

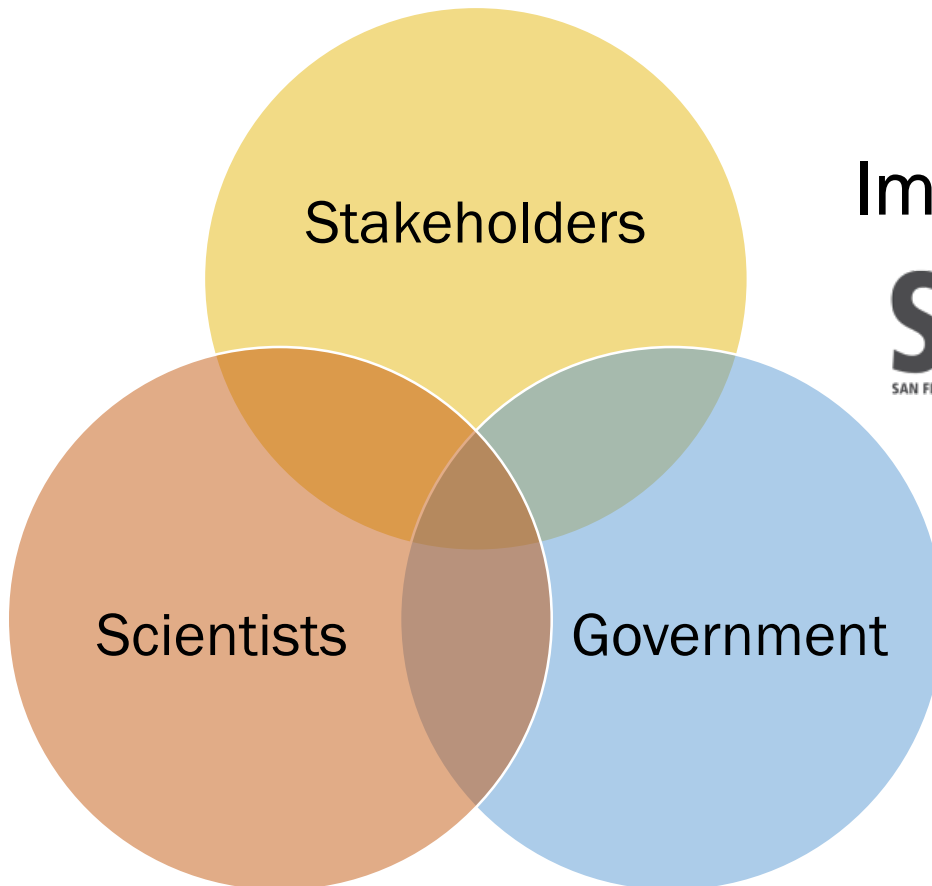


Emerging Contaminants Update

BAPPG Meeting
Diana Lin, PhD
October 4, 2023

Regional Monitoring Program (RMP)

- Partnership to monitor the health of San Francisco Bay in support of management decisions



Implemented by



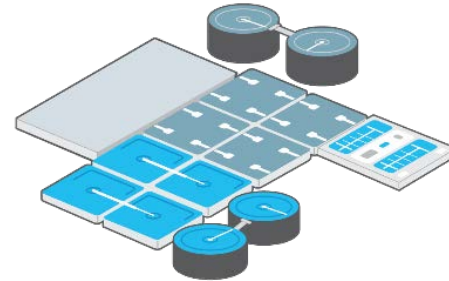
Monitoring San Francisco Bay



Water



Sediment



Wastewater



Urban Stormwater
Runoff



Bivalves



Fish



Bird Eggs



Mammals

Tiered risk-based framework

Very High Concern

Very high probability of an adverse impact

High Concern

High probability of an adverse impact

Moderate Concern

Moderate probability of an adverse impact

Low Concern:

Minimal impact

Possible Concern:

Significant uncertainty



Tiered risk-based framework

Very High Concern

NONE

High Concern

Organophosphate esters, PFAS

Moderate Concern

Alkylphenols/ethoxylates, bisphenols, fipronil & degradates, imidacloprid, microplastics

Low Concern

HBCD, PBDD/Fs, PBDEs, personal care & cleaning products, pharmaceuticals, pyrethroids

Possible Concern

Brominated & chlorinated flame retardants, chlorinated paraffins, phthalates, PHCZs, QACs, etc.



Tiered risk-based framework

Very High Concern

NONE

High Concern

1

2

Organophosphate esters, PFAS

Moderate Concern

4

3

Alkylphenols/ethoxylates, bisphenols, fipronil & degradates, imidacloprid, microplastics

Low Concern

HBCD, PBDD/Fs, PBDEs, personal care & cleaning products, pharmaceuticals, pyrethroids

Possible Concern

5

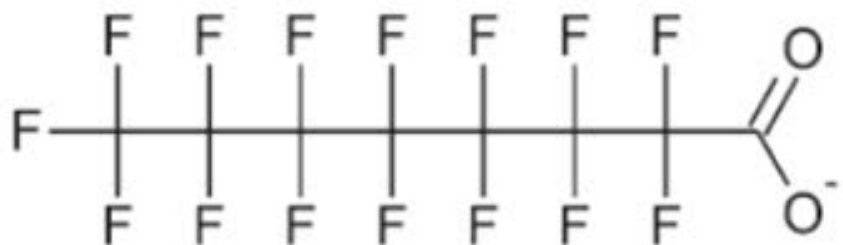
Brominated & chlorinated flame retardants, chlorinated paraffins, phthalates, PHCZs, QACs, etc.



1. Per- and Polyfluoroalkyl Substances (PFAS)

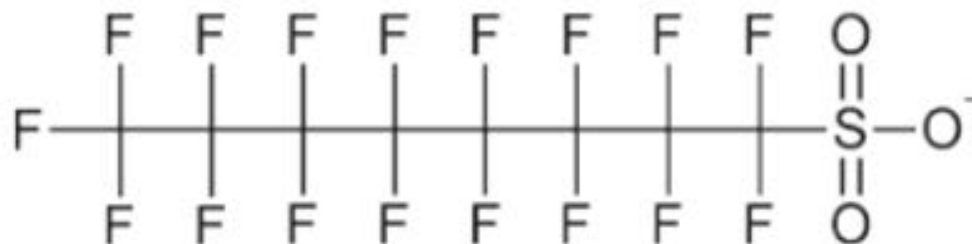
PFOA

Perfluorooctanoic acid



PFOS

Perfluorooctane
sulfonate



3. PFAS: Monitoring



Water



Sediment



Bivalves



Fish

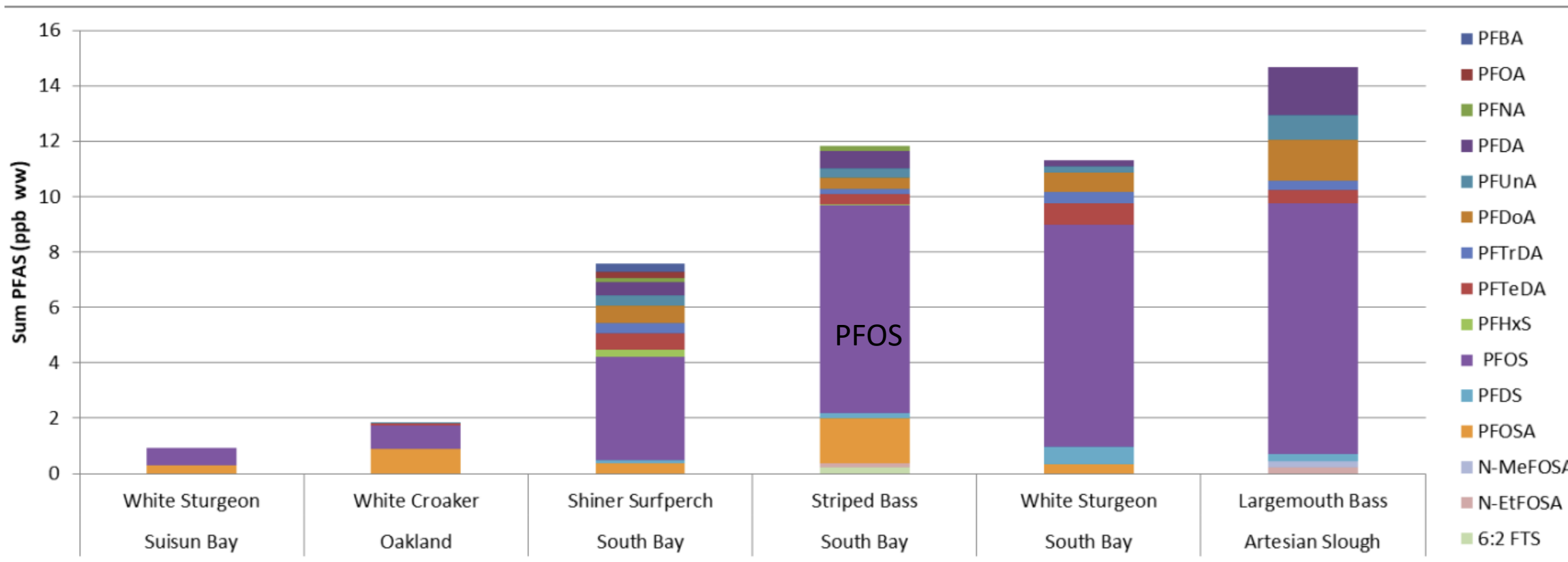


Bird Eggs



Mammals

3. PFAS: Levels in sport fish exceed consumption advisory from other states



3. PFAS: Monitoring



Water



Sediment



Bivalves



Fish



Bird Eggs

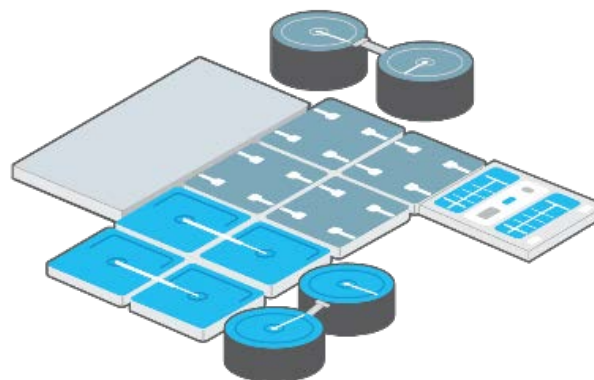


Mammals

3. PFAS: Monitoring Pathways



Urban Stormwater Runoff



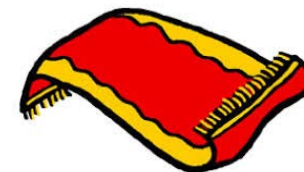
Wastewater



B A C W A
B A Y A R E A
C L E A N W A T E R
A G E N C I E S

3. PFAS Management

- Bans/restrictions on PFAS in certain products

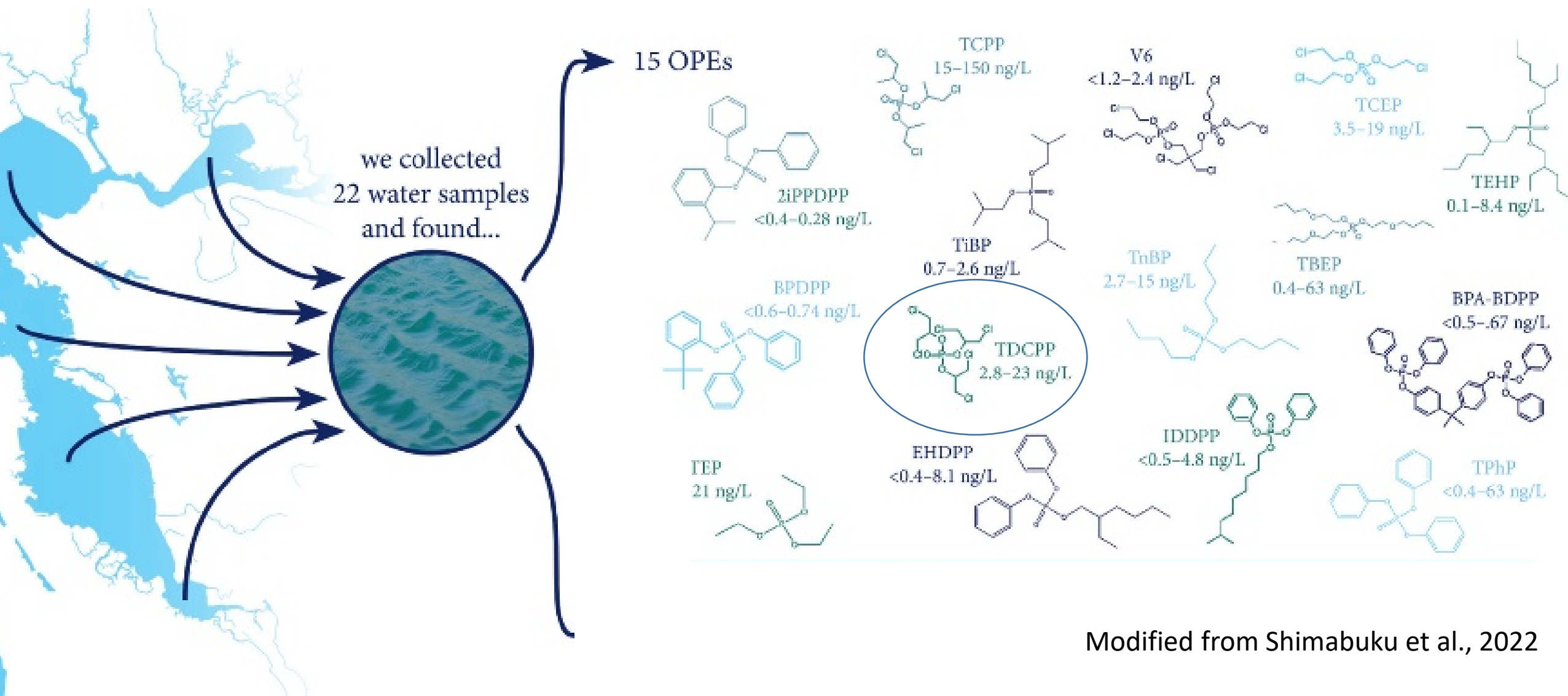


- Avoid use of PFAS containing products
 - Resources: Green Science Policy Institute, City of San Francisco

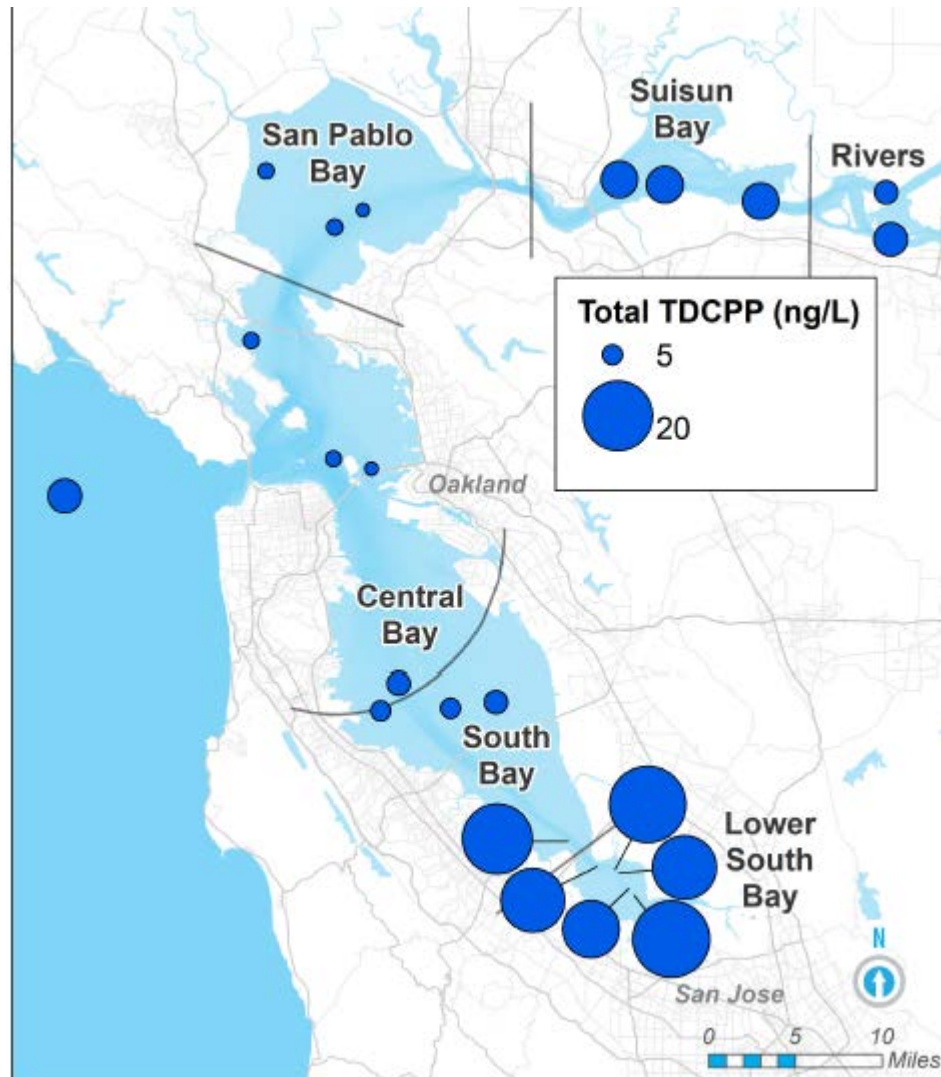
2. Organophosphate Esters (OPEs)



2. OPEs: Monitoring



2. OPEs: TDCPP exceeds ecotoxicity threshold

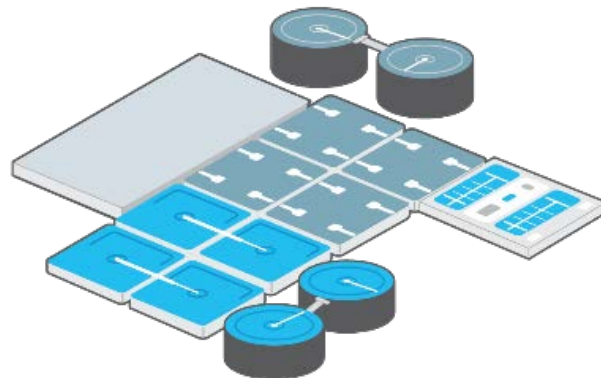


From Shimabuku et al., 2020

2. OPEs: Current Monitoring



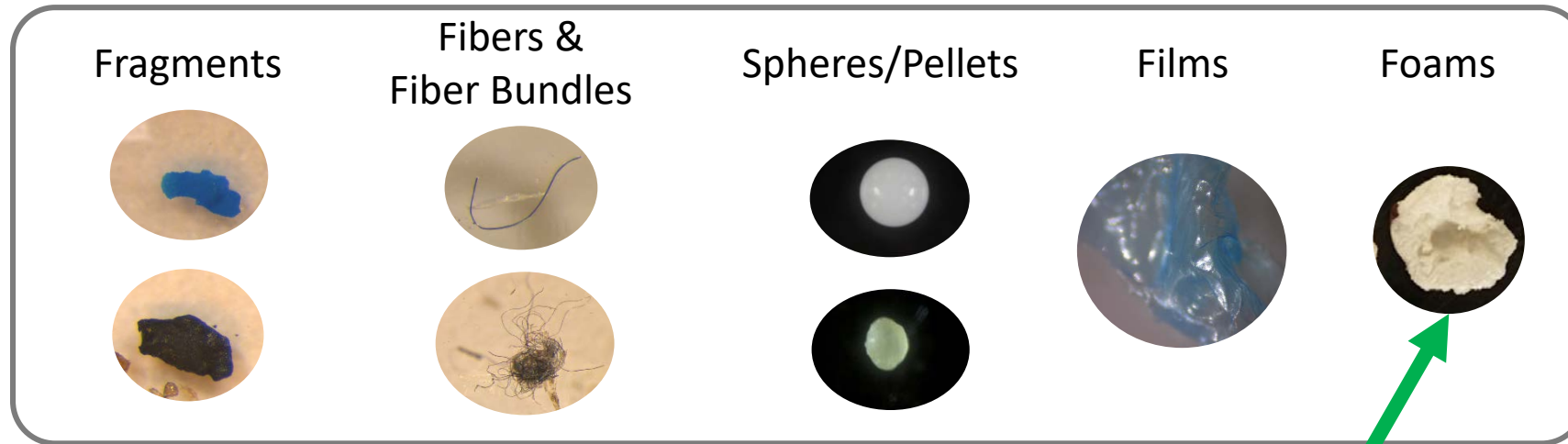
Urban Stormwater Runoff



Wastewater



3. Microplastics



Polyester
Polystyrene
Polypropylene
Polyvinyl chloride (PVC)



Moderate
Concern

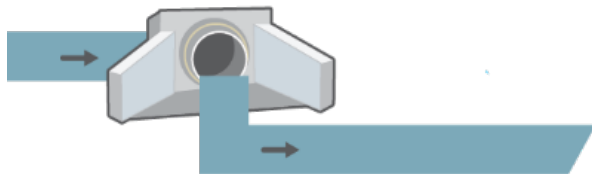
3. Microplastics: Monitoring



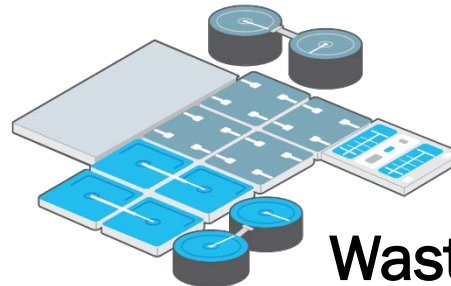
Prey Fish



Bivalves



Urban Stormwater Runoff

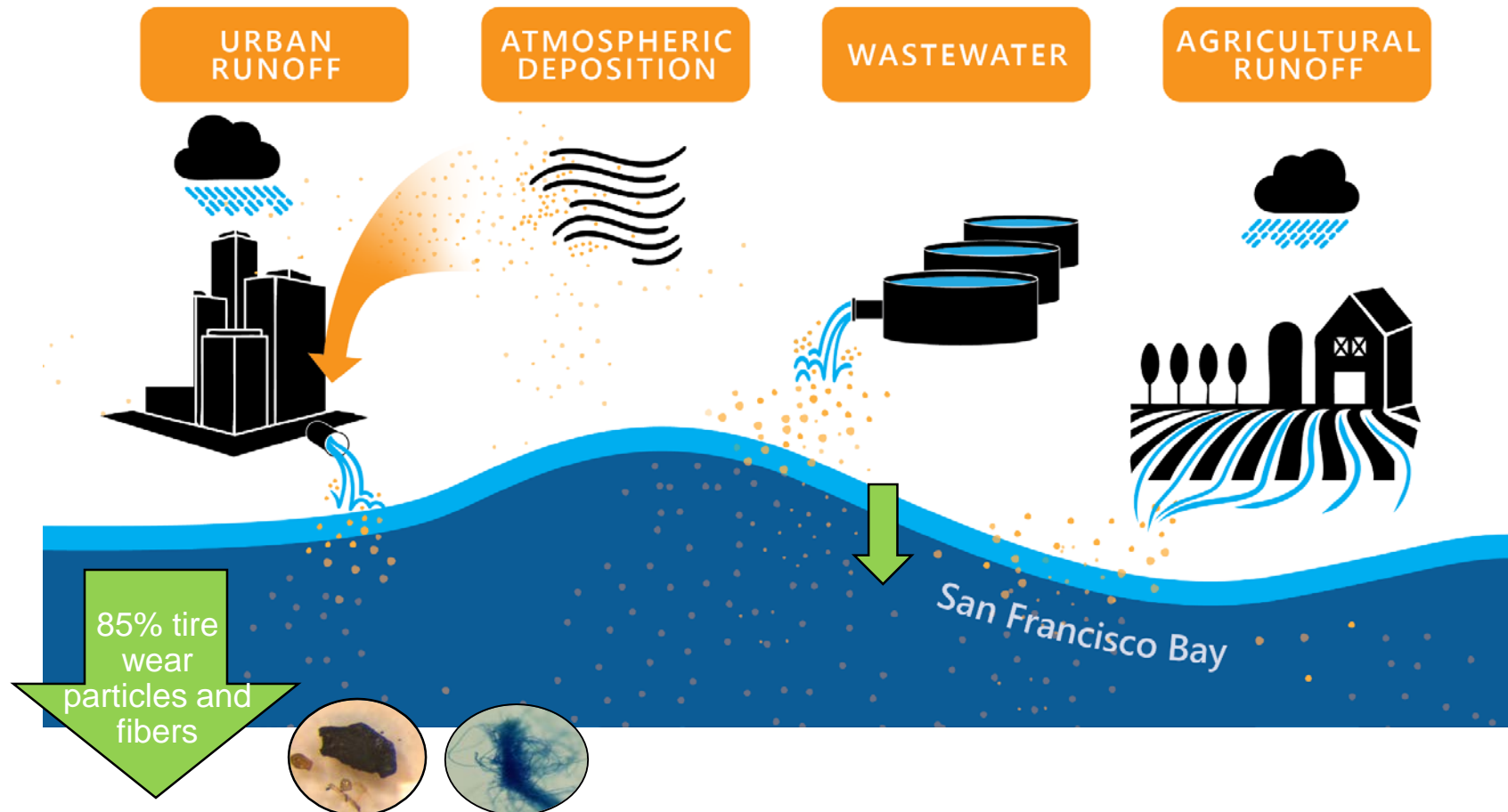


Wastewater



3. Microplastics: Urban stormwater runoff is the dominant pathway

Moderate
Concern



3. Microplastics: 6PPD-quinone Tire Ingredient



pubs.acs.org/journal/estlcu

Letter

Acute Toxicity of the Tire Rubber-Derived Chemical 6PPD-quinone to Four Fishes of Commercial, Cultural, and Ecological Importance

Markus Brinkmann, David Montgomery, Summer Selinger, Justin G. P. Miller, Eric Stock, Alper James Alcaraz, Jonathan K. Challis, Lynn Weber, David Janz, Markus Hecker,* and Steve Wisema



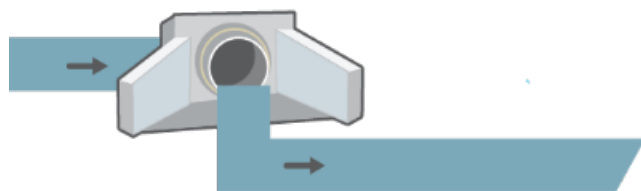
Cite This: <https://doi.org/10.1021/acs.estlett.2c00050>



Read Online



Department of
Toxic Substances
Control



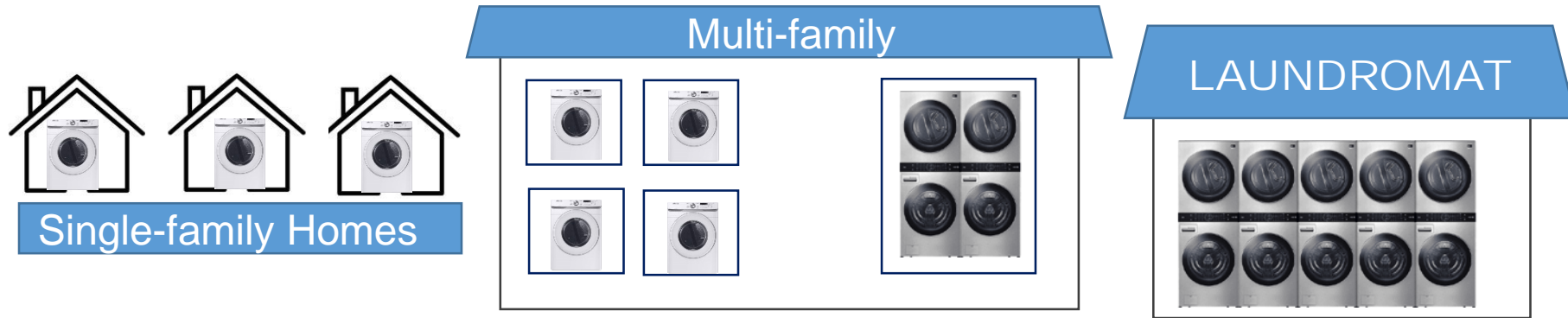
Stormwater



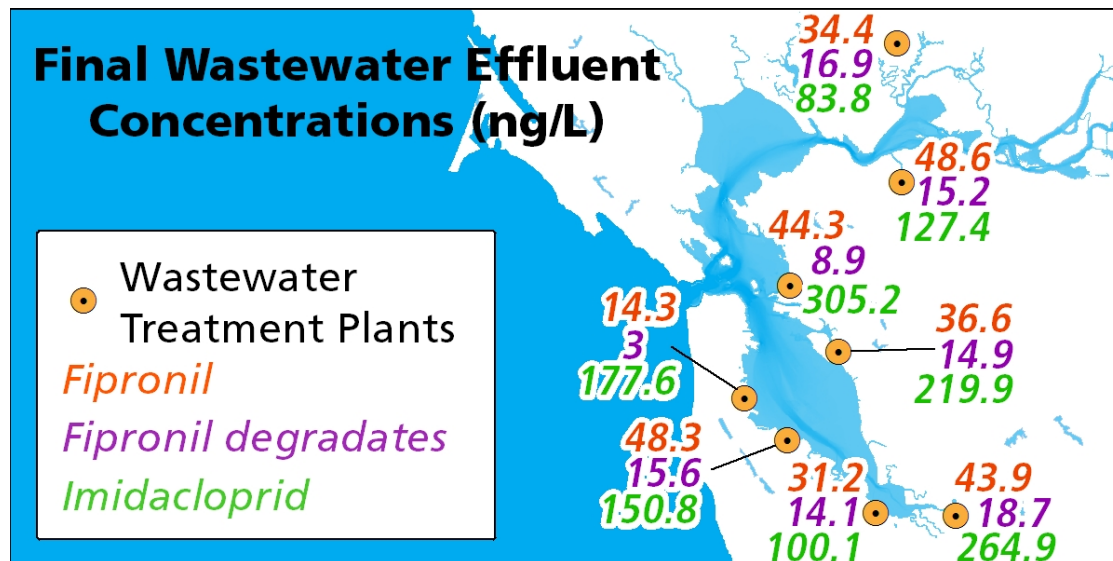
Water



3. Investigating Dryers as Source of Fibers

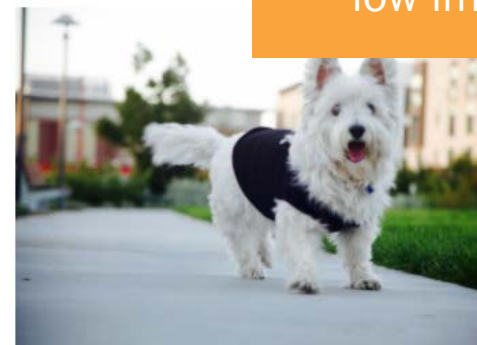


4. Fipronil and Imidacloprid



Moderate
Concern

low impact



RECONSIDER FLEA AND TICK CONTROL OPTIONS FOR YOUR PETS

Products commonly used to treat fleas and ticks contain toxic pesticides that can harm your pet.



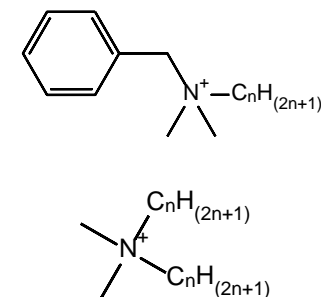
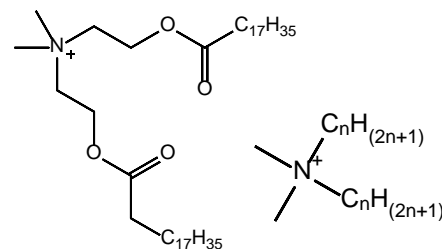
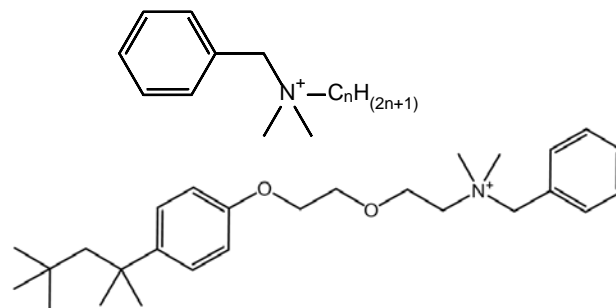
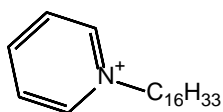
RESOURCES FOR VETERINARIANS

Professionals are encouraged to recommend oral medications to control fleas and ticks, and to discourage the use of topical treatments.

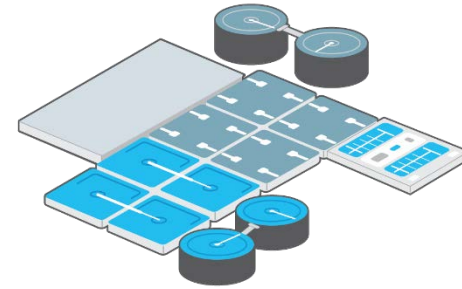


5. Quaternary Ammonium Compounds (QACs)

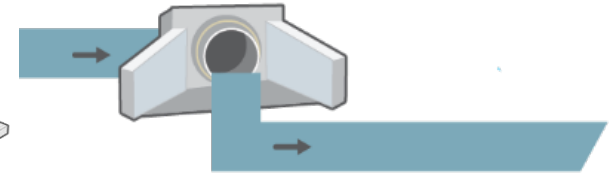
Possible
Concern



5. QACs: Monitoring



Wastewater



Stormwater



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

- San Francisco has safer disinfectant guide to avoid QACs:
 - <https://www.sfapproved.org/safer-disinfectants-covid-19>

Information and Resources

- **CEC Strategy:** <https://www.sfei.org/projects/contaminants-emerging-concern-strategy>
- **PFAS:** <https://www.sfei.org/projects/pfas>
- **Microplastics:** <https://www.sfei.org/projects/microplastics>

Thank You
diana@sfei.org

