



# **Contaminants of Emerging Concern: 2011 Highlights and 2012 Workplan**

**RMP TRC Meeting  
December 13, 2011**

# CEC Strategy



**What CECs have the potential to adversely impact beneficial uses in the Bay?**

**Chemical Screening**



**Pilot Study**



**Routine Monitoring**

# CEC Profiles



- Provide information to water/air quality regulators, managers
- Completed three profiles to date:
  - antimicrobials (final)
  - alkylphenols (reviewed by ECWG, near final)
  - carbamazepine (reviewed by ECWG, near final)
- Triclosan fact sheet

# Alternative Flame Retardants



## Brominated and Chlorinated Flame Retardants in San Francisco Bay Sediments and Wildlife

- Draft manuscript sent to co-authors soon (round 2)
- Will submit to Environment International

## Organophosphates

- Previous data not included in report
- 2009 cormorant egg samples sent to Da Chen, Environment Canada/Carleton Univ for pro bono analysis

# Alternative Flame Retardants



## Publications

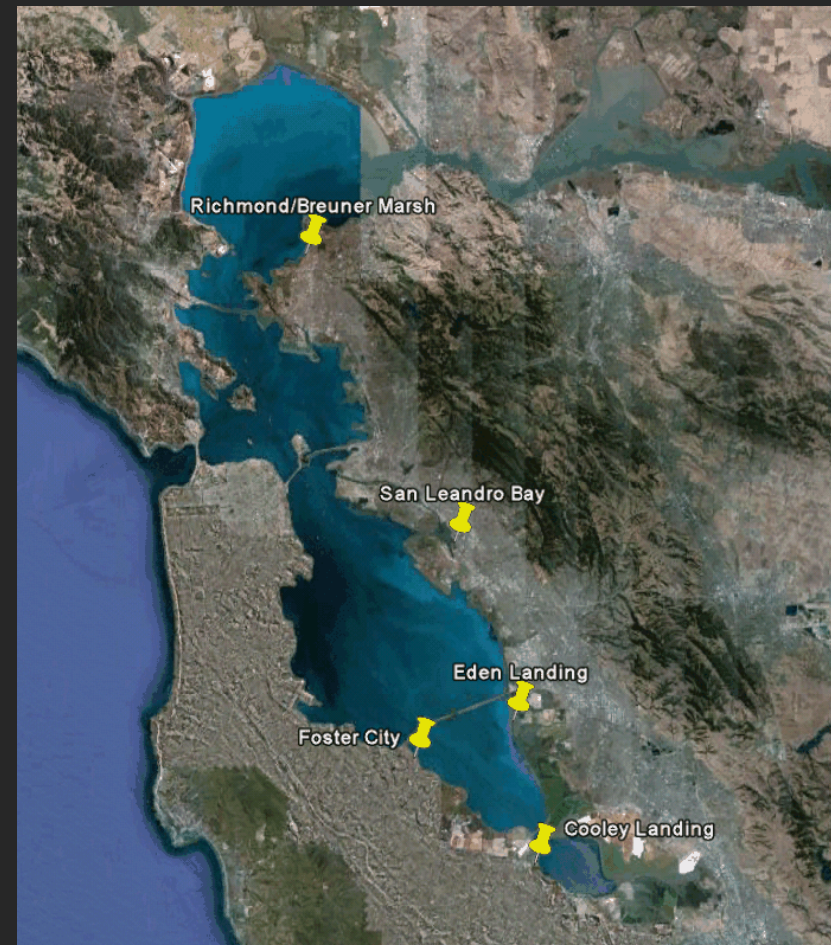
Davis, E.F., Klosterhaus, S., Stapleton, H.M. 2011. **Measurement of flame retardants and triclosan in municipal biosolids.** Environment International. *In press.*

Stapleton, H.M., Klosterhaus, S., Keller, A., Ferguson, P.L., van Bergen, S., Cooper, E., Webster, T.F., Blum, A. 2011. **Identification of flame retardants in polyurethane foam collected from baby products.** Environ Sci Technol. 45: 5323–5331.

# AXYS/CEC Mussel Pilot Study



- Water, sediment, benthic mussels @ 5 margin sites
- 104 PPCPs, alkylphenol ethoxylates, PFCs (pro bono)
- Support NOAA Mussel Watch CA Pilot Study
- Data finalized
- Revising draft report
- Submit to ES&T or JEM



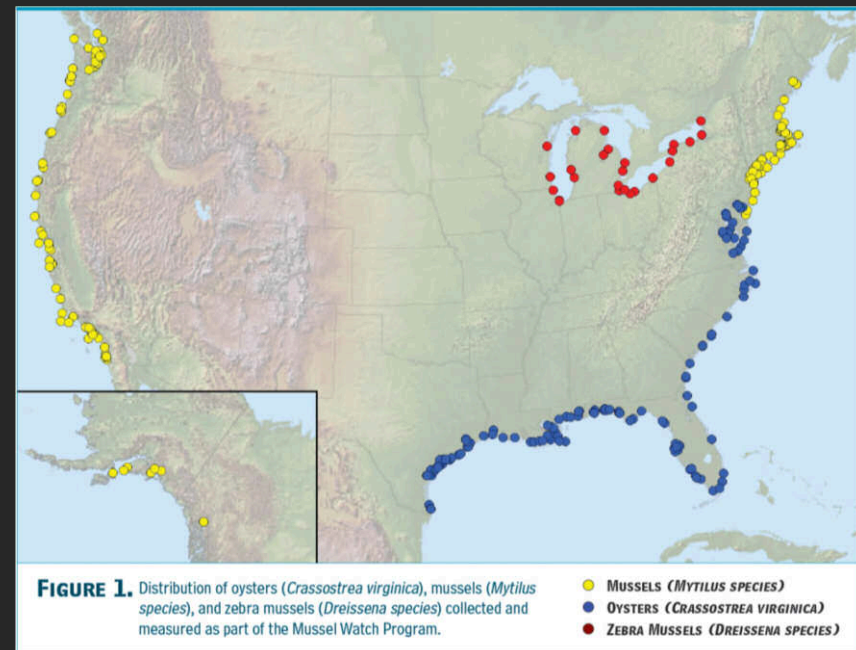
# NOAA Mussel Watch CEC California Pilot Study



- Increase focus on CECs
- 2010 effort as CA Pilot Study
- Multi-agency collaboration
  - Chemical analysis \$\$ from NOAA
  - Partners leveraged resources, provided field support

## Study Goals

- Develop list of high priority CECs for national program
- Investigate alternative methods (passive samplers)





# NOAA Mussel Watch CEC California Pilot Study

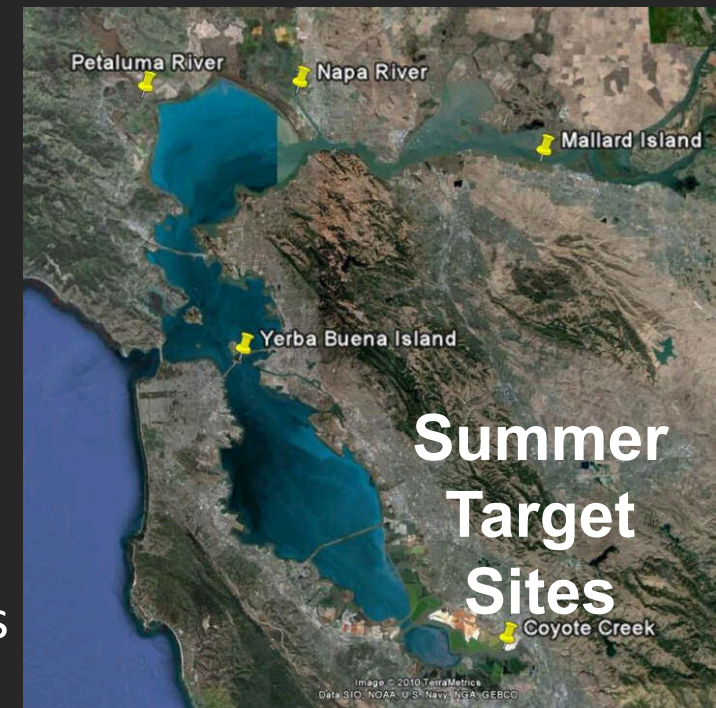


## Winter sampling, existing MW sites (n=69)

- Resident mussels
- Sites stratified by land use
- 4 sites in SF Bay

## Summer sampling, targeted new sites (n~10)

- Caged mussels, passive samplers
- Large POTWs, stormwater discharge, dry season ag runoff
- SF Bay: PSDs @4 sites; PSDs, caged mussels @YBI; Caged mussels @3 sites (Coyote Creek, Red Rock, San Pablo Bay)





# NOAA Mussel Watch CEC California Pilot Study



## Target Compounds

- Flame retardants: PBDEs, PBBs, HBCD, OPs, TBB, TBPH
- 121 PPCPs
- PFCs
- Alkylphenols
- Current use pesticides
- Nanoparticles (single walled carbon nanotubes)
- Legacy compounds for a subset of samples

# NOAA Mussel Watch CEC California Pilot Study



**2010:** Sample collection completed

**2011:**

- Lab analyses (completed in Fall)
- Data review, QA, analysis (SCCWRP, Nov-Dec)

**2012:**

- Manuscripts for special issue of Marine Pollution Bulletin (March 1)
- SF Bay data in statewide context in CEC synthesis report (Summer)

# Nontarget Screening of Bay Wildlife



Collaborators: NIST, The Marine Mammal Center, SCCWRP, SDSU

## Year 1 (2010)

- Harbor seal, mussel samples collected
- Blubber from 6 Bay Area harbor seals analyzed plus one reference harbor seal from Alaska
- Legacy compounds dominated the Richmond marina sample
- Nate Dodder and Eunha Hoh (SCCWRP/SDSU) also compared the Richmond seal data file to a library developed from a dolphin sample generally finding similar compounds as previously.
- Uncommon compounds identified by one or the other group includes dicofol, uncommon DDT-related compounds (e.g. DDMU, tris(chlorophenyl)methane, DDEmethyl sulfone), low molecular weight chloro alkanes), dichlorobenzil, and non halogenated compounds such as fragrances
- The data from a seal from Richmond Marina has been summarized and presented at the Dioxin (Brussels) and SETAC (Boston) meetings

# Year 1 Continued



- Remaining work
  - Finalize data analysis of the other six seal blubber samples
  - Run chlorine/bromine isotope filter algorithm (from Don Hilton CDC) on samples to look for additional compounds
  - Analyze seal blood for metabolites
- Time line (2011-2012)

	December	January	February	March	April
Activity					
Finish Seal Blubber Analysis					
Seal blood analysis					
Seal Blood data analysis					
Final Report year 1					

# Year 2



- Year 2
  - Manuscript on seal work
  - Modify methods for mussel analysis
  - Analysis of mussel samples
  - Develop user library of mass spectra based on Howard and Muir paper
  - Run library against data files from project
  - Quantify compounds in samples where possible



# Time line year 2 (2012)

	May	June	July	August	September	October	November	December
Activity								
Modify methods for mussels								
Analyze Mussel samples								
Acquire spectra of Muir and Howard compounds								
Final Report year 2								



# CEC Synthesis Report (2011-2012)



## Report will include:

- CEC occurrence data for the Bay (RMP and others)
- SF Bay results from NOAA Mussel Watch CA CEC Pilot Study (Dec 2011)
- Water Board Advisory Panel recommendations (May 2012)
- Next steps/recommendations for monitoring CECs

## Timeline:

- Final report Summer 2012

# CEC Strategy (2012)



- Outline plan for continued monitoring of CECs
- Explore opportunities for additional partners, funding?

## **Timeline:**

- Begin writing Summer 2012
- Final report by Dec 2012

# 2012 ECWG Meeting



- Review nontarget work, synthesis report
- Review study proposals for 2013
- Discuss CEC strategy
- Overlap with EEWG for half day meeting?

Photo by Callie Bowdich

## Catching the Next Wave:

*Advancing Science through Innovation and Collaboration*



## SETAC North America 33<sup>rd</sup> Annual Meeting

11–15 November 2012 | Long Beach, California

- Meeting Program Committee
- Co-chair, Science Subcommittee (with Steve Bay, SCCWRP)
- Session proposals due Feb 1