Characterizing PFAS in California's Drinking Water and Groundwater

Water Resources Advisory Committee
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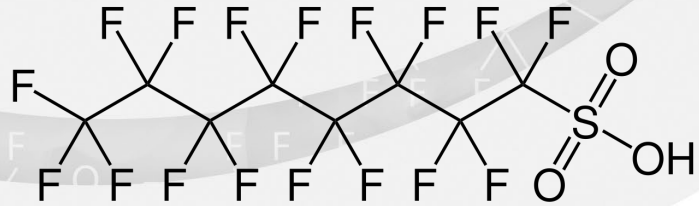
CALIFORNIA
Water Boards

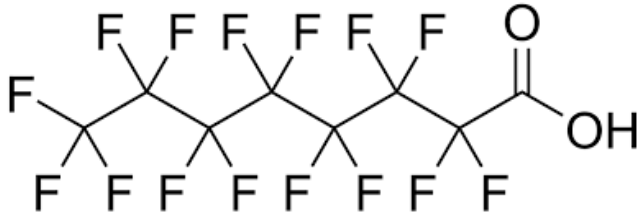
Division of Drinking Water and Water Quality – PFAS Initiative

What are Per- and Polyfluoroalkyl Substances (PFAS)?

- PFAS represent a very broad class of up to 10,000 individual compounds
- Used since the 1940s for a wide range of industrial and commercial applications
- Chemically resistant to heat, water, and oil
- Composed of the strongest bond in nature (C-F) and does not degrade
- Most people have been exposed to mixtures of PFAS

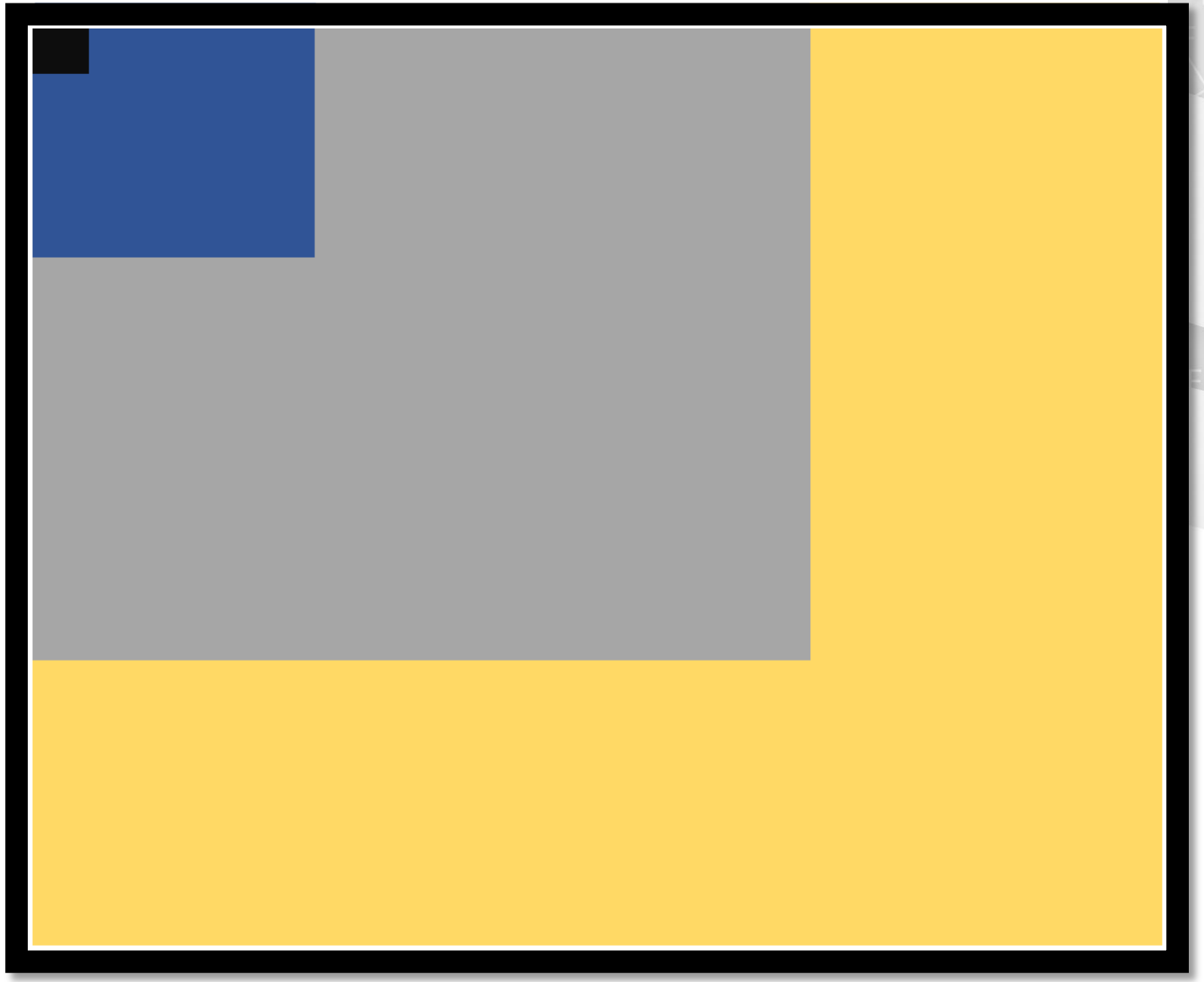


Perfluorooctanesulfonic acid (PFOS)



Perfluorooctanoic acid (PFOA)

Our Awareness of PFAS



- ~10,000 Individual PFAS
- 5,264 catalogued by USEPA
- Non-Target Analysis
- 18 and 24 – Drinking Water Targeted Analysis

Wide Range of Historical PFAS Uses

Class B Firefighting Foam

Carpets, Rugs, Textiles

Non-Stick Cookware

Metal Plating

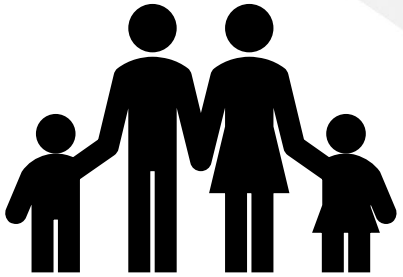
Tech Industry

Food Packaging

PFAS is a Concern

Studies suggest that some PFAS may:

Human Health:

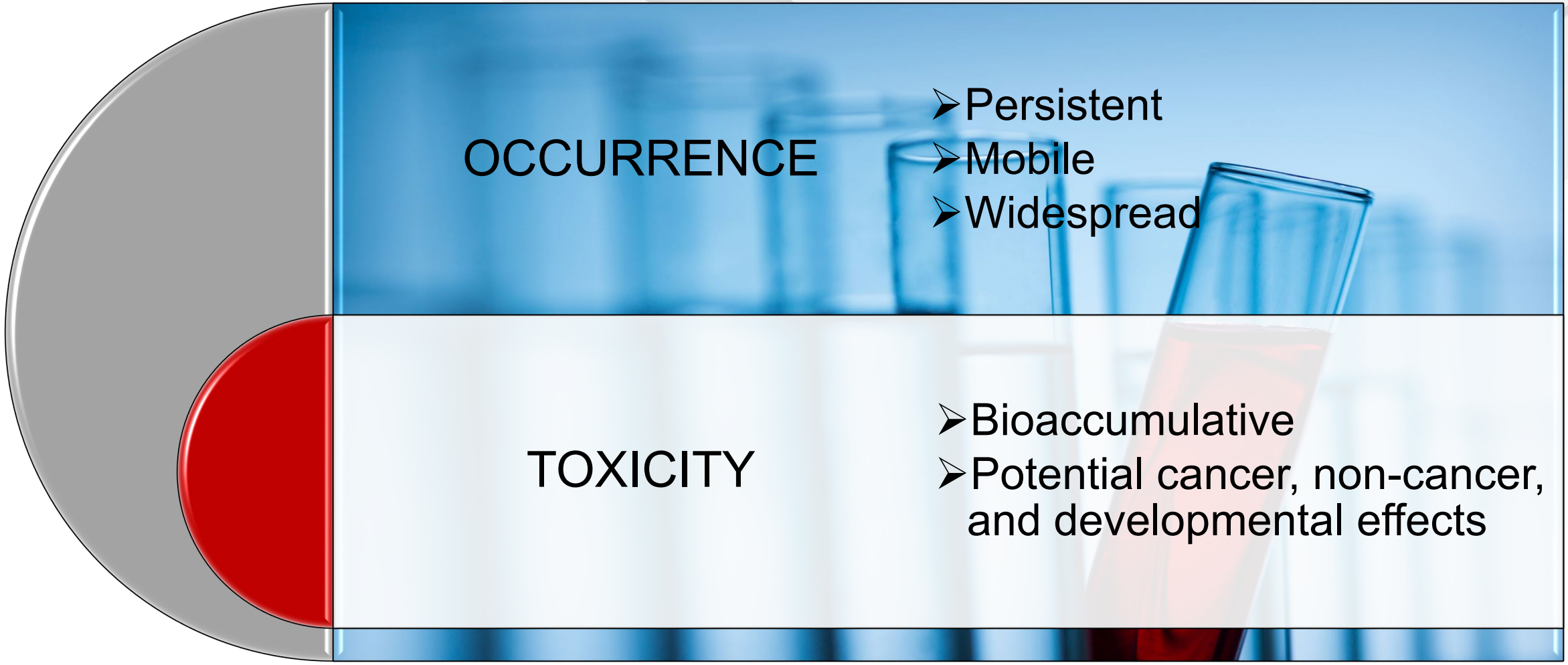


- Affect growth, learning, and behavior of infants and older children
- Lower chance of pregnancy
- Interfere with body's natural hormones
- Increase cholesterol
- Affect the immune system
- Increase the risk of cancer

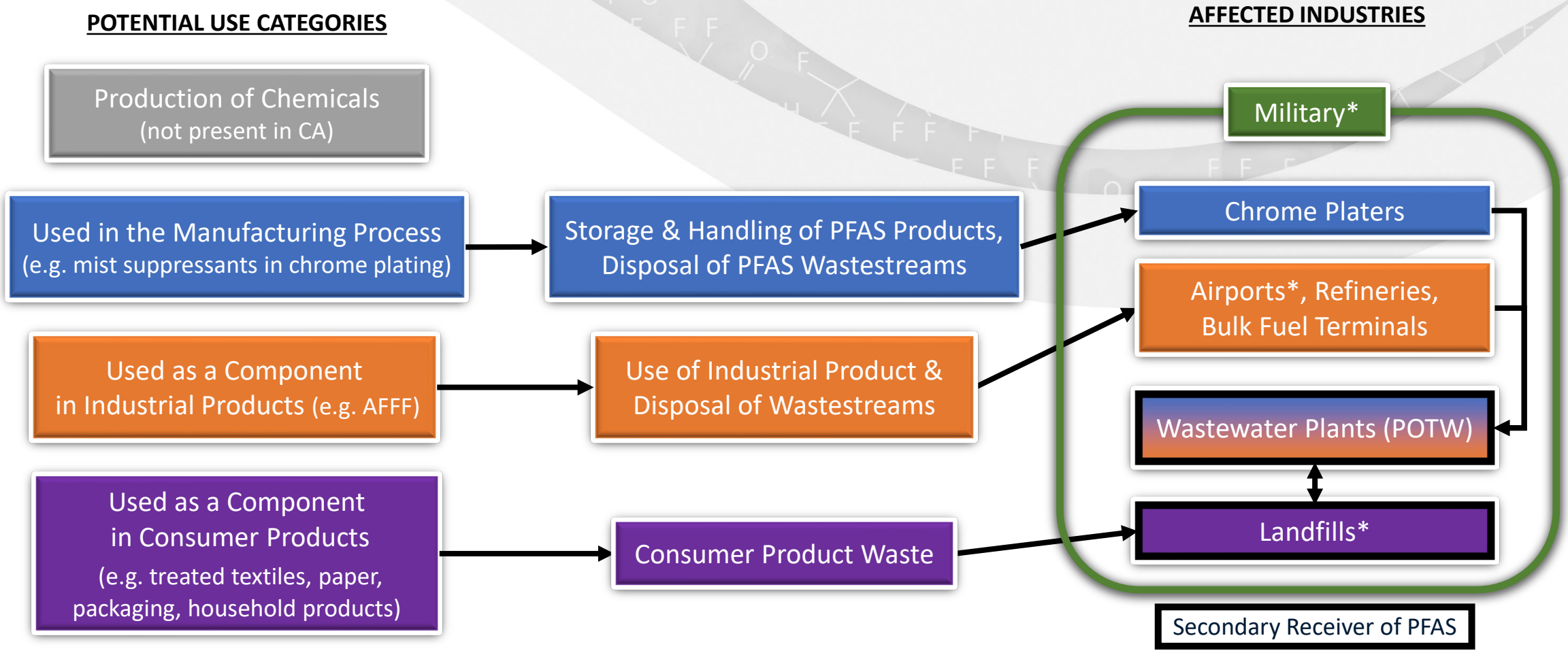
Ecological Concern:

- Reproduction, development, metabolism, growth
- Sensitive organisms:
  - Birds
  - Marine mammals

“Let’s Investigate!” - A PFAS Investigation

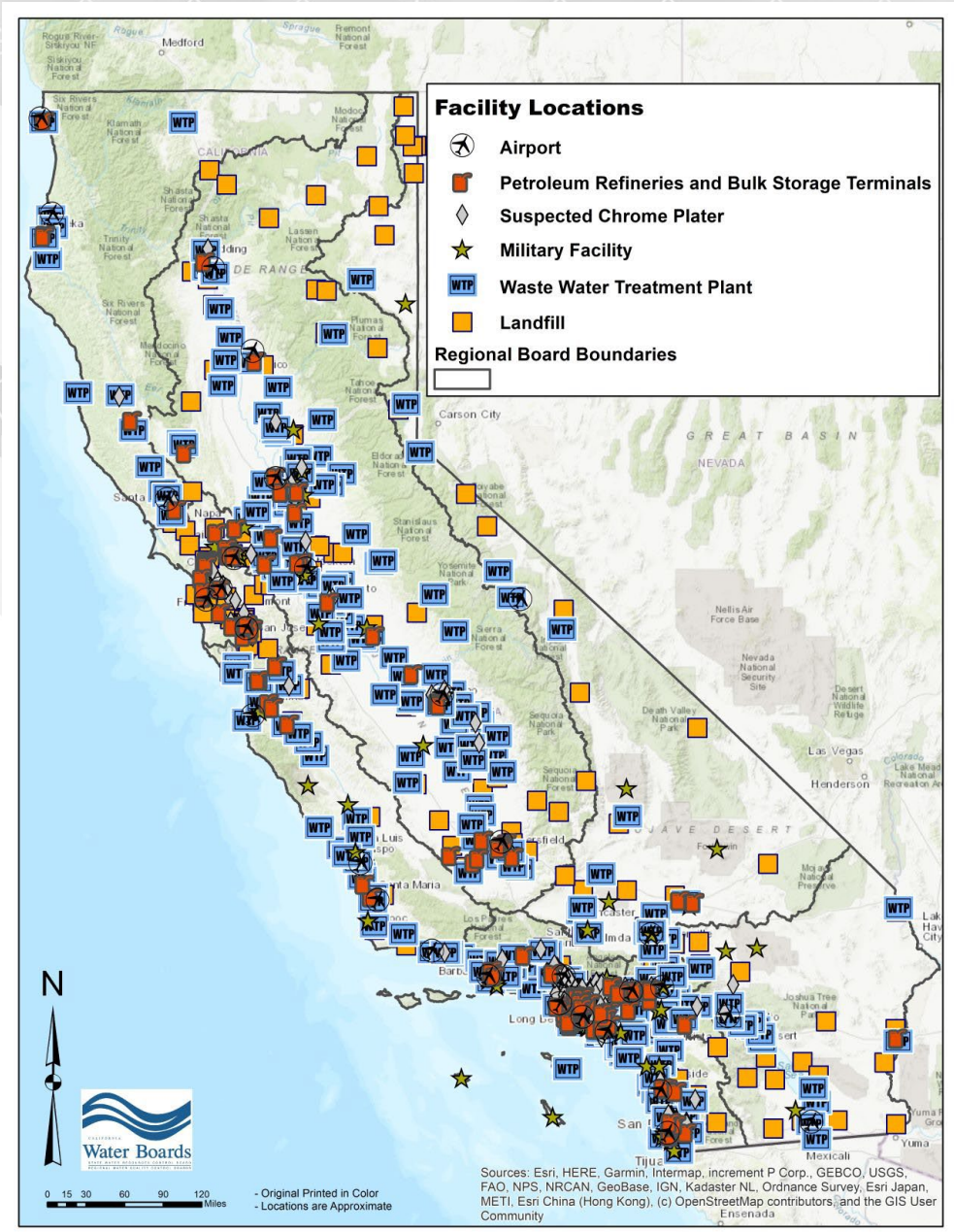


Current Water Board Focus on PFAS Sources



***Ongoing drinking water well testing for PFAS**

State-wide PFAS Investigative Orders



Summary of General PFAS Concentrations from State-wide Investigative Orders

Media	Chrome Platers	Airports/Bulk Fuel Terminals/ Refineries	Landfills	POTWs
Soil				
Groundwater				
Stormwater				
Surface Water/ Sediment				
Wastewater				

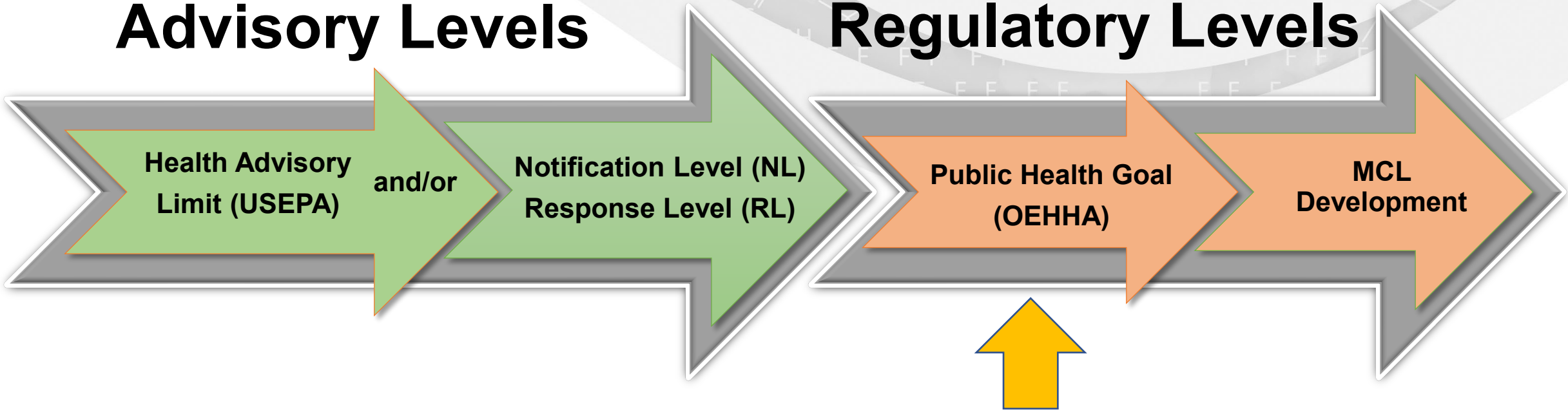
Not assessed	Not Detected to Low Concentrations (<100 ppt)	Moderate Concentrations (100 ppt to 5,000 ppt)	Significant Concentrations (>5,000 ppt)

Drinking water EPA Method 537.1 includes 18 PFAS analytes; All other matrices were analyzed using the DoD QSM with 25 to 38 analytes.

Path to a Drinking Water MCLs

Advisory Levels

Regulatory Levels



PFOA (C8)	70 ppt combined	NL 5.1 ppt; RL 10 ppt	0.007 ppt*	2025
PFOS (C8)		NL 6.5 ppt; RL 40 ppt	1 ppt*	
PFBS (C4)		NL 0.5 ppb; RL 5 ppb		

*Proposed

What's Next - Data Gaps

- Assess PFAS in drinking water source wells associated with **septic-dominated communities**
- Assess PFAS at **surface water intakes** along several major rivers in California
- Coordinate with programs to add PFAS for future ambient **surface monitoring**
- Support Regional Water Boards in finding other significant sources of PFAS
- Understanding "Total PFAS" in the water supply

What's Next - EPA PFAS Roadmap

- Set **MCL** for PFOA and PFOS (draft regulation – 2022; final 2023)
- Establish **wastewater effluent limitations** guidelines (2022)
- Propose **NPDES monitoring requirements** at facilities where PFAS is expected or suspected (late 2022)
- Improve **analytical methods** (non-drinking water method/possible expansion of drinking water target list) (late 2022 to 2024)
- Designate PFOA and PFOS as **CERCLA hazardous substances** (proposed rulemaking – 2022; final 2023)
- Conduct **UCMR 5 PFAS sampling** in California's public and small water systems (2023-2025)

GeoTracker PFAS Mapping Tool

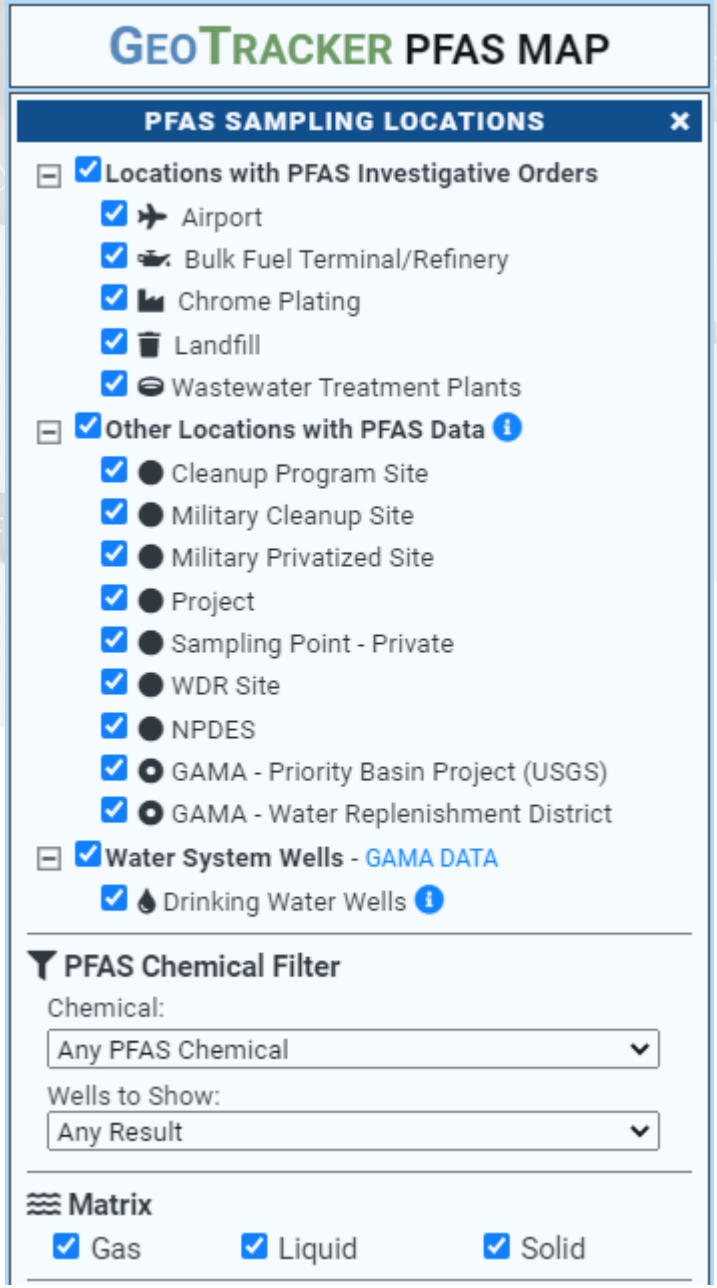
https://geotracker.waterboards.ca.gov/map/pfas_map

DATA SUMMARY - 5841 SAMPLE POINTS FOUND - EXPORT / EXPORT STATEWIDE

VALUES TO SHOW: MAX VALUES MOST RECENT VALUES

CHEMICAL	# WELLS SAMPLED	RECENT VAL	UNITS	MATRIX		
PFOS	5988	=383000	NG/L	Liquid	[HIGHLIGHT]	[ZOOM]
PFOA	5988	=79000	NG/L	Liquid	[HIGHLIGHT]	[ZOOM]
PFNA	5944	=26300	NG/L	Liquid	[HIGHLIGHT]	[ZOOM]
PFBS	5943	=242000	NG/L	Liquid	[HIGHLIGHT]	[ZOOM]
PFHpA	5943	=48700	NG/L	Liquid	[HIGHLIGHT]	[ZOOM]
PFHxS	5939	=1330000	NG/L	Liquid	[HIGHLIGHT]	[ZOOM]
PFDA	5857	=1300	NG/L	Liquid	[HIGHLIGHT]	[ZOOM]
PFTrDA	5857	=1700	NG/L	Liquid	[HIGHLIGHT]	[ZOOM]
PFTeDA, PFTA	5854	<1000	NG/L	Liquid	[HIGHLIGHT]	[ZOOM]

Export PFAS data included in map view or statewide!



More information available at…

PFAS Website: www.waterboards.ca.gov/pfas/

Division of Drinking Water PFOA/PFOS website: www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/PFOA_PFOS.html

Email: PFAS@waterboards.ca.gov

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