



ADDRESSING “FOREVER CHEMICALS”: PFAS IN DRINKING WATER



April 26, 2023



Before we start...

Session Flow

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PFAS: The Big Picture

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West Plains Overview

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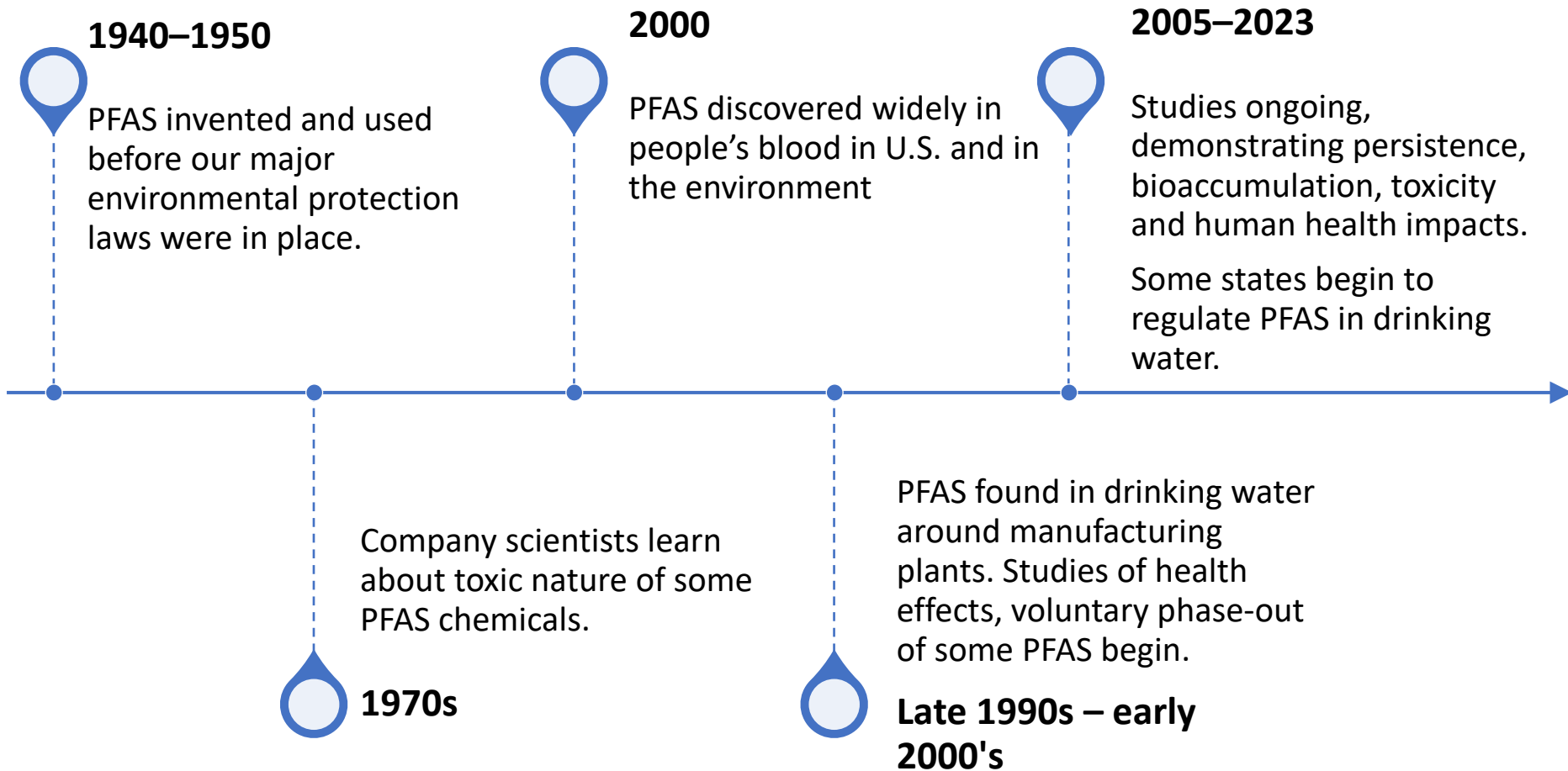
**Community Perspectives from
West Plains Water Coalition**

What ARE PFAS?

- “PFAS” is short for “per- and polyfluoroalkyl substances.”
 - “Forever chemicals.”
- Family of 10,000+ human-made chemicals.
 - PFOA and PFOS = two of the most studied, no longer used in U.S. manufacturing.
- Used since 1950s in wide range of consumer products.
 - Historically used in AFFF firefighting foam.



How did we get here?



PFAS are a problem because...



**Some are
toxic.**



**Can escape
consumer
products.**



**Can get into
soil and
groundwater.**



**Don't break
down
easily.**



**Spread easily
in outdoor
environment.**



Bioaccumulate.



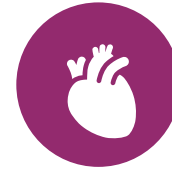
Having higher PFAS levels in your body could...



Affect your immune system and make some vaccinations less effective.



Increase risk for kidney cancer.



Increase risk for high cholesterol.



Increase risk for low birthweights.



PFAS exposure may also increase your risk for...



**Other cancers,
like testicular
cancer.**



**Thyroid
disease.**



**High blood
pressure
during
pregnancy.**



**Other
reproductive
issues.**



What is my risk?

Your risk of long-term health impacts is influenced by many different factors and is different for each person.

Factors that influence how your body responds to ANY toxic chemical:

- 1) Your diet, lifestyle, and habits.
- 2) Your individual and family medical history.
- 3) Your overall health.

Individual exposure:

- 1) How much of the chemicals you were exposed to.
- 2) How often you were exposed.
- 3) How long you were exposed.
- 4) How long you were exposed for.
- 5) Which PFAS chemicals you were exposed to.

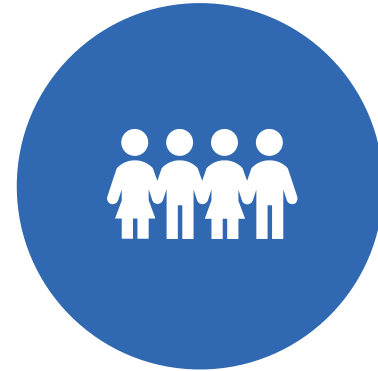
Who is most vulnerable?



Pregnant people.



**Babies in the
womb.**



**Children ages 5
and younger.**



Lessons of Airway Heights PFAS Exposure Assessment – ATSDR/CDC



Drinking water can contribute to PFAS body burden. Airway Heights residents had higher average blood levels of:

PFOS = 8x national average.

PFHxS = 56x national average



Children who drank formula prepared with tap water had higher PFHxS and PFOS blood levels than children who didn't.



Long-time residents had higher blood PFHxS (7.2%), PFOS (5.6%), and PFOA (3.9%) levels.



Female participants: PFAS blood levels decreased with increasing number of child births.

Factors in Individual exposure:

- 1) How much.
- 2) How often.
- 3) How long.
- 4) Which PFAS.



Spokane River Forum, April 26, 2023



STATE ACTION ON PFAS

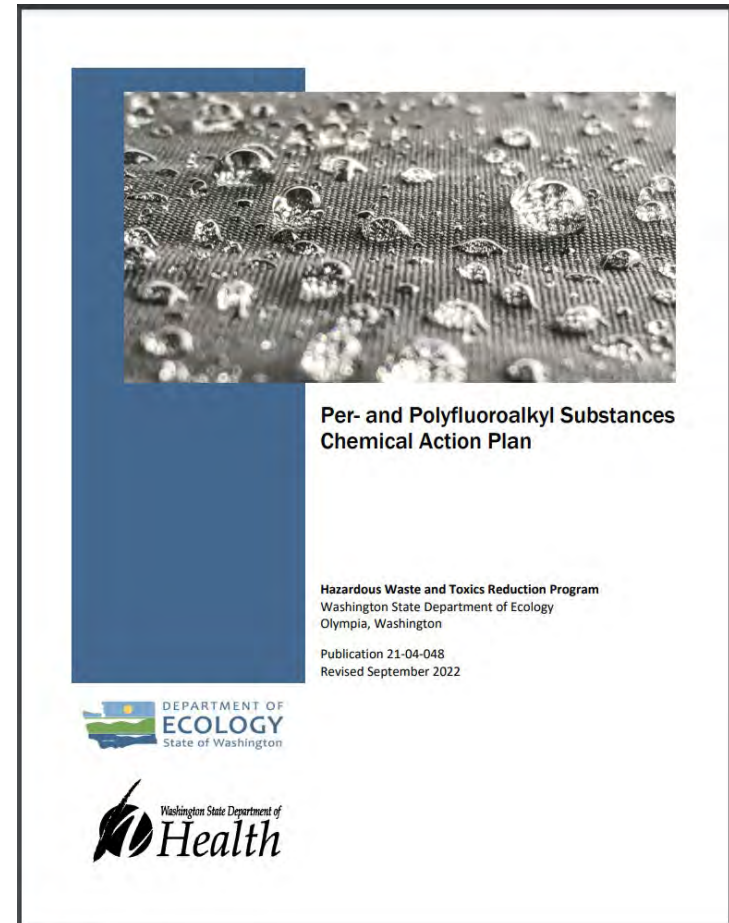
Barbara Morrissey
Office of Environmental Public Health Sciences

State Chemical Action Plan for PFAS (2017-2021)

Recommendations in 4 areas:

- Ensuring drinking water is safe
- Managing environmental PFAS contamination
- Reducing PFAS in products
- Understanding and managing PFAS in waste

See <https://ecology.wa.gov/Waste-Toxics/Reducing-toxic-chemicals/Addressing-priority-toxic-chemicals/PFAS>



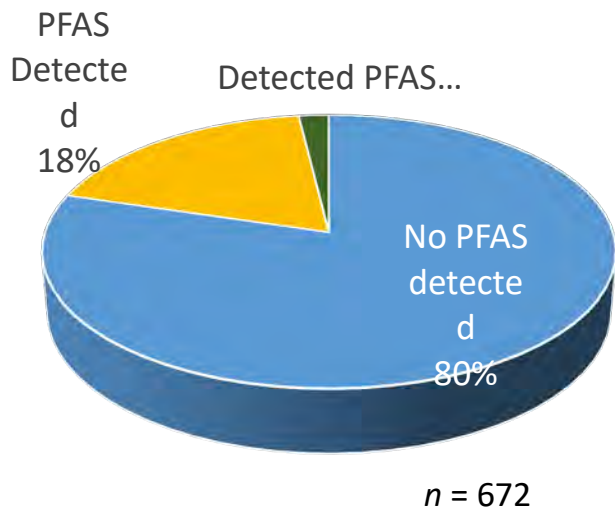
2021 State Action Levels (SALs)

Features

- State Action Levels for 5 PFAS
- Requires PFAS testing by most Group A water systems by Dec. 2025.
- Requires notification of customers
- Requires follow-up monitoring
- Treatment is not required but is encouraged and supported with earmarked funding.

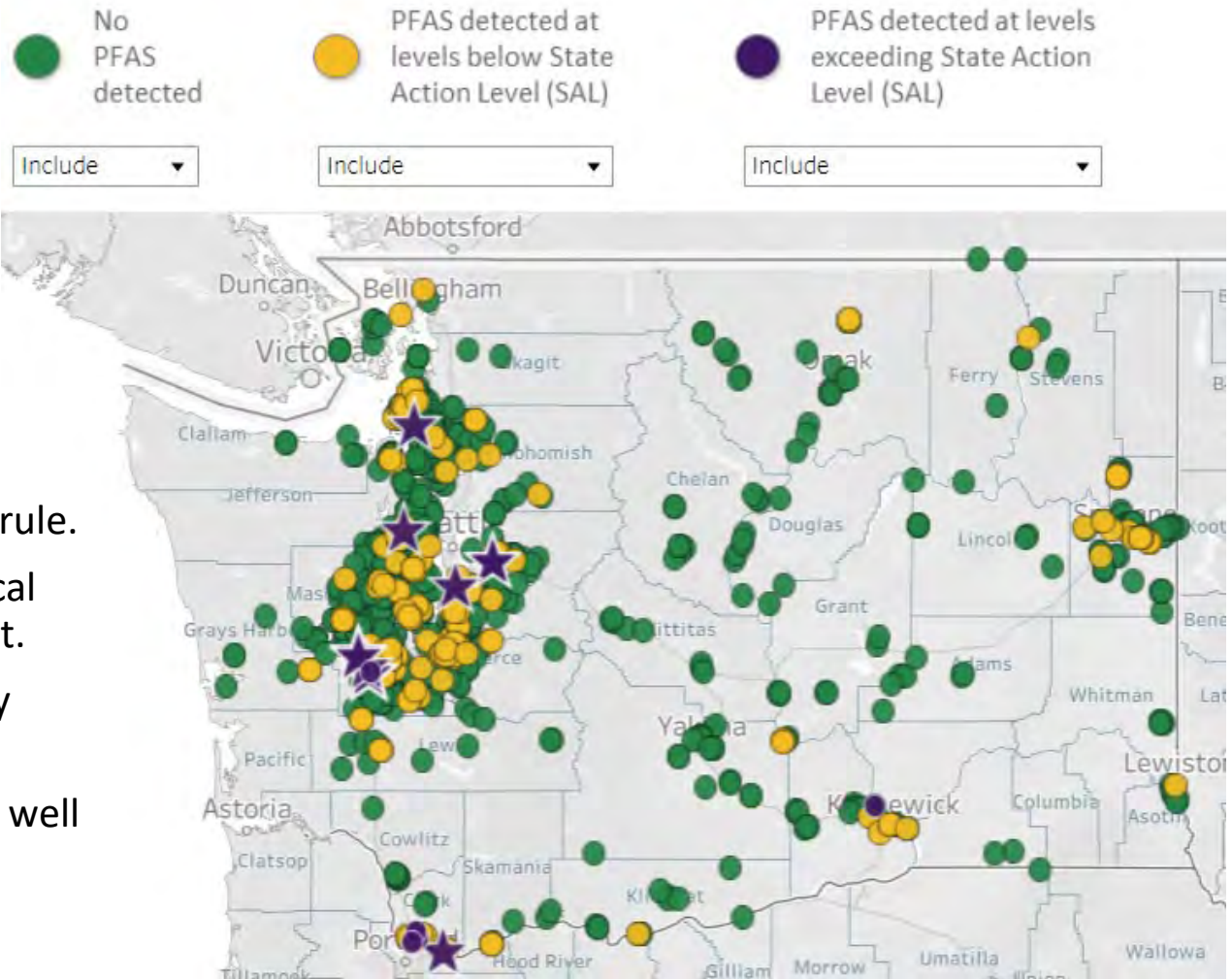
Drinking water Contaminant	SAL (parts per trillion)
PFOA	10
PFOS	15
PFNA	9
PFHxS	65
PFBS	345

Update on Drinking Water Testing



- ~1/4 of public water systems have tested for PFAS (672/2422 systems)
- 80% of systems tested report no PFAS.
- 2% of water systems tested have PFAS > SAL.

Map of PFAS Drinking Water Testing



Only includes samples for Group A water systems complying with new state rule.

- Doesn't include historical water testing results yet.
- Doesn't include military testing yet.
- Doesn't include private well results

State Restrictions on PFAS in products



2018

- Firefighting foam (RCW 70A.400)
- Food contact paper (RCW 70A.222)



New

- Cosmetics (HB 1047) –bans intentionally added PFAS by Jan 1, 2025.
- A proposed ECY rule would ban intentionally added PFAS in:
 - Aftermarket stain and water proofing treatments
 - Leather and textile furnishings (indoor)
 - Carpets and rugs




**Safer Products for
Washington Program**


Fish Consumption Advice



Common carp
Cutthroat trout
Northern pikeminnow
Largemouth bass
Smallmouth bass
Yellow perch

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<https://doh.wa.gov/sites/default/files/2022-12/334-471.pdf>




PFOS Fish Advisory

Lake Washington, Lake Sammamish, and Lake Meridian

Continue to eat fish. Eating fish is good for you and has important health benefits.

- Perfluorooctane sulfonate (PFOS) has been found in several fish species in Lake Washington, Lake Sammamish, and Lake Meridian. PFOS comes from a chemical family called per- and polyfluoroalkyl substances (PFAS). PFAS chemicals are sometimes called “forever chemicals” in the news. PFOS has been made since the late 1940s, and was phased out of production in the U.S. in 2002 due to health concerns.
- Having PFOS in your body can interfere with your immune system and make some vaccinations less effective and increase your risk for kidney cancer, a lower birthweight for your baby, and high cholesterol. PFOS exposure may also increase your risk for other cancers (like testicular cancer), thyroid disease, high blood pressure problems during pregnancy, and other reproductive issues.
- Your risk of developing health problems depends on how much, how often, and how long you were exposed. Age, lifestyle and overall health can impact how your body responds to PFOS exposure.



A map showing the location of Lake Washington, Lake Sammamish and Lake Meridian in relation to Seattle, Issaquah and Kent.

Protect your health by lowering your PFOS exposure.
Follow the guidelines on the back page to safely eat fish from Lake Washington, Lake Sammamish and Lake Meridian.

Educational Outreach & Community Engagement



Youtube videos & factsheets



DOH partners with local health to help impacted communities know when and how to take action to reduce their exposure.

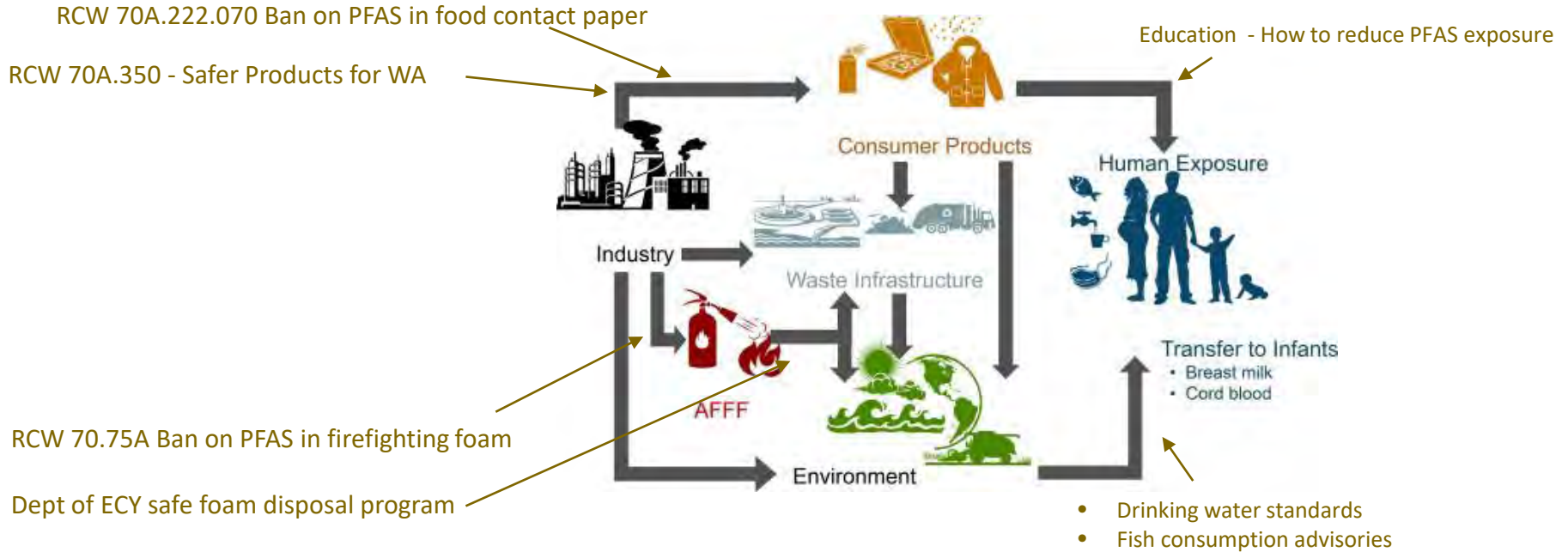
Communities should be respected as full partners in problem solving.

PFAS are largely unregulated compounds, many gaps to bridge together.



Community Listening Sessions

State Action to Address PFAS



Source: Sunderland EM et al. (2019) **A review of the pathways of human exposure to poly- and perfluoroalkyl substances (PFASs) and present understanding of health effects.** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6380916/>



Questions?



To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

Evolving Health Guidance on PFAS in drinking Water

State vs. federal numbers for PFAS in Drinking Water (ng/L or parts per trillion)

Individual MCLs	WA State Action Levels (2021)	EPA Health Advisory Levels (2022)	EPA proposed MCL (2023)
PFOA (perfluorooctanoic acid)	10	0.004 *	4
PFOS (perfluorooctane sulfonic acid)	15	0.02 *	4
Hazard Index of 1.0 for group of 4 PFAS			HBWC used to calculate a ratio**
PFNA (perfluorononanoic acid)	9	-	10
PFHxS (perfluorohexanesulfonic acid)	65	-	9
PFBS (perfluorobutane sulfonic acid)	345	2,000	2,000
GenX (hexafluoropropylene oxide dimer acid and its ammonium salt)	-	10	10

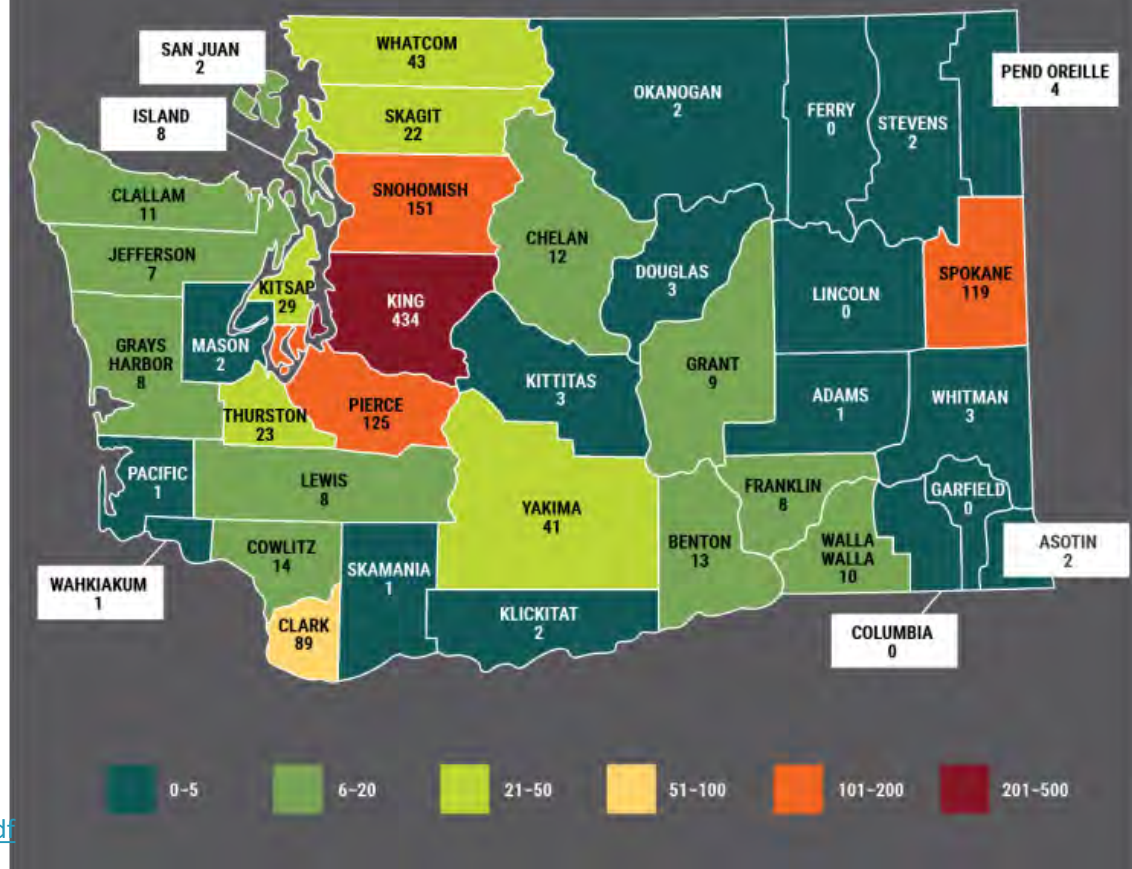
*These are interim HALs.

** Health-based water concentration (HBWC) are the “acceptable” values used to create a ratio of observed/acceptable for each of 4 PFAS. If the ratios add up to more than 1.0, action must be taken to lower PFAS in the drinking water.



Metal plating
Leather & Textiles
Paper production
Aerospace
Automotive
Electronics
Mining

POSSIBLE BUSINESSES USING PFAS IN MANUFACTURING



Source: Figure 23 PFAS Chemical Action Plan, 2021
<https://apps.ecology.wa.gov/publications/documents/2104048.pdf>

Household consumer products that may have PFAS



Graphics credit: WA Dept of Ecology



AFFF

Key Users

Military bases

Airports and hangars

Fire training centers

Fire stations

Petroleum production/refining

Chemical storage

Road and rail emergency response
crews

Highway tunnels

