



RMP Priorities for Contaminants of Emerging Concern

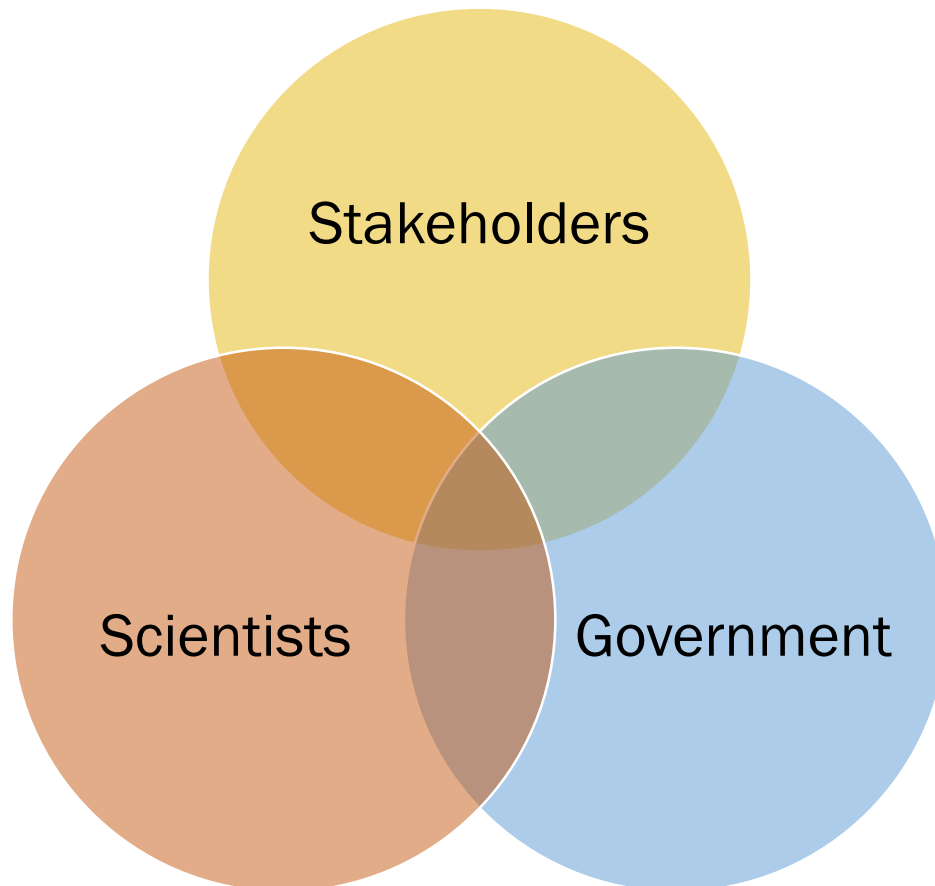
Bay Area Pollution Prevention Group
Pollutant Prioritization Meeting
Diana Lin, PhD
August 18, 2021

CECs and Microplastics Team



Regional Monitoring Program

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



Implemented by

SFEI | AQUATIC
SCIENCE
CENTER
SAN FRANCISCO ESTUARY INSTITUTE & THE AQUATIC SCIENCE CENTER



Tiered risk-based framework

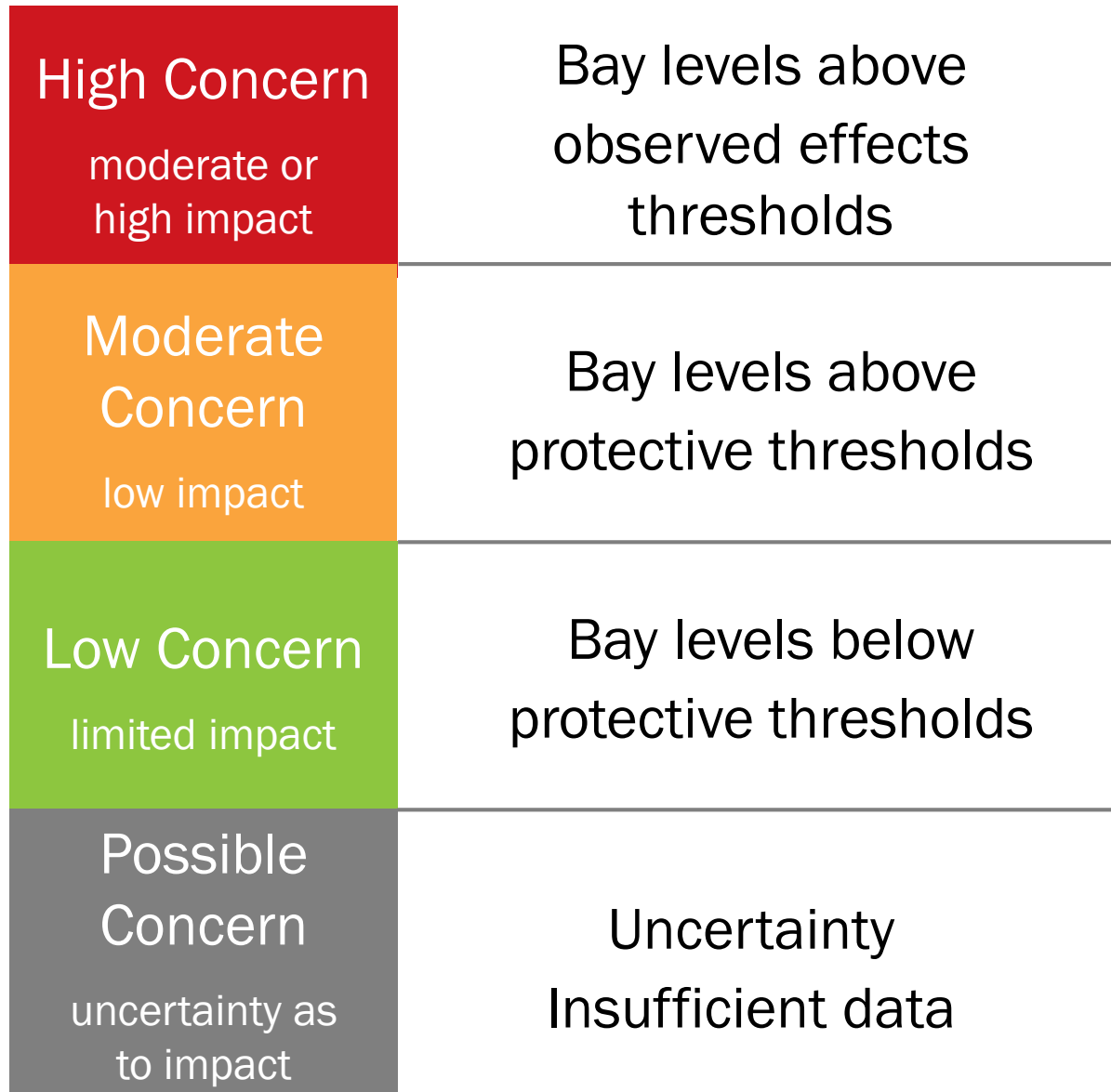
High Concern

moderate or
high impact

Bay levels above
observed effects
thresholds



Tiered risk-based framework



CECs in San Francisco Bay

High Concern moderate or high impact	None currently
Moderate Concern low impact	PFAS Alkylphenols, Alkylphenol Ethoxylates Fipronil, Imidacloprid, Bisphenols Organophosphate Esters, Microplastics
Low Concern limited impact	PBDEs and HBCD Pharmaceuticals, Pyrethroids* Personal Care & Cleaning PBDDs / PBDFs
Possible Concern uncertainty as to impact	Alternative Flame Retardants Pesticides, Plastic Additives Quaternary Ammonium Compounds Siloxanes, SDPAs, UV-BZTs, others

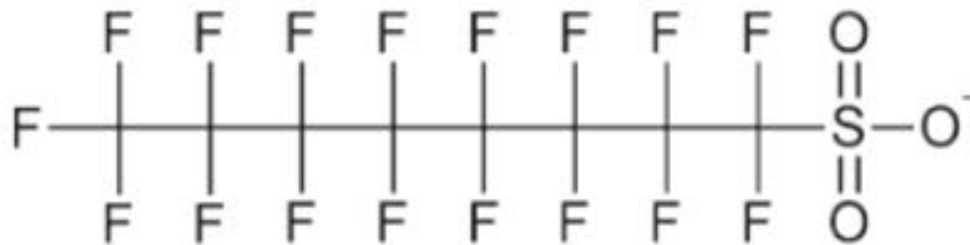
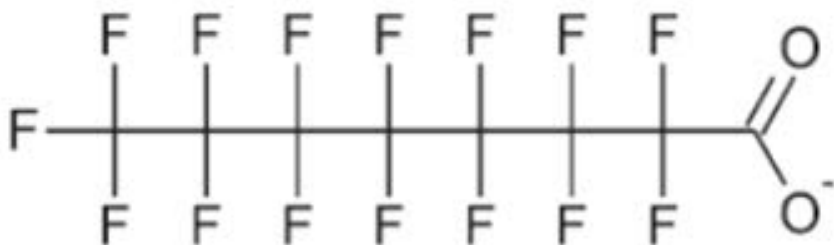


CECs in San Francisco Bay

High Concern moderate or high impact	
Moderate Concern low impact	PFAS Fipronil, Imidacloprid, Bisphenols Alkylphenols, Alkylphenol Ethoxylates Organophosphate Esters, Microplastics
Low Concern limited impact	
Possible Concern uncertainty as to impact	Quaternary Ammonium Compounds



Per- and Polyfluoroalkyl Substances (PFAS)



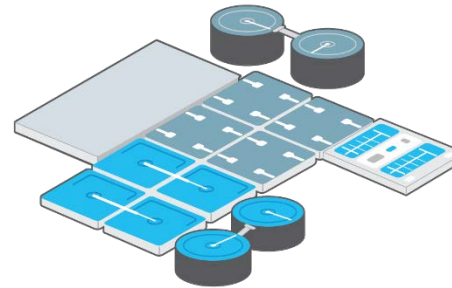
PFAS in Bay



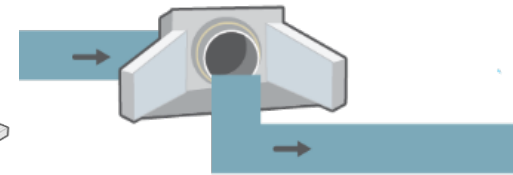
Water



Sediment



Wastewater



Stormwater



Fish



Bird Eggs





Mammals

PFAS Source-Specific Management

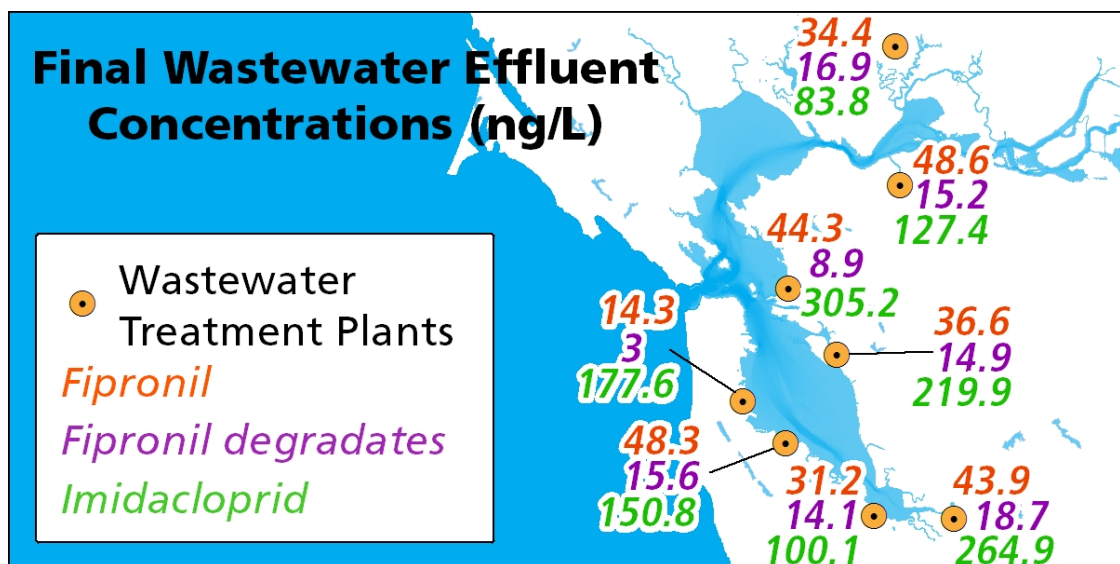
FEDERAL: No PFAS in Cosmetics Act 2021 (S.2047)

Susan Collins (R-ME)
Richard Blumenthal (D-CT)
Dianne Feinstein (D-CA)
Maggie Hassan (D-NH),
Jeanne Shaheen (D-NH),
Kirsten Gillibrand (D-NY)
Angus King (I-ME)

Cosmetic Categories and High Fluorine

Product Category or Sub-Category	Number of Products Tested	Percentage of Products with High Fluorine
All Lip Products (lipsticks, glosses, shadows, liners, shimmers, balms)	60	55%
Liquid Lipstick	42	62%
Foundations (liquids, creams)	43	63%
Concealers	11	36%
Other Face Products (powders, blush, bronzers, highlighters, primers, sprays) 	30	40%
All Mascara	32	47%
Waterproof Mascara	11	82%
Other Eye Products (shadows, liners, creams, primers, pencils) 	43	58%
All cosmetics tested	231	52%

Fipronil and Imidacloprid



RECONSIDER FLEA AND TICK CONTROL OPTIONS FOR YOUR PETS

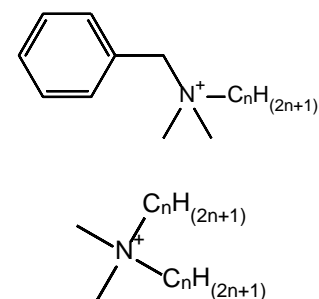
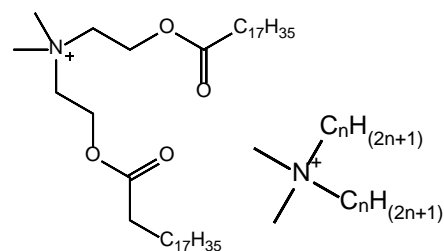
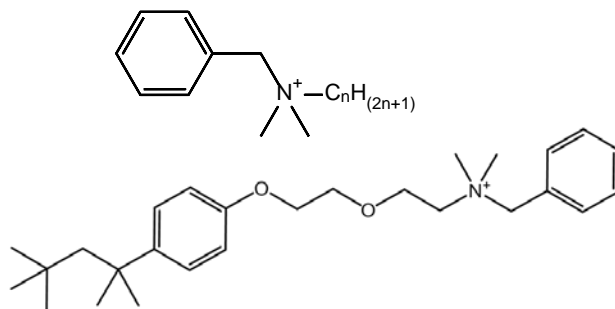
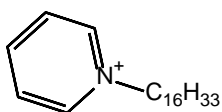
Products commonly used to treat fleas and ticks contain toxic pesticides that can harm your pet.



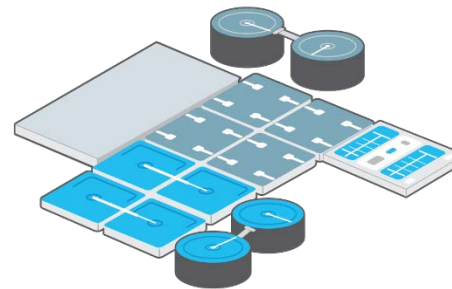
RESOURCES FOR VETERINARIANS

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

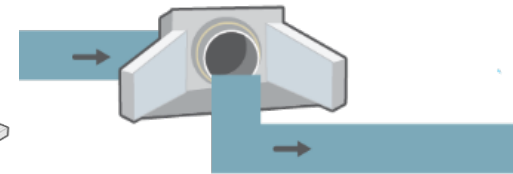
New Possible Concern: Quaternary Ammonium Compounds (QACs)



QACs in Bay: Current Monitoring



Wastewater



Stormwater

Prevention steps:

- Wear a mask correctly
- Stay 6 feet apart
- Wash hands often
- Clean regularly
- Use contact tracing



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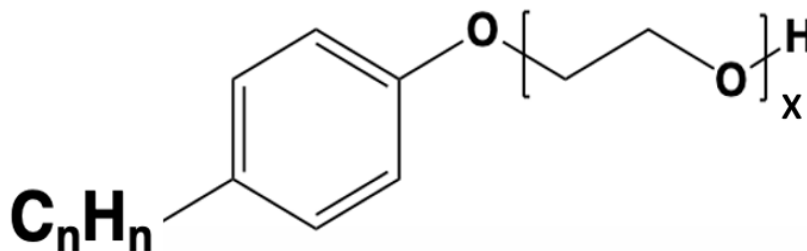
www.cdc.gov/coronavirus

CS 32463-A 02/2021

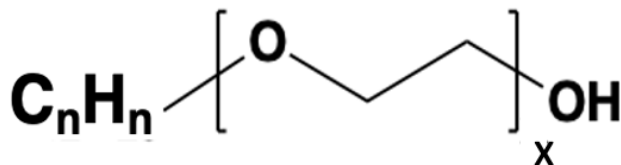


Alkylphenol Ethoxylates

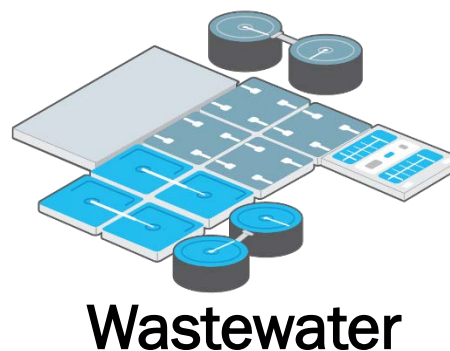
Alkylphenol ethoxylate



Alcohol ethoxylate



Alkylphenol Ethoxylates in Bay



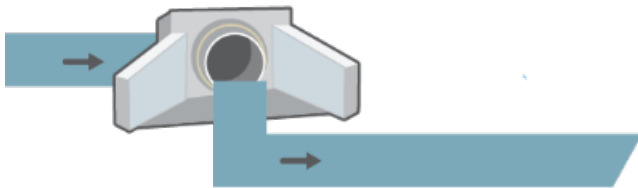
- Broad suite of compounds detected
- High concentrations in wastewater that received significant industrial flows
- Both wastewater and stormwater pathway important

Plastic Ingredients: Bisphenols and Organophosphate Esters (OPEs)

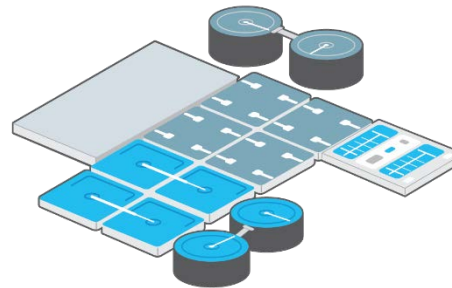
Bisphenols



OPEs



Stormwater



Wastewater



Water

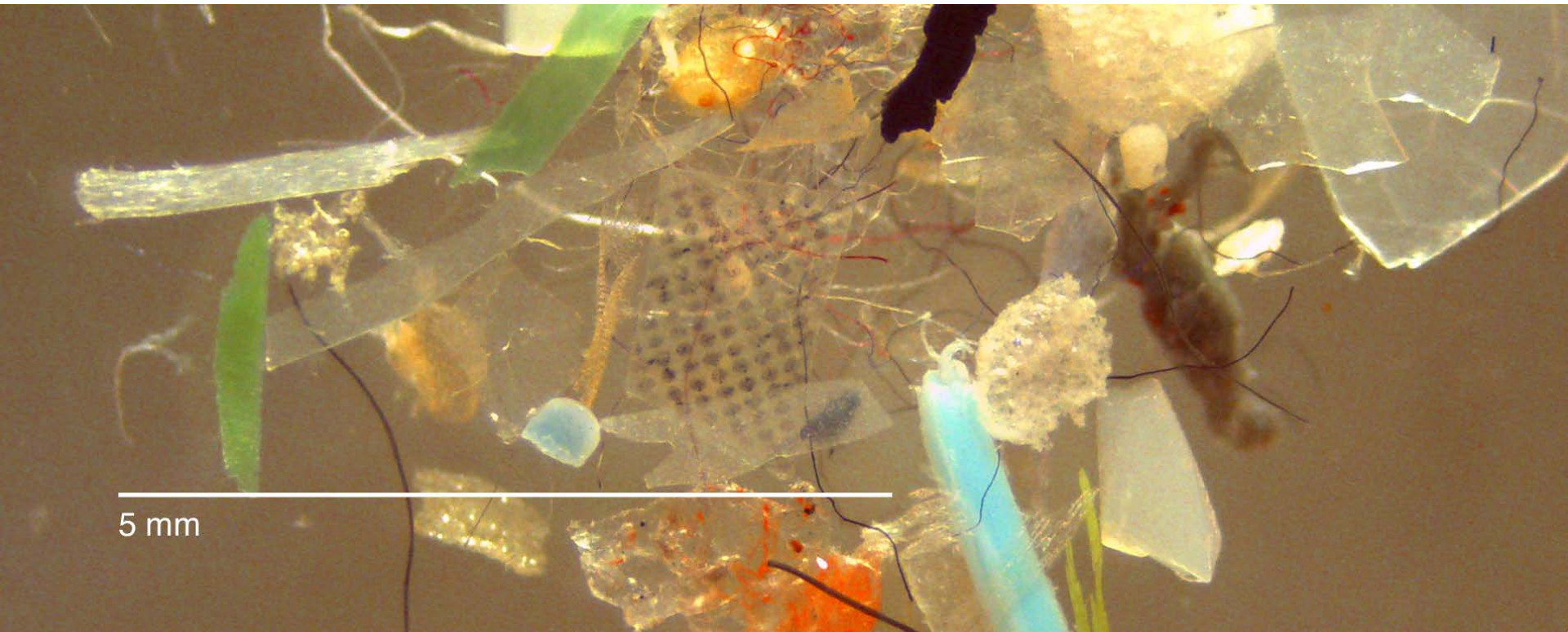


Microplastics

Particles of plastic smaller than **5 mm**

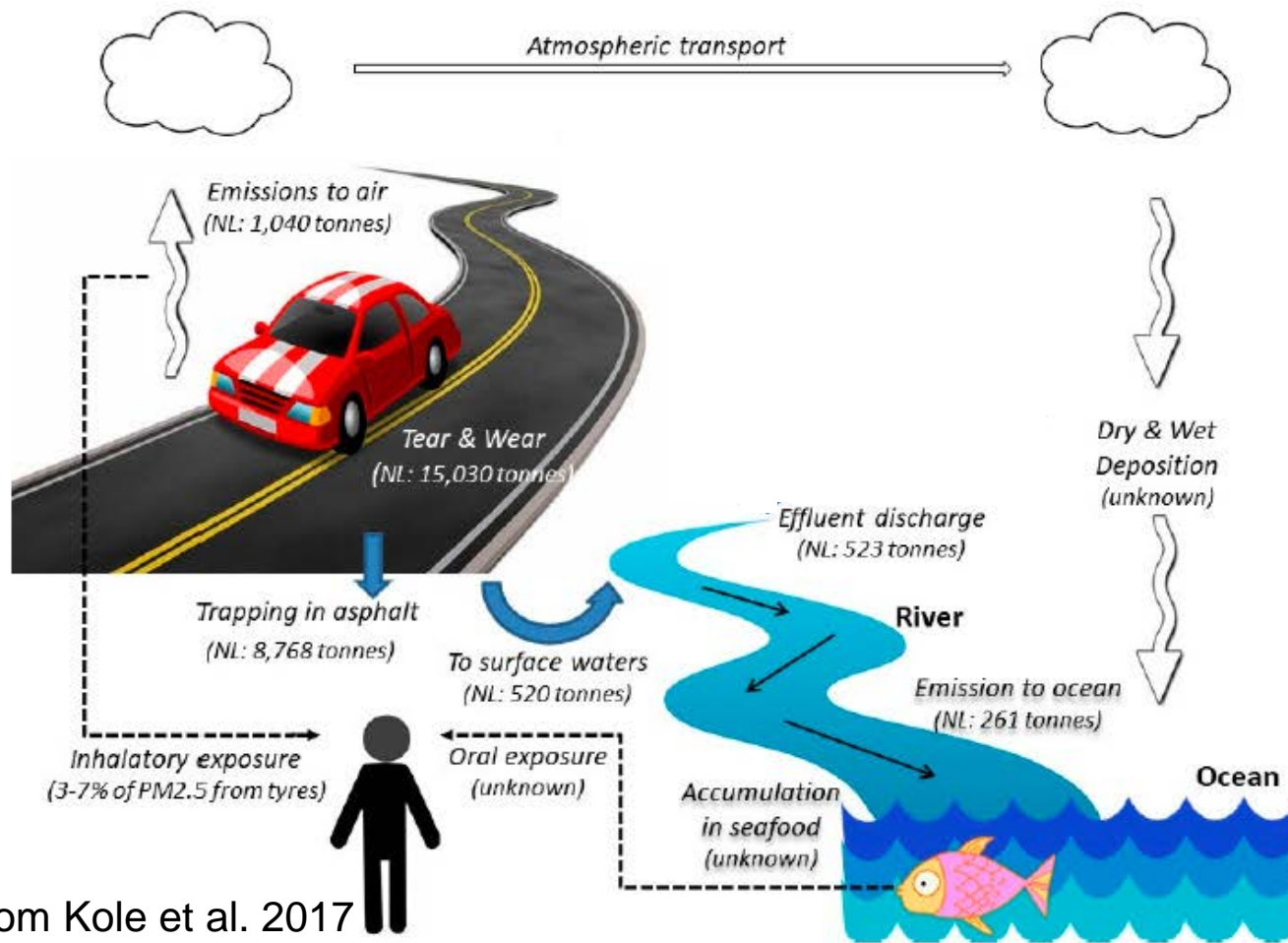
Detected in all Bay matrices

Stormwater >> Wastewater



5 mm

Current Microplastics Studies



Adapted from Kole et al. 2017

Upcoming: Sunscreen Chemicals



**UV sunscreens
chemicals**

Forecast increase in use

Oxybenzone (BP-3)

- High volume chemical > 1 mil pounds (USEPA 2003)
- Used in 65% of all sunscreens



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Thank you

www.sfei.org/CECs

diana@sfei.org