. Application of Uncertainty Factors (see page 23 of the June Technical Report)	1. Accounting for breastmilk & placental transfer in a drinking water standard (MDH model)
2. Human half-life estimates (average values)	2. 95 th percentile water consumption rates, <i>throughout life</i>
3. Placental & breastmilk transfer estimates (average values)	3. Assumed 12-month exclusive breastfeeding period
4. Individual MCLs specific to each compound instead of a class-based MCL.	4. Assuming 100% absorption in GI tract
5. Relative Source Contribution cap of 50%*	5. Relative Source Contribution cap of 50%*

26

(Jonathan Ali, Ph.D. (NHDES), Tech. Background Report Summary, July 7, 2019

<https://www4.des.state.nh.us/nh-pfas-investigation/wp-content/uploads/Stakeholder-Talk-07-09-2019.pdf>)

4



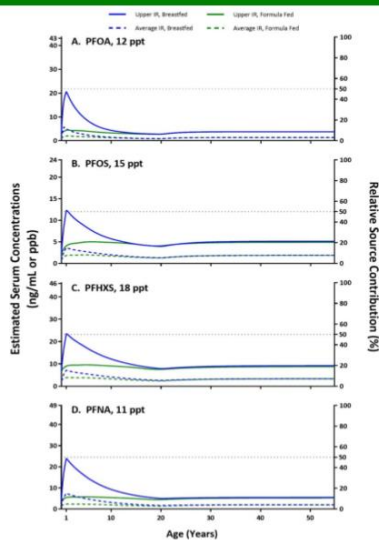
Modeled Exposures & Proposed MCLs

Given these **reference doses** and **exposure assumptions**, the proposed MCLs/AGQS are:

PFOA	12 ng/L
PFOS	15 ng/L
PFHxS	18 ng/L
PFNA	11 ng/L

NHDES is *currently* not recommending a class- or subclass-based approach to regulating PFAS.

NHDES is committed to continuing to review the scientific literature for advances in risk assessment for these and other PFAS.



27

(Jonathan Ali, Ph.D. (NHDES), Tech. Background Report Summary, July 7, 2019

<https://www4.des.state.nh.us/nh-pfas-investigation/wp-content/uploads/Stakeholder-Talk-07-09-2019.pdf>)

5



Questions

References and Supporting Documents can be found in the Reference List of the June 2019 Technical Report:

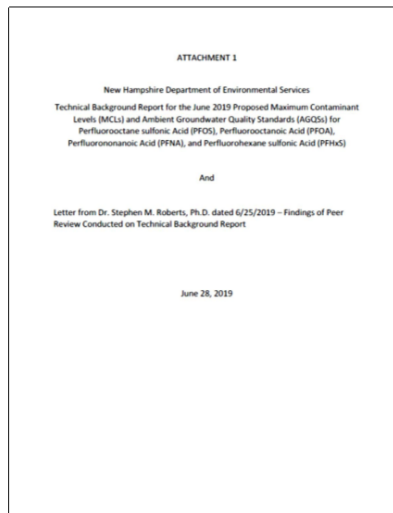
<https://www.des.nh.gov/organization/commissioner/legal/rulemaking/documents/pfas-scr-attach-1-w-ltr.pdf>

Technical Questions about this presentation can be submitted to the **NHDES Permitting & Environmental Health Bureau**:

Jonathan Ali, Ph.D.
Toxicologist
Phone: (603) 271-1359
Email: jonathan.ali@des.nh.gov

Mary Butow, M.S.
Human Health Risk Assessor
Phone: (603) 271-8693
Email: mary.butow@des.nh.gov

David Gordon, M.S.
Human Health Risk Assessor
Phone: (603) 271-4608
Email: david.gordon@des.nh.gov



28

(Jonathan Ali, Ph.D. (NHDES), Tech. Background Report Summary, July 7, 2019

<https://www4.des.state.nh.us/nh-pfas-investigation/wp-content/uploads/Stakeholder-Talk-07-09-2019.pdf>)

6

Components of the Rules

- Drinking Water Program Rules (Env-Dw)
 - Drinking water MCLs for 4 PFAS compounds
 - Monitoring, Compliance, Reporting and Public Notification requirements
- Site Remediation Program Rules (Env-Or)
 - Ambient Groundwater Quality Standards (AGQS) for four PFAS compounds
- Groundwater Discharge Program Rules (Env-Wq)
 - Conditional exemption for localized violations of new AGQS for PFAS caused by wastewater discharges to groundwater (similar to earlier 1,4-dioxane rule)

Components of the Rules

- New Drinking Water MCLs and Ambient Groundwater Quality Standards for four PFAS compounds
 - PFOA 12 ng/L (parts per trillion)
 - PFOS 15 ng/L
 - PFHxS 18 ng/L
 - PFNA 11 ng/L
- MCLs applicable to regulated public water systems
- AGQS applicable to contaminated sites and permitted discharges to groundwater

Current Rules Status

- Last Thursday, July 18, the Joint Legislative Committee on Administrative Rules approved of all three proposed rules
- At present, the rules are anticipated to become effective October 1, 2019
- NHMA and others have expressed concern regarding the effective date. These concerns are being considered.

Drinking Water / Groundwater

(Select Locations - Established or Proposed Standards and Guidance Values)

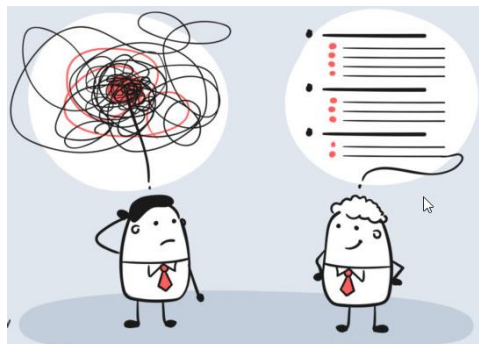
Location	Concentration (ng/L) (* also includes sum of indicated analytes)							
	PFOA	PFOS	PFNA	PFHxS	PFHpA	PFDA	PFBS	PFBA
USEPA	70	70						
	40	40						
Alaska*	70	70	70	70	70		2,000	
Rhode Island	*70	*70						
Maine	*70	*70					400,000	
Connecticut	*70	*70	*70	*70	*70			
Vermont	*20	*20	*20	*20	*20			
Massachusetts	*20	*20	*20	*20	*20	*20	2,000	
Minnesota	35	15		47			2,000	7,000
California	14	13						
New Jersey	14	13	13					
New York	10	10						
New Hampshire	*70	*70						
Effective ca. 10/19	12	15	11	18				

Sources: State webpages and ITRC PFAS Fact Sheets (<https://pfas-1.itrcweb.org/fact-sheets/>)

Plan to Generate PFAS Water Quality Standards

Draft Outline

Final contents likely to vary.



<https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwiV5-udnM7jAhUtTd8KH5oCtMQjhx6B8AgBEAM&url=https%3A%2F%2Fwww.grammarly.com%2Fblog%2Fhow-to-write-outline%2F&psig=AOvVaw37fOIP7MTL3zmOrCbF7Lv9&ust=1564080521492722>

11

1. Executive Summary



<https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwiRvd7bnM7jAhWNVN8KHVR0DOUQjhx6B8AgBEAM&url=https%3A%2F%2Ftenderspage.com%2Fwrite-executive-summary-rfp-response%2F&psig=AOvVaw2YftRlzQDazcMNjHtnhNW&ust=1564080669301316>

12

2. Introduction

- 2.1. Overview of Information Presented in this Document
- 2.2. What are PFAS Chemicals and Why Are They a Concern
- 2.3. Legislative Charge
- 2.4. Overview of the Surface Water Quality Standards
- 2.5. Programs Affected by Surface Water Quality Standards
- 2.6. Enforcement

13

3. Neighbor States Overview

- 3.1. Other States
- 3.2. Cost Share Potential



https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=2ahUKewjZo_Kpnc7JAhXSGM0KHbyIAYEQjhx6BAGBEAM&url=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FList_of_states_and_territories_of_the_United_States&psig=AOvVaw0JN-P_CfbvXSzjkZwnDUH&ust=1564080827816209 14

Vermont

2019, SB 49

- WQStds Plan by January 15, 2020
 - (1) perfluorooctanoic acid; perfluorooctane sulfonic acid; perfluorohexane sulfonic acid; perfluorononanoic acid; and perfluoroheptanoic acid; and
 - (2) the PFAS class of compounds or subgroups of the PFAS class of compounds.



15

4. Surface Water Quality Data Review

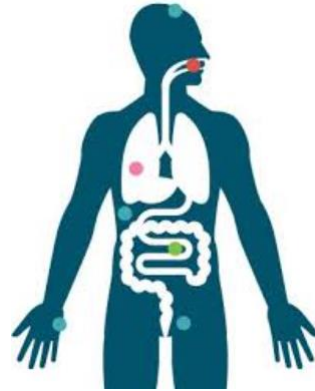
- 4.1. Overview
- 4.2. Targeted sampling of suspected sites
- 4.3. Targeted sampling for trend monitoring stations
- 4.4. Key and Ongoing Studies
- 4.5. Data/Additional Sampling Needs

16

5. Protection of Human Health

5.1. HH WQStd Criteria Options Overview

5.2. Overview of Routes of Exposure



<https://www.google.com/url?sa=i&rc=j&q=&esc=s&source=images&cd=&cad=rja&uact=8&ved=2ahUKewjp1Pf9n87jAhVMG80KH1YALgQjhx6BAGBEAM&url=https%3A%2Fwww.pinterest.com%2Fpin%2F252342385349617367%2F&psig=AOvVaw3xvEQpzJjQMGVJ6toYTbKk&ust=1564081530576965>

17

5. Protection of Human Health (cont.)

5.3. MCL - Where MCL less than Water and Fish Ingestion Criteria (Water Concentration Criteria)

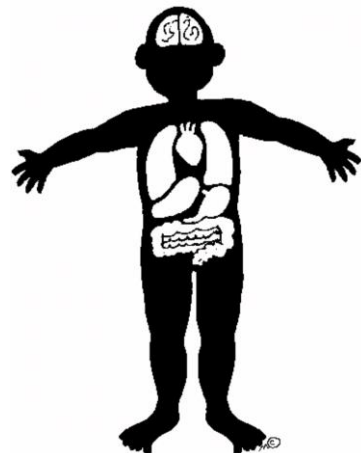
5.4. Fish Consumption Advisory – Environmental Health Program (Tissue Concentration)

5.5. Fish Consumption (Tissue Concentration Criteria)

5.6. Fish/Shellfish Consumption Only (Water Concentration Criteria)

5.7. Water and Fish/Shellfish Consumption (Water Concentration Criteria)

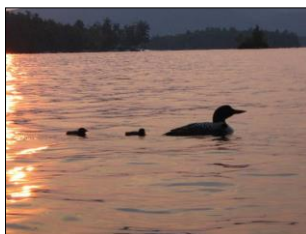
5.8. Recreational Contact (Water Concentration Criteria)



http://www.clipartpanda.com/clipart_images/human-clipart-3347034

18

6. Aquatic Life Use



19

7. Recommendations

- 7.1. Fish/Water/Sediment sampling to build BAF
- 7.2. Capacity Building for Emerging Contaminants
- 7.3. Build Lab Capacity
- 7.4. Regional Library to share papers, research, data,... (NEIWPC?)

20

8. Timeline

- 8.1. MCL - Where MCL less than Water and Fish Ingestion Criteria (Water Concentration Criteria)
- 8.2. Fish Consumption Advisory – Environmental Health Program (Tissue Concentration)
- 8.3. Fish Consumption (Tissue Concentration Criteria)
- 8.4. Fish Consumption & Water and Fish Ingestion (Water Concentration Criteria)
- 8.5. Recreational Contact (Water Concentration Criteria)
- 8.6. Aquatic Life Use

21

An aerial photograph of a large green field, possibly a golf course or agricultural field, with a small red structure visible on the right side. The text "Discussion?" is overlaid on the left side of the image.

Discussion?