

A wide-angle photograph of the San Francisco skyline across a body of water. The city's dense urban landscape, including numerous skyscrapers and the Transamerica Pyramid, is visible against a clear blue sky with some light clouds. The water in the foreground is dark blue with gentle ripples.

From Detection to Prevention: Regional PFAS Studies Supporting Source Control

Lorien Fono

BACWA Executive Director

CVCWA Annual Meeting – September 16, 2026

SF Bay Regional Study



BACWA
BAY AREA
CLEAN WATER
AGENCIES

SFEI

**AQUATIC
SCIENCE
CENTER**

SAN FRANCISCO ESTUARY INSTITUTE & THE AQUATIC SCIENCE CENTER



CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS



Diana Lin



Miguel
Mendez



Kayli
Paterson



SFEI/BACWA PFAS Special Study

Overview

Phase 1

Consistent approach to Statewide Investigation Order

- Monitor representative subset (n=15) of facilities
- Influent/effluent/biosolids
- **2020**

Phase 2

Investigate PFAS sources in sewershed

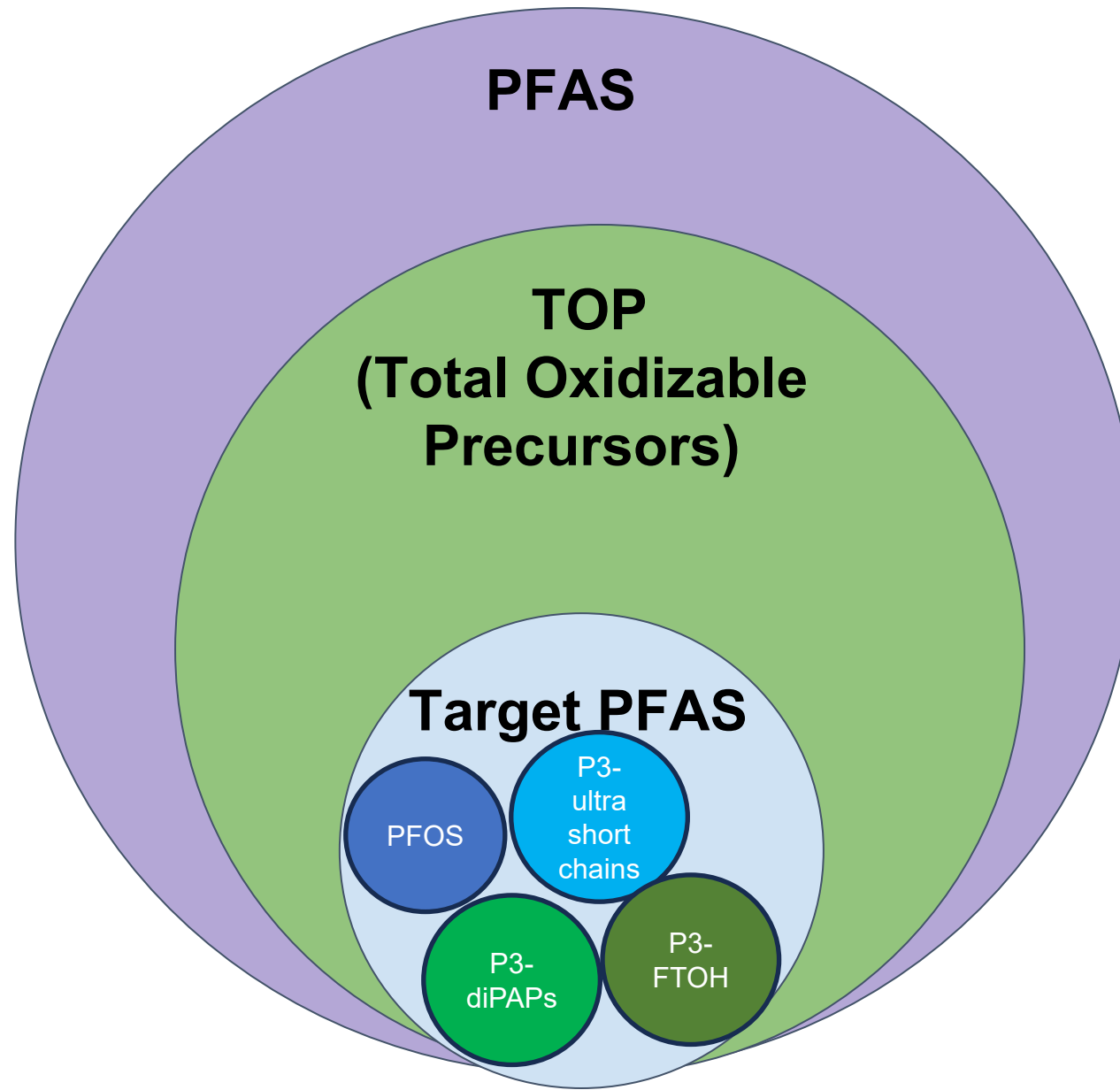
- Investigate upstream sources
- **2022**

Phase 3

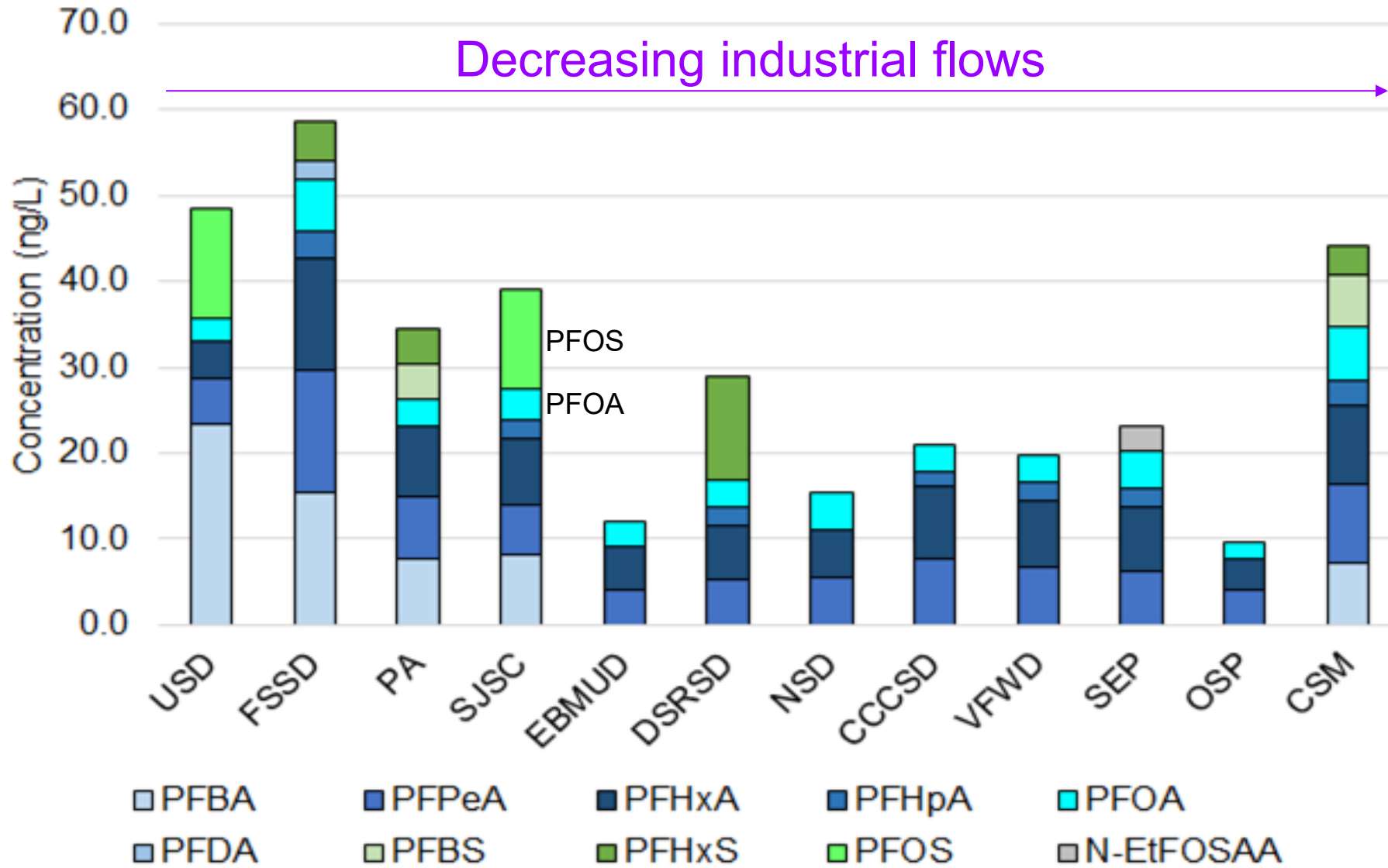
Expand Understanding of sources

- Track long-term trends
- Investigate upstream sources
- Expand analytical methods
- **2026/2027**

PFAS Analytical Methods

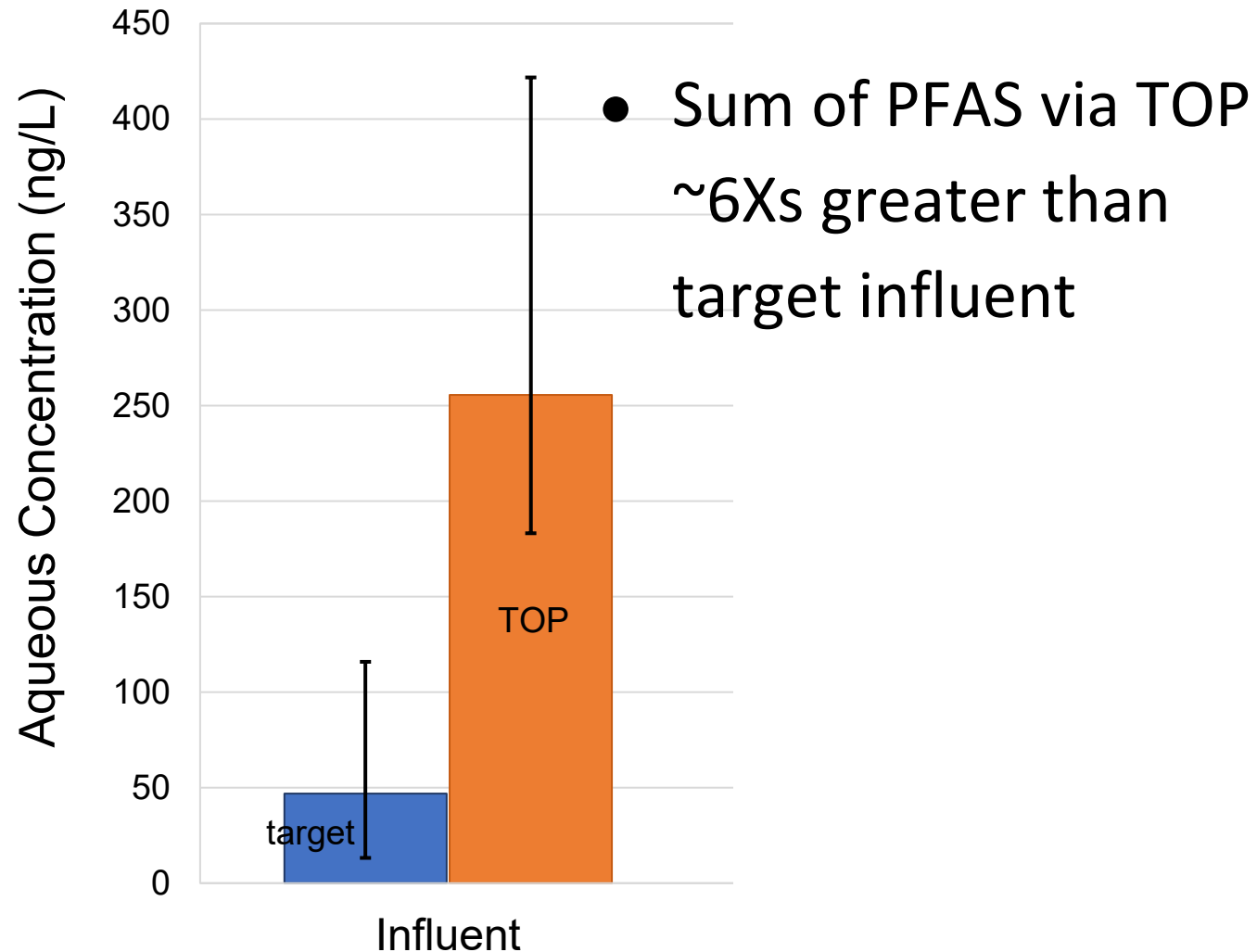


Influent Concentration (Target)

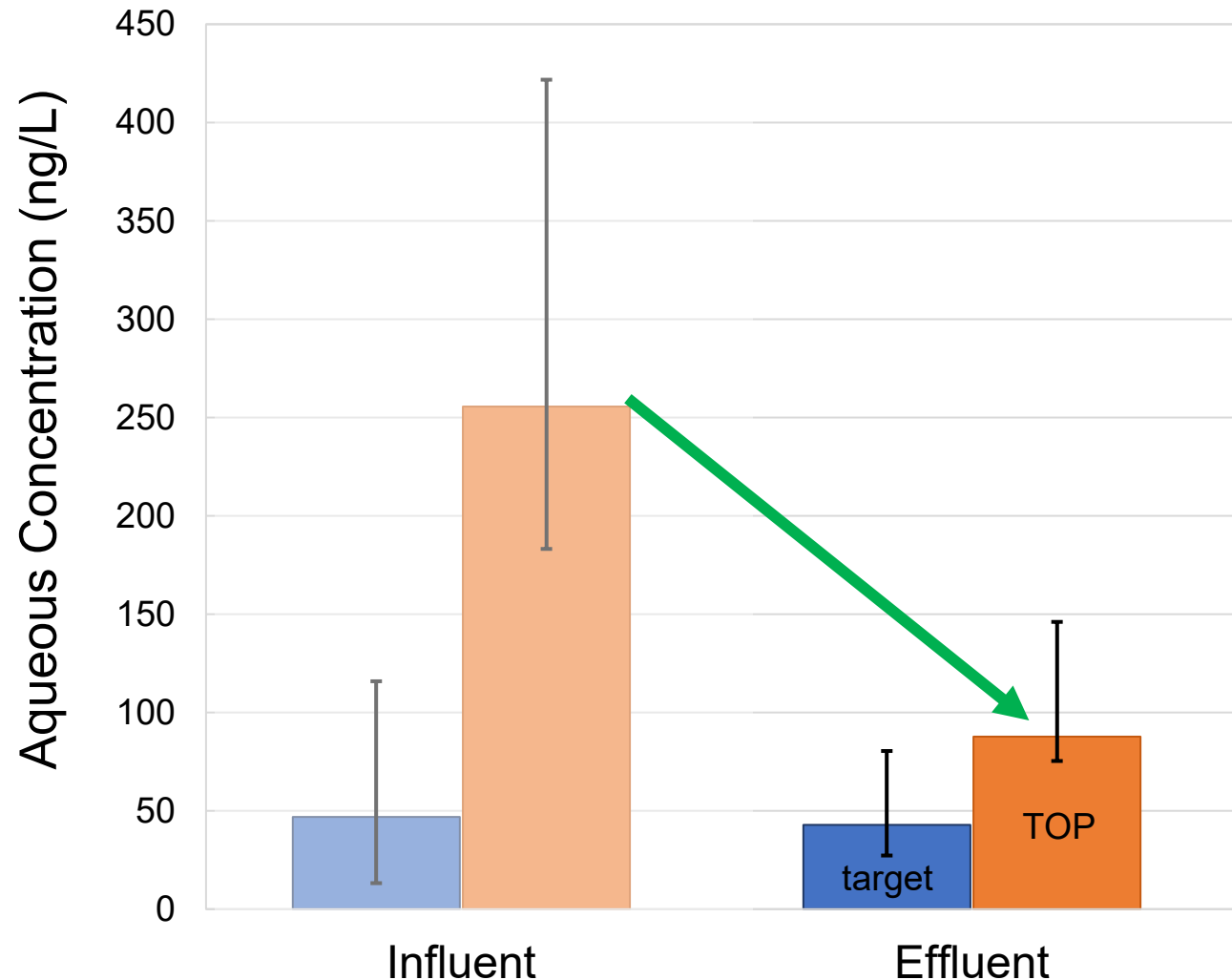


- Concentrations and composition comparable among sites
- Continued presence of long-chain PFOS and PFOA
- No clear trend from industrial discharges
- Comparable to other municipal wastewater in CA and international studies

PFAS Concentrations in Wastewater Matrices

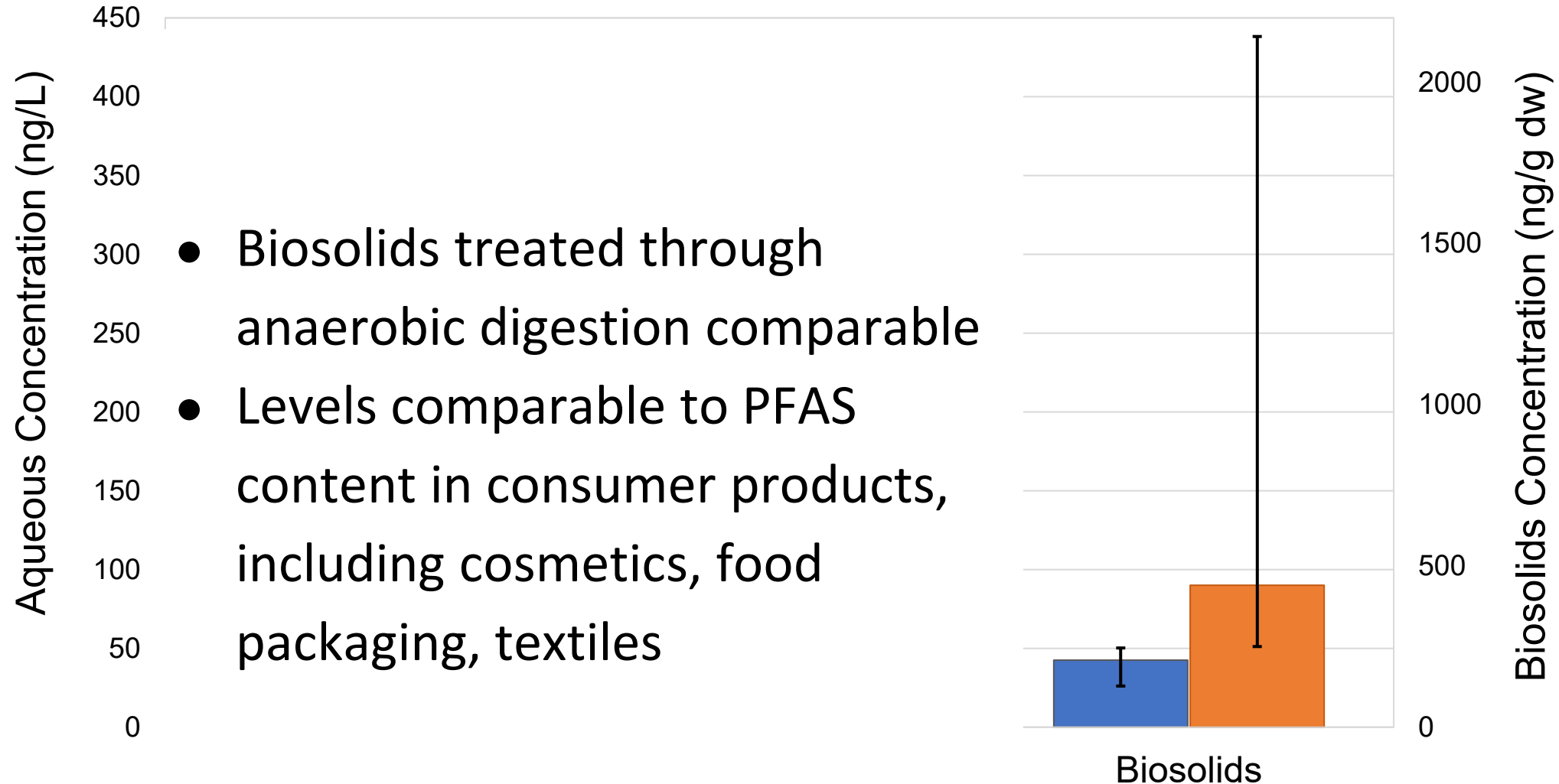


PFAS Concentrations in Wastewater Matrices



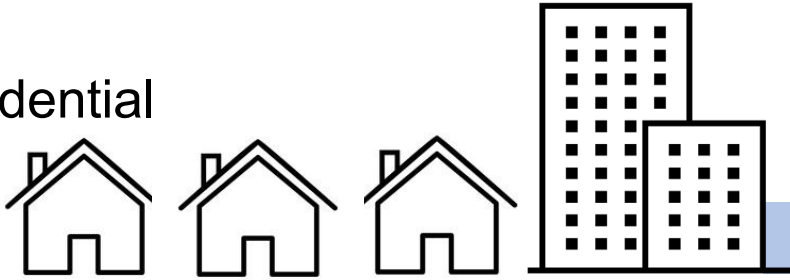
- Effluent results consistent and comparable with other studies
- ~80% reduction in PFOA and PFOS between 2009 and 2022
- 50% reduction in sum of PFAS quantified via TOP between 2014 and 2022
- Trends also observed in other studies

PFAS Concentrations in Wastewater Matrices



Sewershed Monitoring

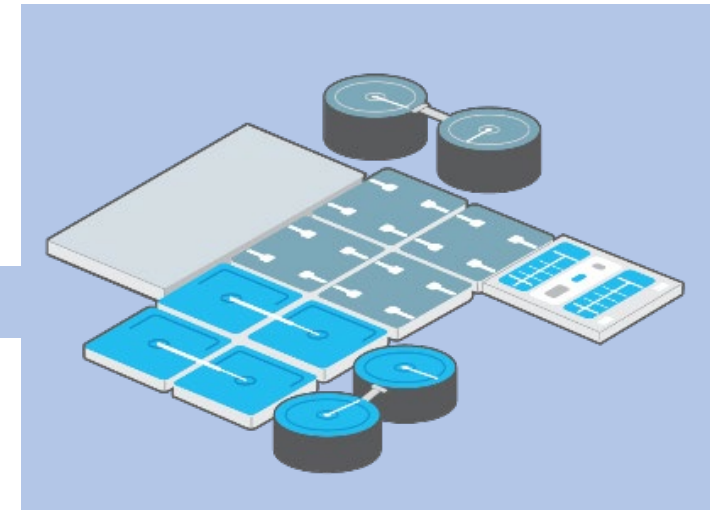
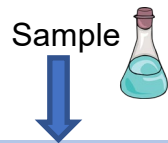
Residential



Industrial

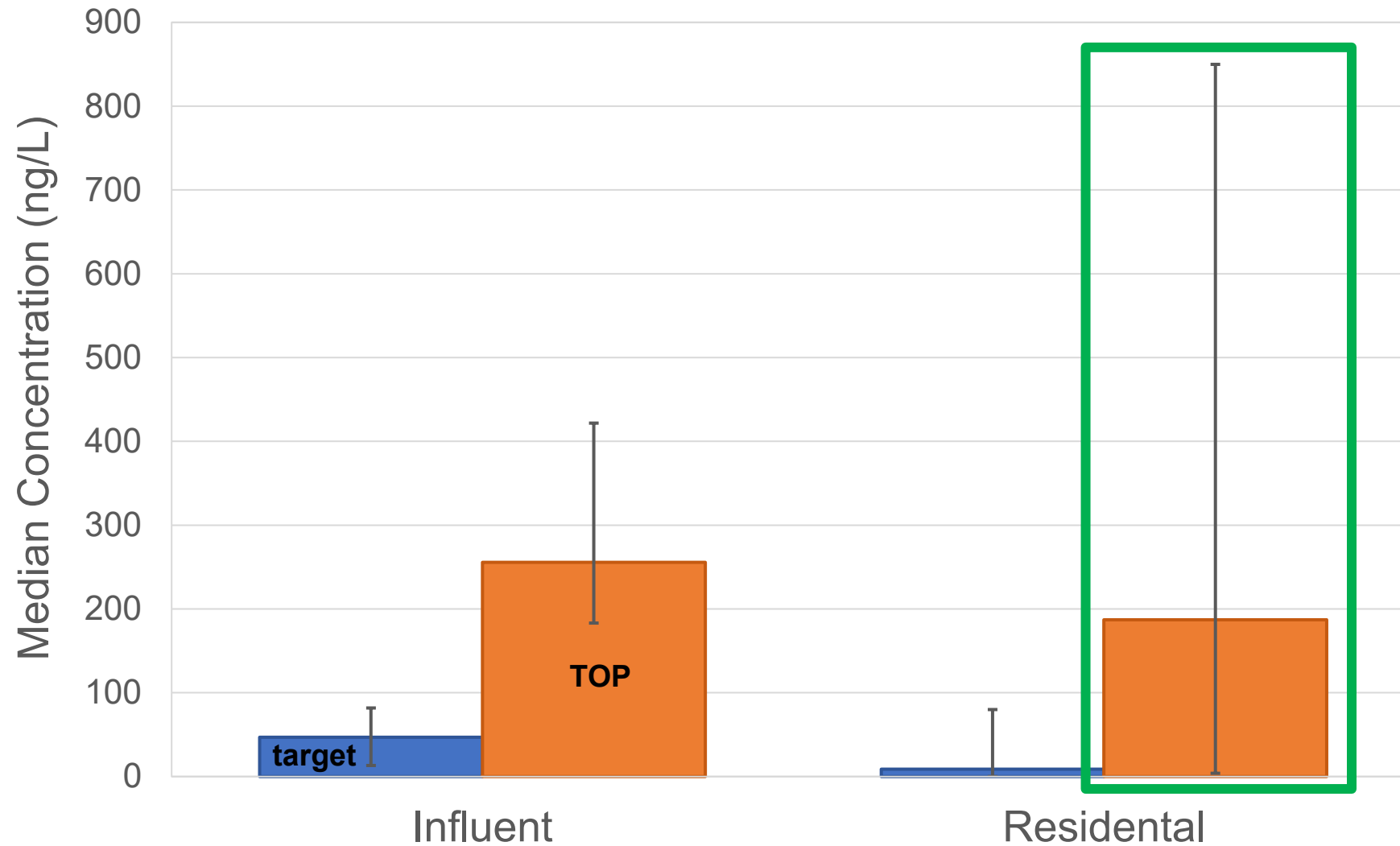


Commercial



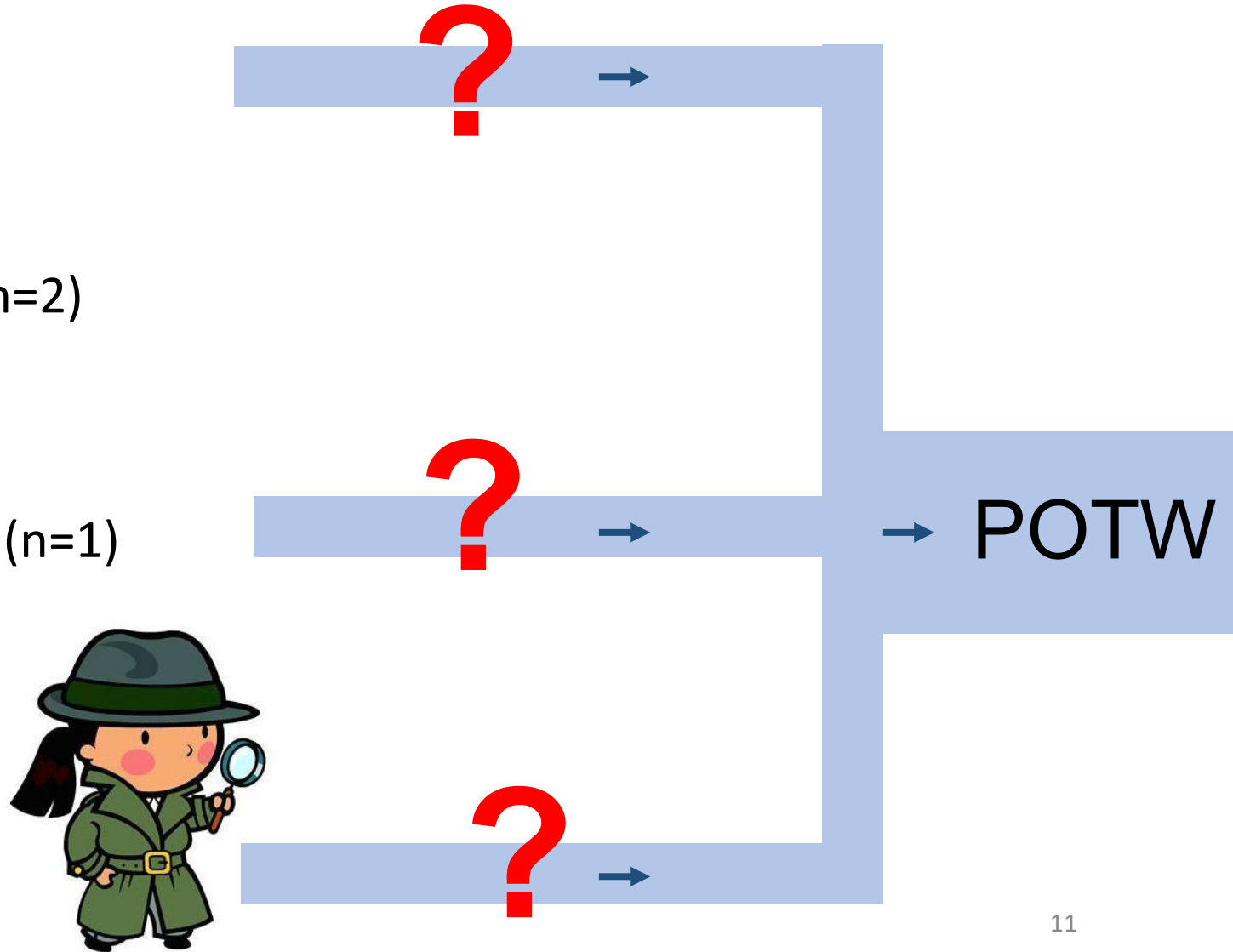
POTW

Residential Sewershed Discharge

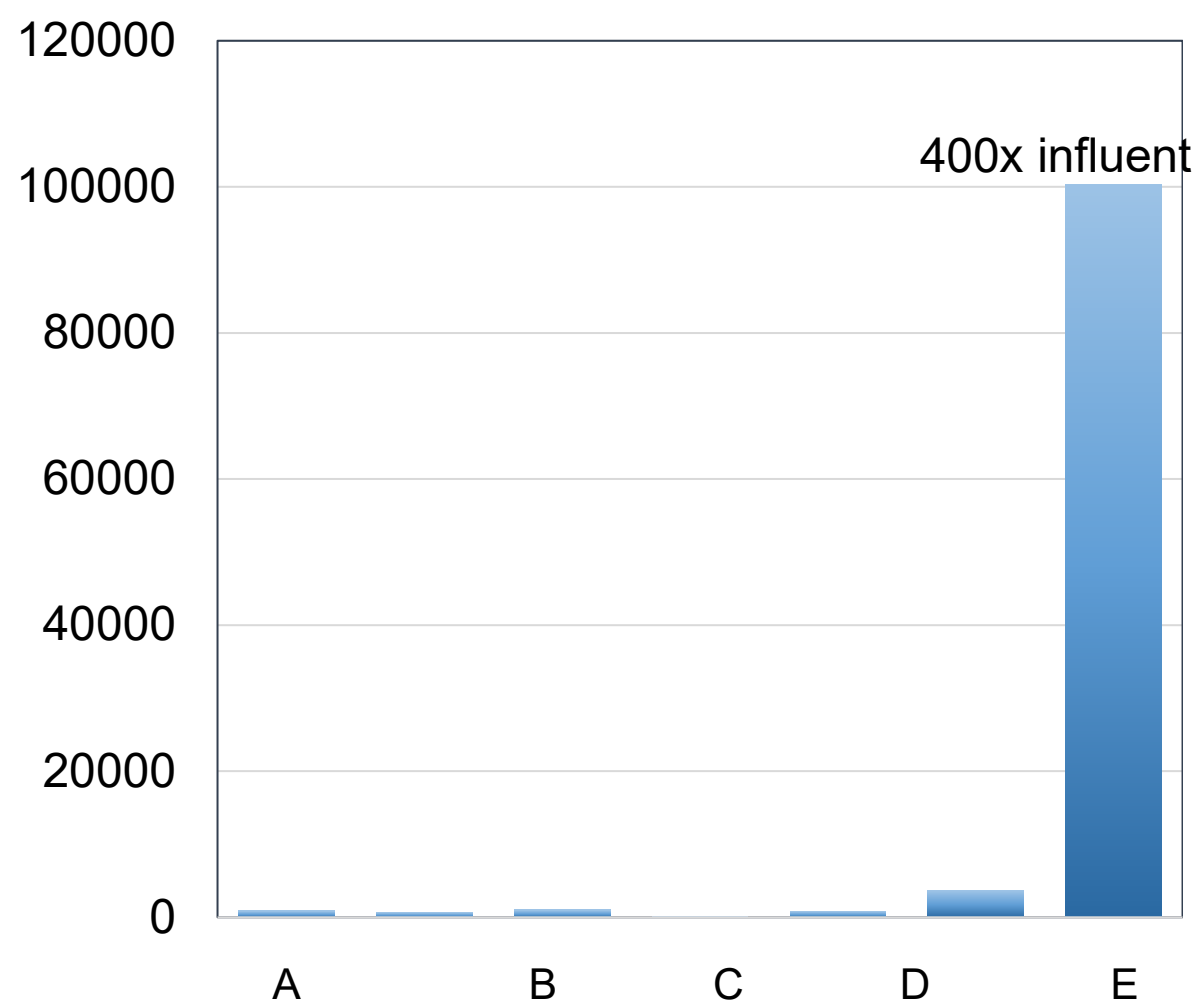
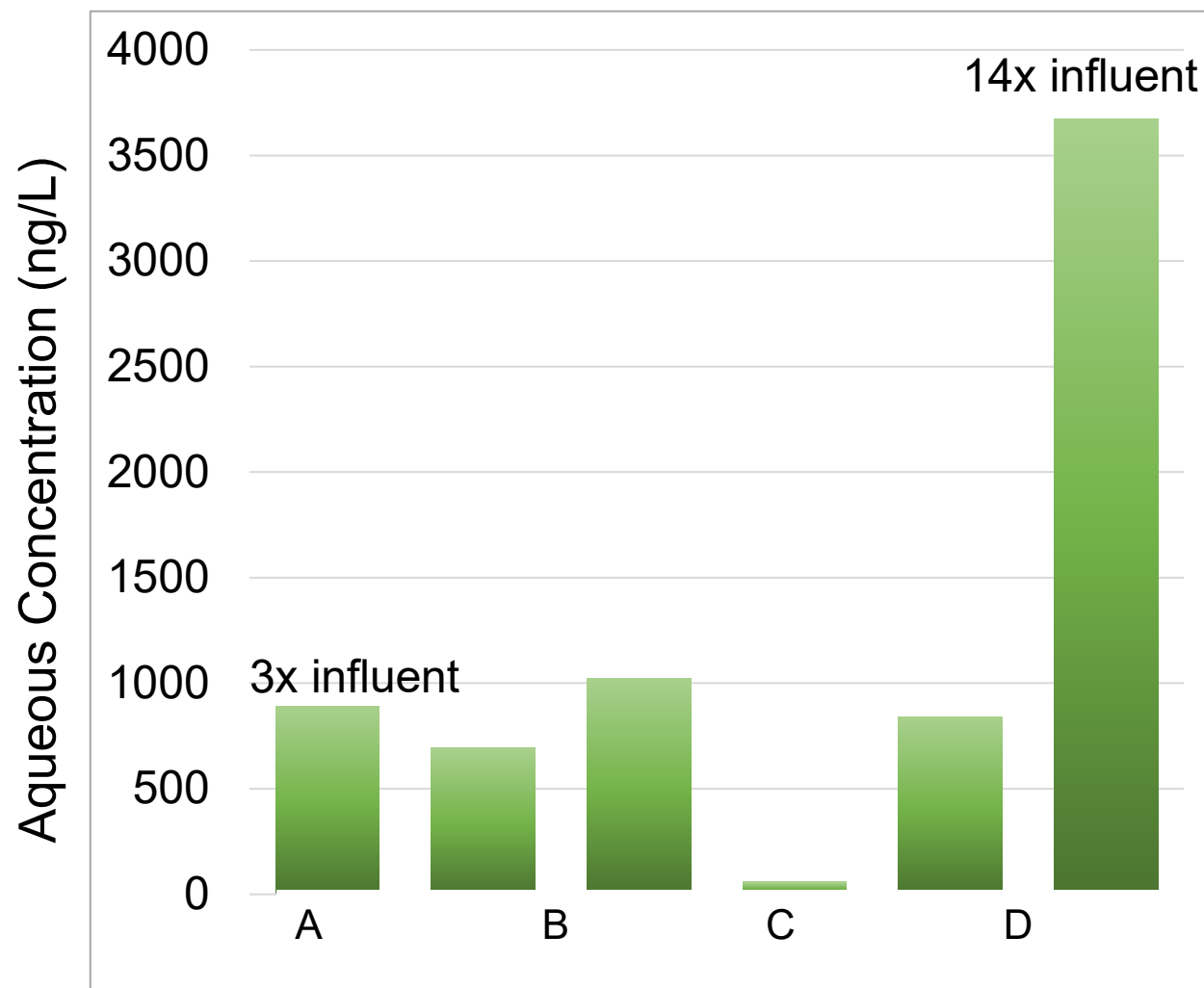


Industrial Discharge Screening Study

- Industrial laundry (n=5)
- Hospitals (n=4)
- Chrome-plating on-site (n=3)
- Semiconductor manufacturing (n=2)
- Military site (n=1)
- Car wash (n=3)
- Pulp paperboard manufacturing (n=1)

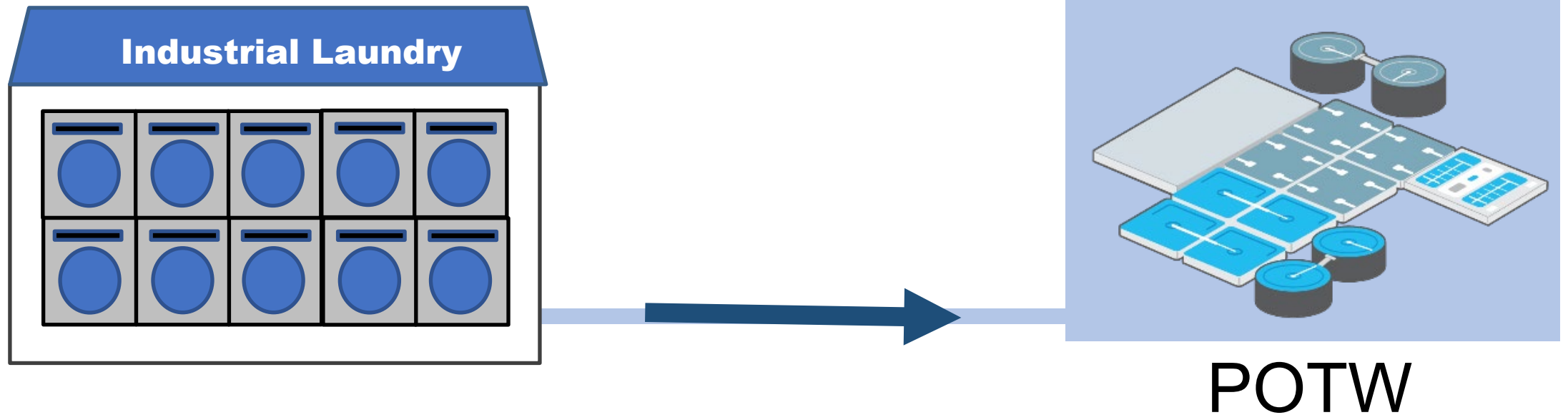


Industrial Laundry Sewershed TOP Analysis



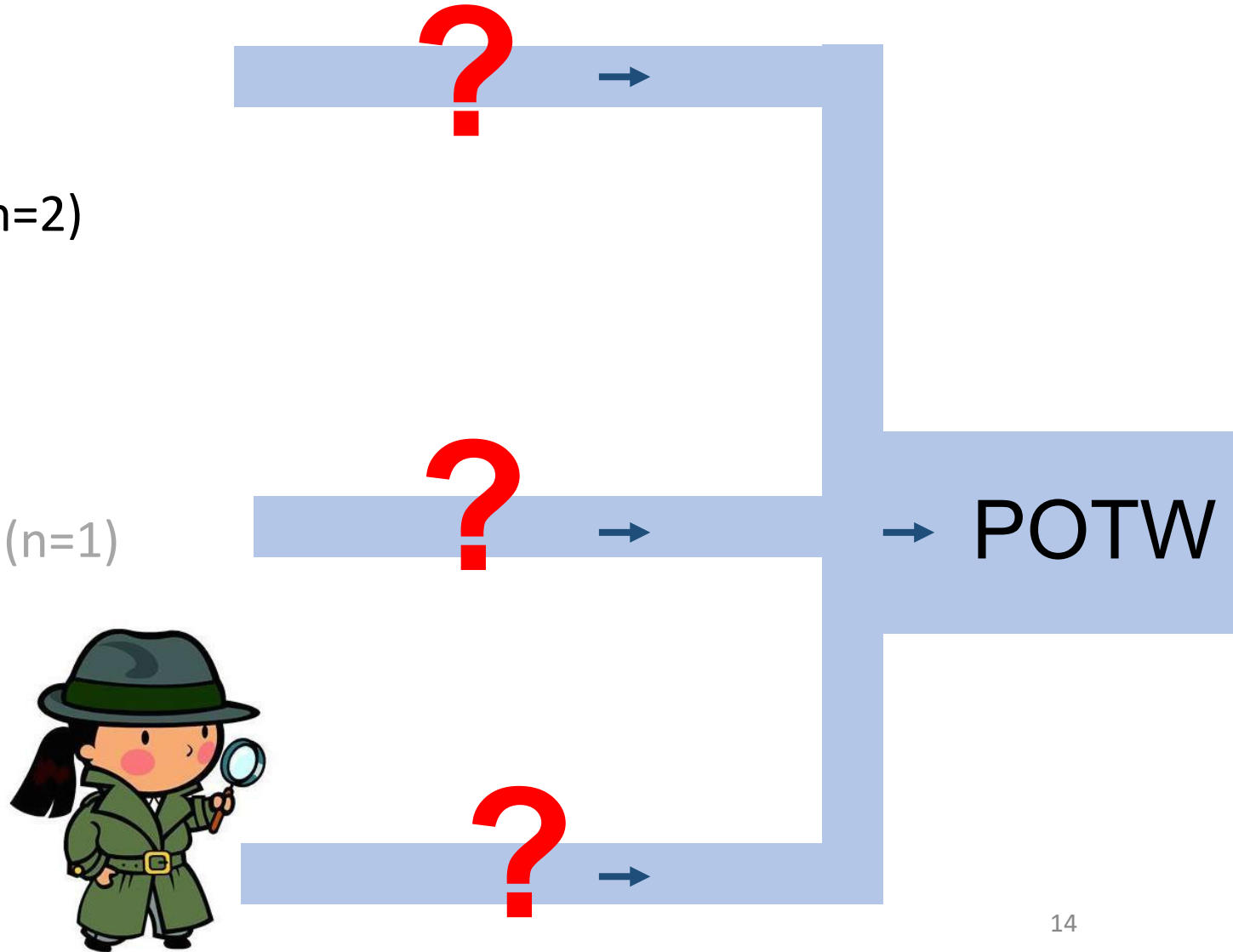
Industrial Laundry Contribution to PFAS Loading at POTW

- Discharge permit ~2.5 MGY
- Mean = 15,000 ng/L sum of PFAS (TOP)
- Facility discharging 0.01% of flows could contribute 1% of PFAS loadings

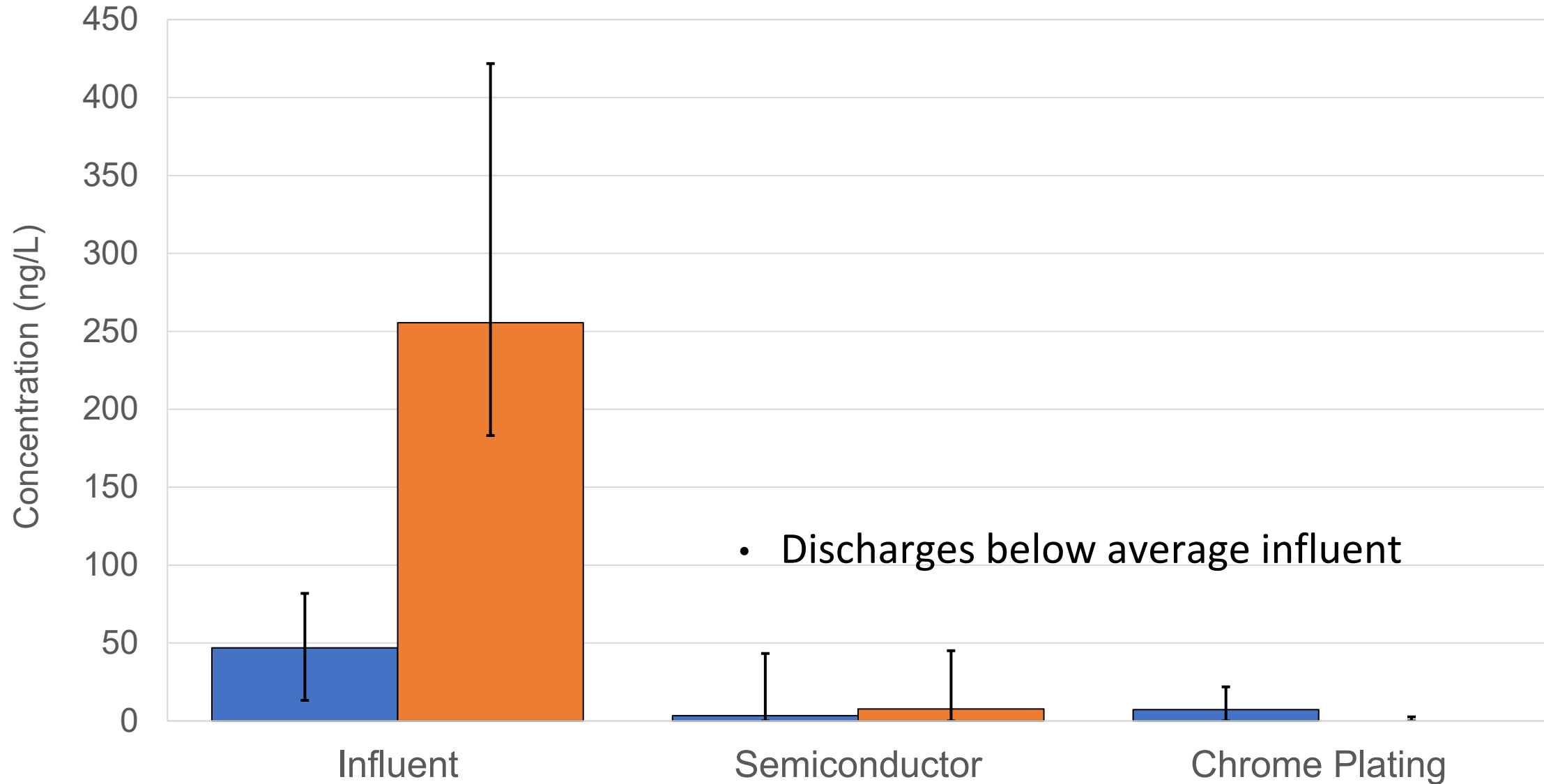


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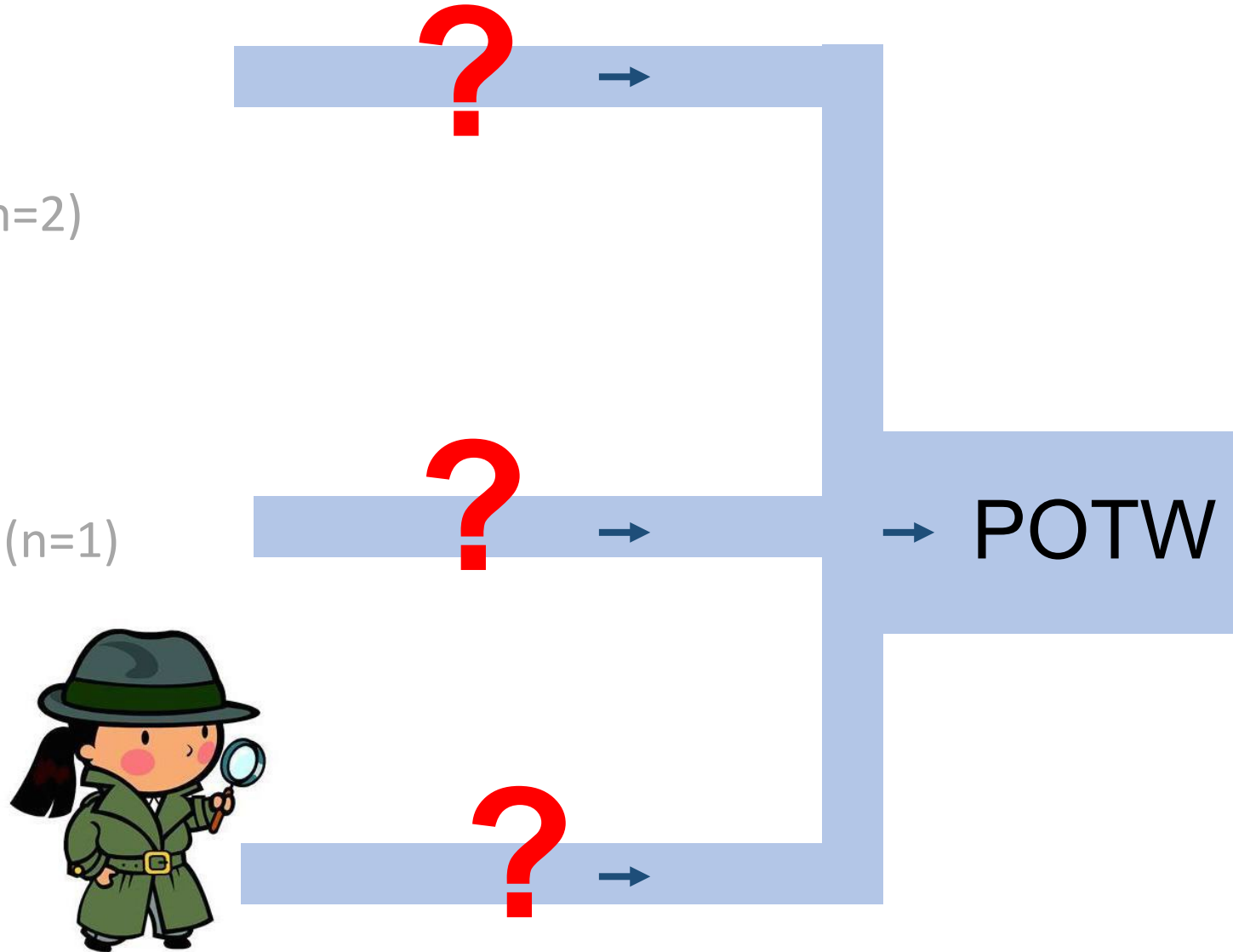


Semiconductor Manufacturing and Chrome-Plating Sites

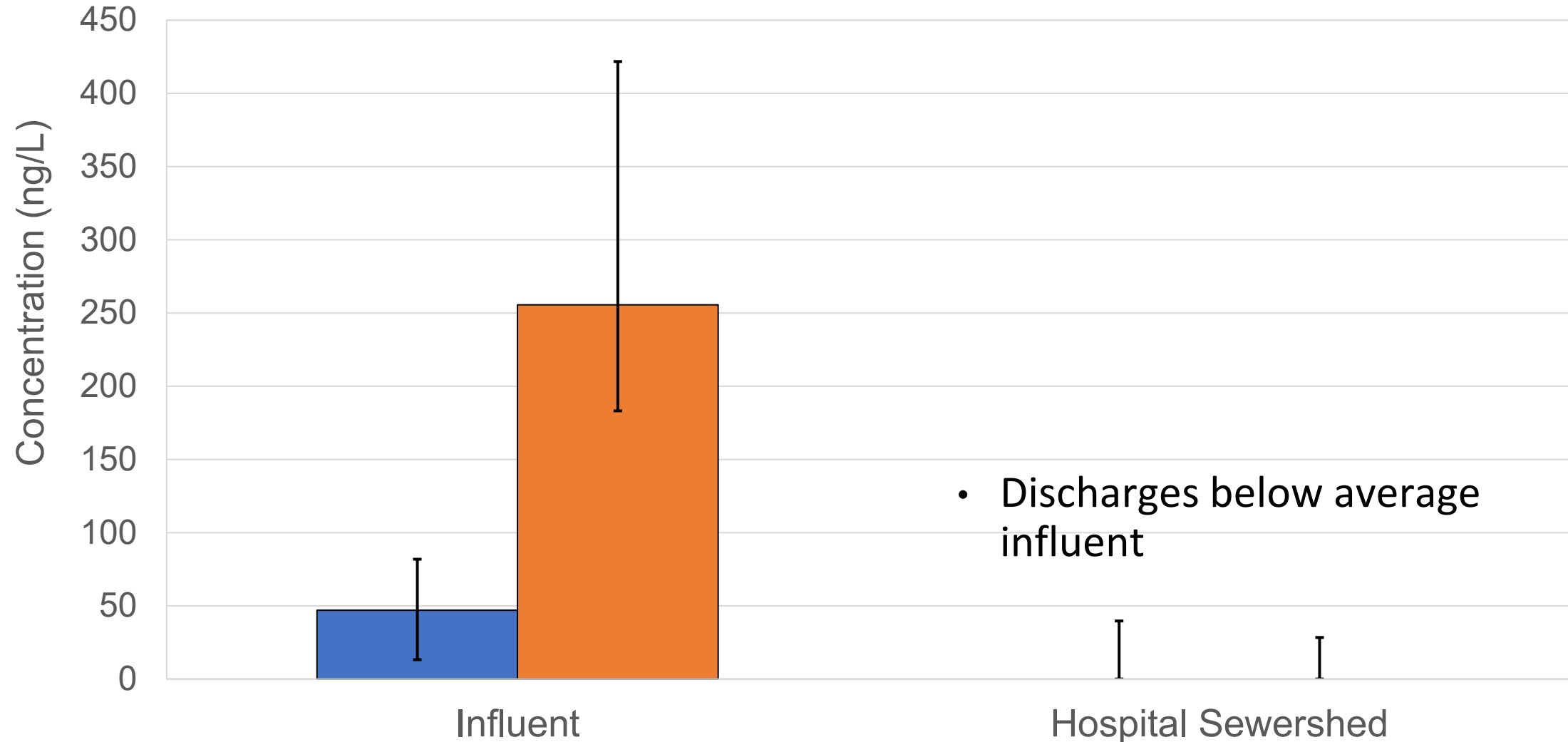


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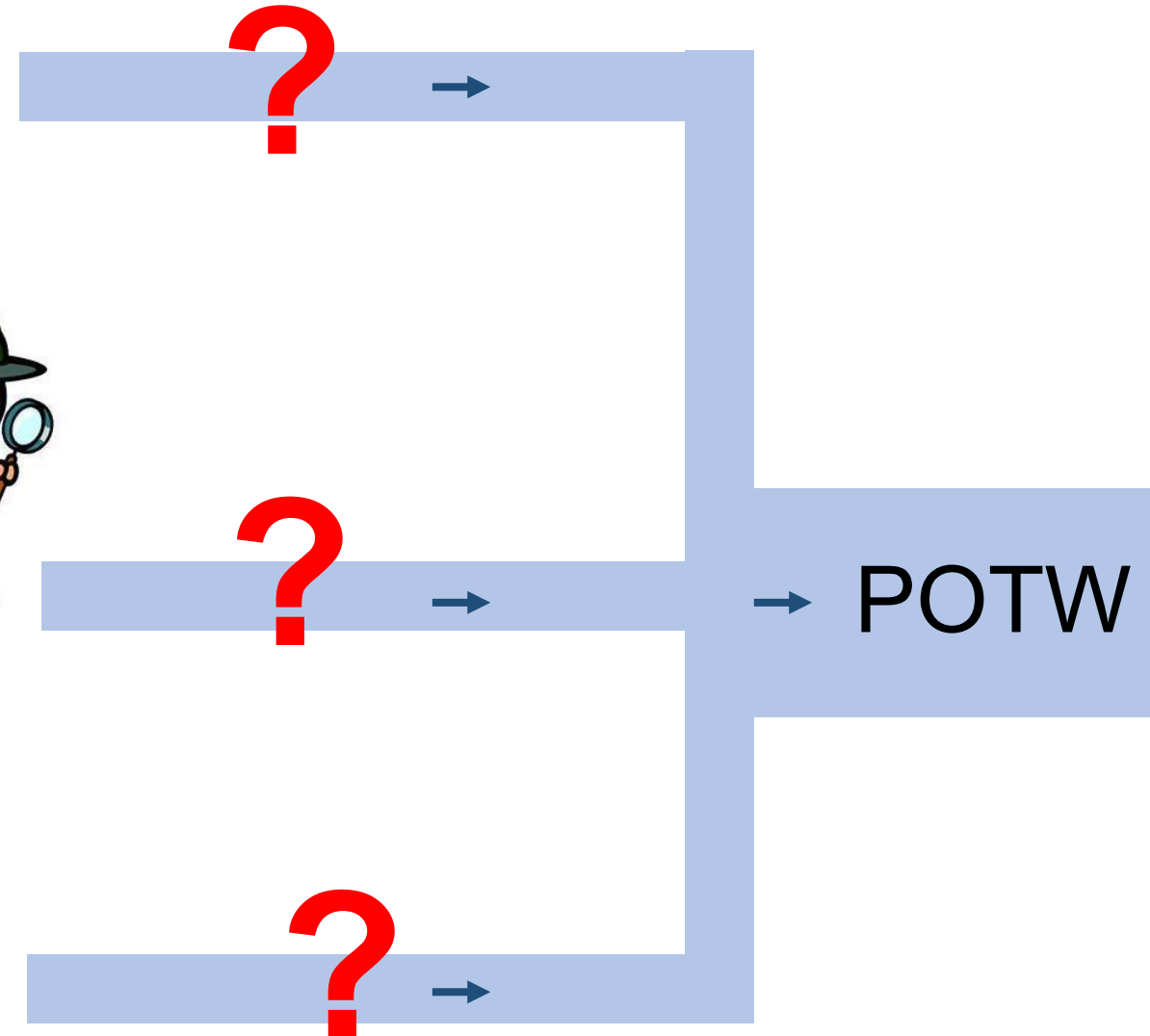


Hospital Sewershed Discharge

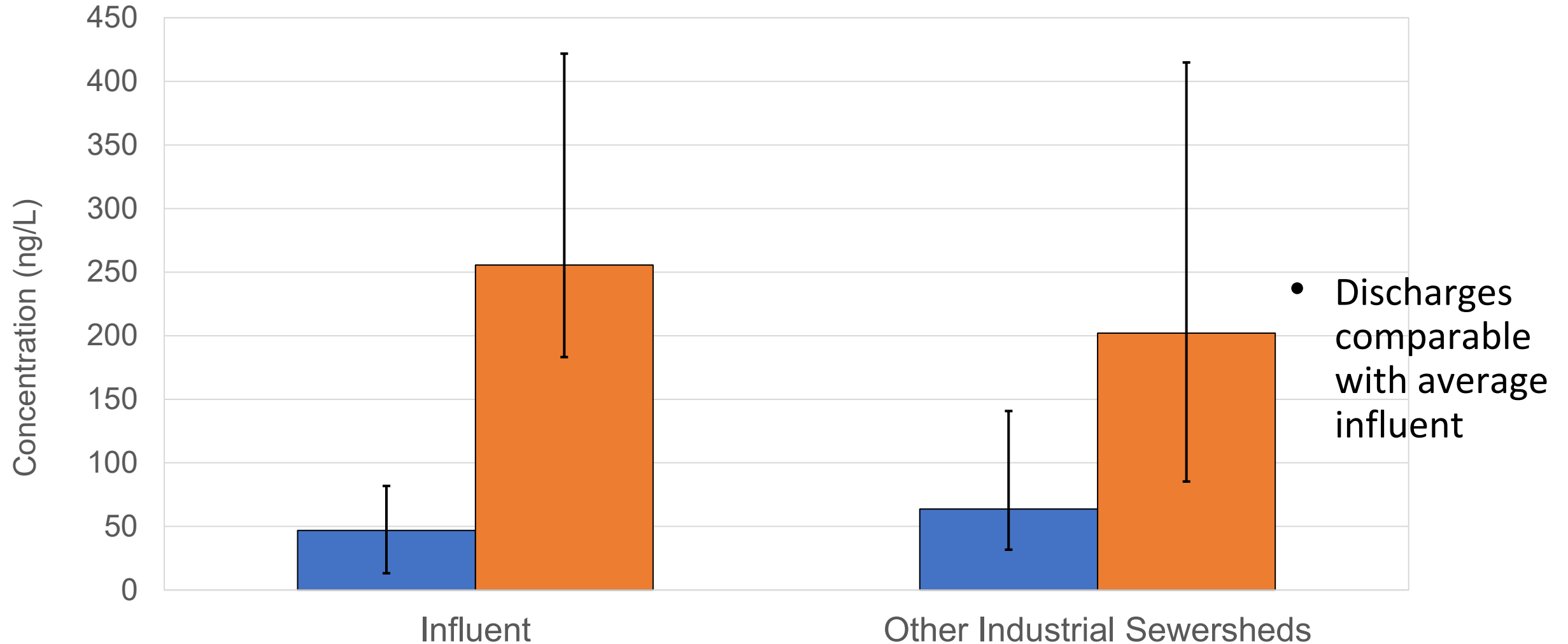


Industrial Discharge Screening Study

- Industrial laundry (n=5)
- Chrome-plating on-site (n=3)
- Semiconductor manufacturing (n=2)
- Hospitals (n=4)
- Military site (n=1)
- Car wash (n=3)
- Jail (n=1)
- Pulp paperboard manufacturing (n=1)



Other Industrial Sewershed Discharges



PFAS Sources to Solutions:

Identifying and Preventing PFAS Pollution
in San Francisco Bay

PROPOSAL TO THE EPA WATER QUALITY IMPROVEMENT FUND 2023
SUBMITTED BY THE **SAN FRANCISCO ESTUARY INSTITUTE** with

Regional Monitoring Program for Water Quality in San Francisco Bay (RMP)
Department of Toxic Substances Control (DTSC)
Bay Area Clean Water Agencies (BACWA)
Bay Area Municipal Stormwater Collaborative (BAMSC) Member Programs
Indiana University Bloomington
University of Toronto

PFAS Sources to Solutions

- Funded by US EPA
San Francisco Bay Water Quality Improvement Fund
- Led by SFEI, in coordination with RMP, DTSC, and BACWA



PFAS Sources to Solutions

- Identify major sources of PFAS
- Identifying priority PFAS product categories suspected to contain PFAS
- Measure PFAS in priority products
- Product selection
 - Data gap in California market
 - Not already subject to PFAS management action
 - Potentially large contribution to mass of PFAS entering SF Bay via urban runoff or POTW effluent
 - Coordination with data gaps most useful for DTSC



PFAS Sources to Solutions

- Product Categories in testing

- Exterior Automotive Care Products
 - Car waxes
 - Wash and waxes
 - Tire Shine
- Household Laundry Products
- Dishwashing Products



- Categories of interest (WWTP related)

- Other general cleaning products
- Interior paints and sealants



BACWA Phase 3 PFAS Study Questions

1. What are the concentrations of various PFAS subgroups (legacy and newer PFAS) within municipal POTW influent and effluent?
2. Are there observed temporal trends in wastewater?

The study will also be evaluated in the context of the larger PFAS Sources to Solutions project to inform the questions:

3. What are relative PFAS loadings from POTWs to the San Francisco Bay compared to urban stormwater runoff?
4. What are major sources of PFAS to municipal wastewater?

BACWA's Public Outreach and Education

Baywise English

Learning Center

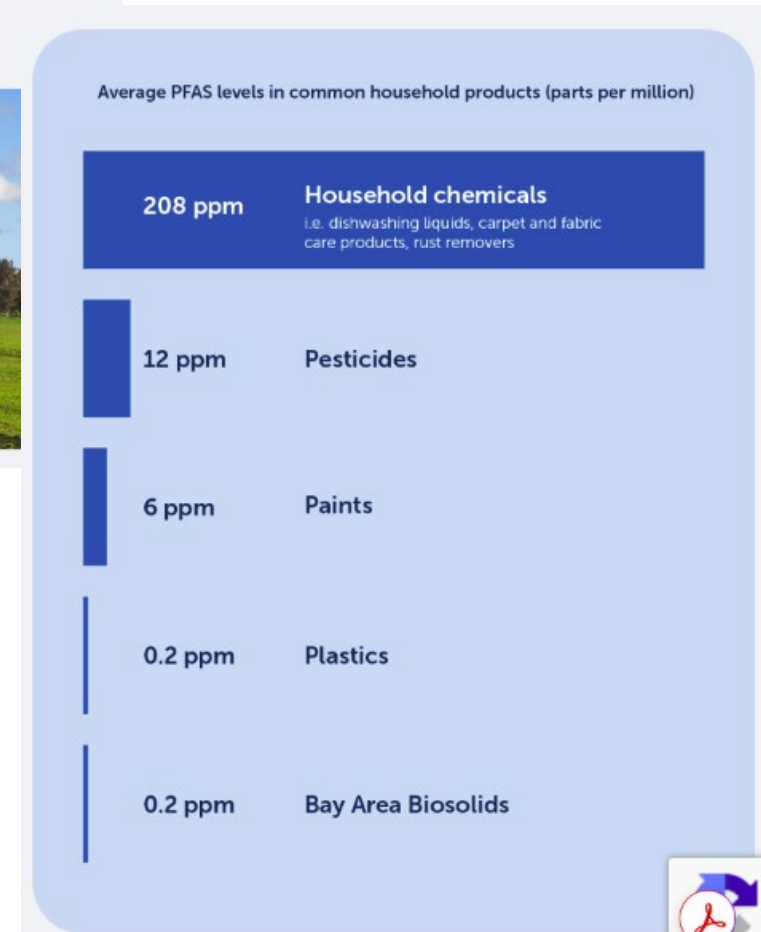
PFAS: The Uninvited Guest



Baywise English

Learning Center

What are biosolids?





'Forever Chemicals' Reach Tap Water via Treated Sewage, Study Finds

Wastewater, even after treatment to make it drinkable, contains high levels of PFAS, according to researchers.



A wastewater treatment plant in Maine. PFAS chemicals have been linked to cancer. Cj Gunther/EPA, via Shutterstock



NEWSLETTER
Climate Forward

What to Know About 'Forever Chemicals' in Sludge Fertilizer

How to understand the E.P.A.'s new warning about PFAS levels in sewage sludge.



A wastewater treatment facility in Maine, which had once been the source of PFAS-contaminated sludge for fertilizer. Cj Gunther/EPA, via Shutterstock

Something's Poisoning America's Land. Farmers Fear 'Forever' Chemicals.

Fertilizer made from city sewage has been spread on millions of acres of farmland for decades. Scientists say it can contain high levels of the toxic substance.



Photo: Connie Park

These Stain-Resistant Shirts Repelled
(Almost) Everything We Threw at
Them



What happens if you pour a glass of red wine down one of these shirts? We found out. Photo: Connie Park

PFAS and stain-repellent fabrics

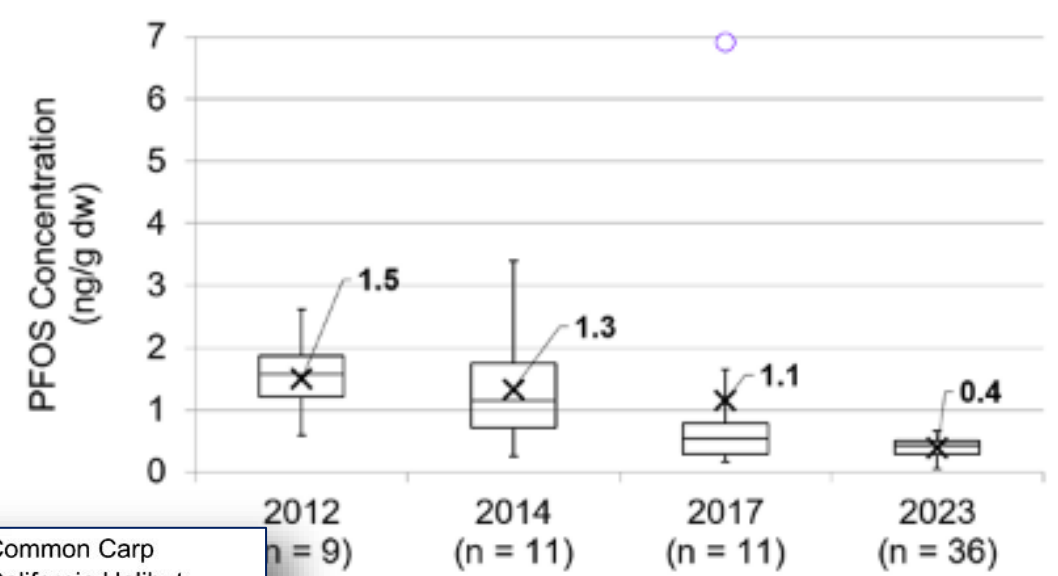
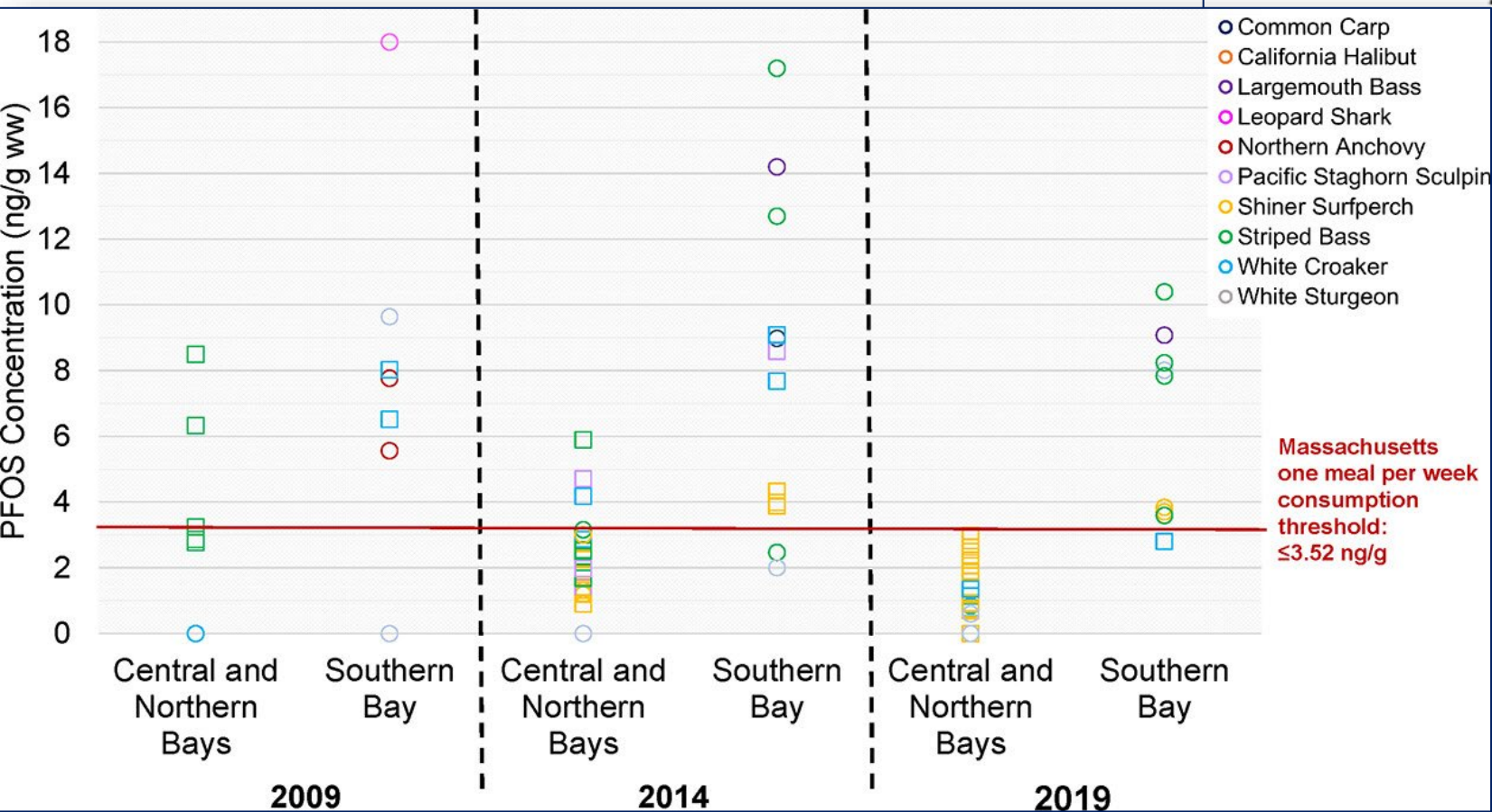
Most water- and stain-resistant textiles owe their liquid-repellent properties to chemical compounds called PFAS. The good news is that experts believe that occasionally wearing a shirt that's been treated with PFAS (like wearing period underwear, yoga pants, or any number of other garments that contain PFAS) is unlikely to pose much personal risk. But high levels of exposure to certain PFAS—through contact with contaminated water, air, soil, and food or proximity to PFAS manufacturing—has been linked to increased cholesterol, changes in liver enzymes, and other harmful health effects. For more info, we discuss the health and environmental impacts of PFAS here.

We need to turn off the tap



- 😊 **Cosmetics:** Ban on intentionally-added PFAS in effect in 2025
- 😊 **Textiles:** Ban on intentionally-added PFAS in effect in 2025
- 😊 Department of Toxic Substances Control continues to consider PFAS in the Safer Consumer Products Program – evaluation of floor polishes and waxes underway in 2025-2026
- 😞 **SB 682:** Would have banned PFAS in cleaning products, ski wax, food packaging, dental floss, and cookware, but Governor vetoed

Cause for optimism?



A wide-angle photograph of the San Francisco skyline across the water. The city is visible in the distance, with various skyscrapers and buildings. The water in the foreground is dark blue with small waves. The sky is a clear, bright blue with a few wispy clouds on the right side.

Questions?
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