



*We work with others to protect the health of the people of Washington State by ensuring safe and reliable drinking water.*



## PFAS AND UNREGULATED CONTAMINANTS IN DRINKING WATER

Washington State Board of Health  
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# Presenters

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# Overview

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- Updates on federal and state activities
- DOH science review of Poly & Perfluoroalkyl Substances (PFAS) and recommended State Action Levels (SALs)
- Proposed regulatory framework for setting future SALs
- SAL requirements – monitoring, follow-up actions, reporting and public notice
- Next steps

# Federal Partners

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- Environmental Protection Agency (EPA) establishes an Action Plan for PFAS - Feb 2019
- Decision on whether or not to set a maximum contaminant level (MCL) for PFOA/PFOS expected December 2019
- Department of Defense (DoD) – site investigations, mitigation of drinking water on/near military sites in Washington
- Federal Aviation Administration and DoD researching fluorine-free firefighting foams
- Agency for Toxic Substances and Disease Registry (ATSDR) launching new PFAS exposure and health studies

# DOH and State Partners

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- Draft Chemical Action Plan - recommendations released for stakeholder review
- Ecology implementing 3 WA laws to reduce PFAS contamination of food and water
  - PFAS in food paper (2018)
  - PFAS in firefighting foams (2018)
  - PFAS in priority products - Safer Products for Washington (2019)
- Developed recommendation for regulatory framework for SALs
- Developed recommendation for SALs for five PFAS

# Issues for Stakeholder Comment

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- Answer key questions on state regulated contaminants
  - Criteria for pursuing a SAL
  - Sampling requirements for each SAL
  - Utility responsibilities when sampling results > SAL
  - Frequency at which to review/update existing SALs
- Adopt existing SALs previously established by the department but not incorporated into rule
- Explore new regulatory approach for highly bioaccumulative contaminants

# DOH Approach to setting PFAS SALs

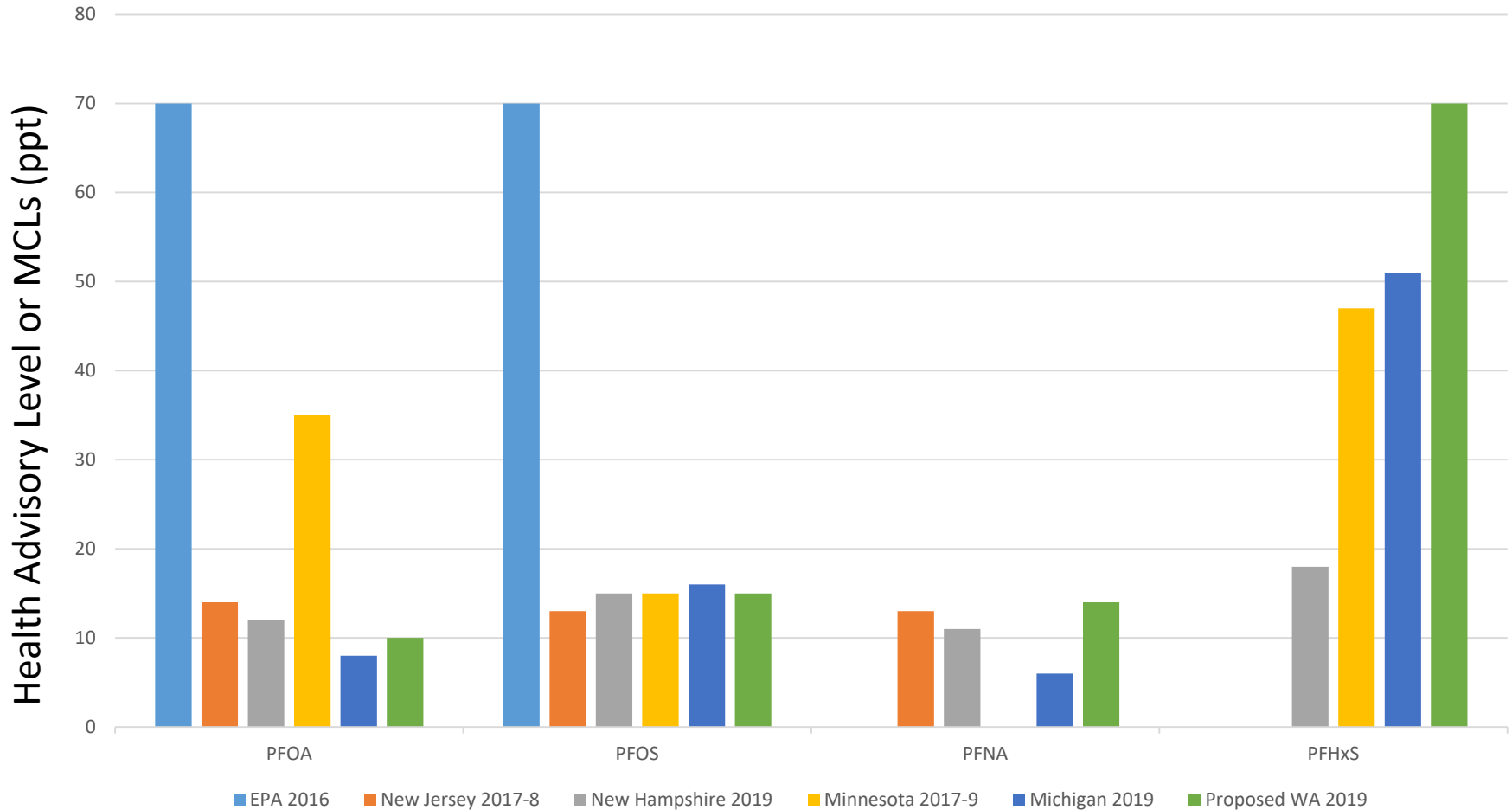
- Use best available science
- Build on existing scientific assessments (high quality, comprehensive, recent)
- Establish health protective values for Group A public water systems
- Use SALs on 5 common PFAS as indicators to identify and address PFAS contamination in drinking water

# Proposed SALs for 5 PFAS in drinking water:

Individual PFAS	Action level in drinking water
PFOA	10 ppt
PFOS	15 ppt
PFNA	14 ppt
PFHxS	70 ppt
PFBS	1,300 ppt



# Comparison with EPA, other states



# Calculating a health protective SAL for drinking water

$$\frac{\text{Acceptable daily oral intake}}{\text{Water intake}} \times \text{Proportion allowable from water} = \text{SAL (or MCLG)}$$

# Health protective oral daily intake

- Derived from toxicity testing in laboratory animals. Non-cancer effects.
- Human health research used to support.
- Most sensitive subgroup: fetus/child.

**PFOS = 3.1 ng/kg/day**  
(MDH RfD 2019)

**PFOA = 3 ng/kg/day**  
(ATSDR MRL 2018)

**PFNA = 3 ng/kg/day**  
(ATSDR MRL 2018)

**PFHxS = 9.7 ng/kg/day**  
(MDH RfD 2019)

**PFBS = 300 ng/kg/day**  
(EPA RfD 2018/MDH)

# Daily Drinking Water Ingestion Rate

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- Even low levels in daily drinking water significantly increase human serum levels
- Used modelling to estimate predicted PFAS serum levels across life-stages for a given concentration in drinking water.
  - Minnesota Department of Health life stage exposure model (with modifications)
  - High end, age-specific drinking water intake rates
  - Breastfed infant had highest serum level in the model

# Drinking water's allowable contribution or Relative Source Contribution (RSC)

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- Need to account for other sources of PFAS exposure besides drinking water (diet, environment)
- Used the EPA Exposure Decision Tree developed for water quality standards to derive RSCs
- Result: Drinking water can contribute 20-50% of the health protective value (RfD, MRL)
  - RSC = 50% PFOA, PFNA, PFHxS
  - RSC = 50% (infants), 20% (adults) PFOS
  - RSC = 20% PFBS (default),

# Recommended SALs

PFAS	RfD/MRL	Ingestion rate	RSC	SAL in drinking water
<b>PFOA</b>	3 ng/kg-d	MDH model	50%	10 ppt
<b>PFOS</b>	3.1 ng/kg-d	MDH model	20% Adults 50% Children	15 ppt
<b>PFNA</b>	3 ng/kg-d	MDH Model w/ MDHHS inputs	50%	14 ppt
<b>PFHxS</b>	9.7 ng/kg-d	MDH Model	50%	70 ppt
<b>PFBS</b>	300 ng/kg-d	0.047 L/kg-d	20%	1,300 ppt

# Requirements – Initial & Ongoing Monitoring

- PFAS monitoring for all community and nontransient noncommunity water systems
  - Phase in monitoring over a 3-year period based on risk
  - Monitoring only at-risk transient noncommunity systems
- Will develop a waiver model based on risk

# Requirements – Follow-up Actions

- Increased quarterly monitoring based on contaminant concentration
- Ongoing monitoring for systems with no waiver or based on risk and concentration
- Requirement for water systems to notify DOH and customers when a SAL is exceeded
- Requirement to investigate the cause of contamination
- Take actions as directed by DOH



# Requirements – Public Notice

- SAL exceedances
  - Uses the federal Tier 2 framework (within 30 days)
  - For PFAS exceedances (Bioaccumulative)
    - As soon as possible
    - Ongoing notice - quarterly
- For community water systems, notice of any detections in its annual Consumer Confidence Report to customers

# Setting Future SALs

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- Increasing Clarity and Transparency
  - Draft criteria for pursuing a SAL
  - Identify how SAL candidates are selected
  - Describe criteria used in establishing a SAL
  - Specify sampling requirements for each SAL
  - Specify utility responsibilities when sampling results > SAL
  - Specify frequency to review/update existing SALs
- Adopts existing SALs previously established by the department but not incorporated into rule

# Lab Rule – Update to incorporate PFAS changes

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- DOH recommends the Board consider filing a CR-101 to make amendments to the Lab Rule
- Include a new PFAS Template (adopt by reference into guidance)
- Add requirement to notify DOH and water systems when PFAS results exceed SALs
- Add State Detection Reporting Limits for PFAS identified in the test panel

# Lab Rule – Update to make technical corrections

- Clarify requirement for after hours (5pm) notification
- Remove obsolete “effective” dates
- Reduce reporting of chronic contaminants from 45 to 30 days
- Remove fluoranthene and lower chloride and sulfate state detection reporting limits
- Adjust arsenic significant figures to align with federal rule

# Next Steps

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- Holding workshops on draft rule language in areas with known contamination
  - Tacoma – December 2<sup>nd</sup>
  - Mt. Vernon – December 3<sup>rd</sup>
  - Spokane – December 4<sup>th</sup>
- Evaluate comments and make necessary rule changes
- Finalize significant analysis & small business economic impact analysis
- Board briefing – April 2020
- File CR-102 Proposed Rule – May 2020
- Public Hearing – June 2020

