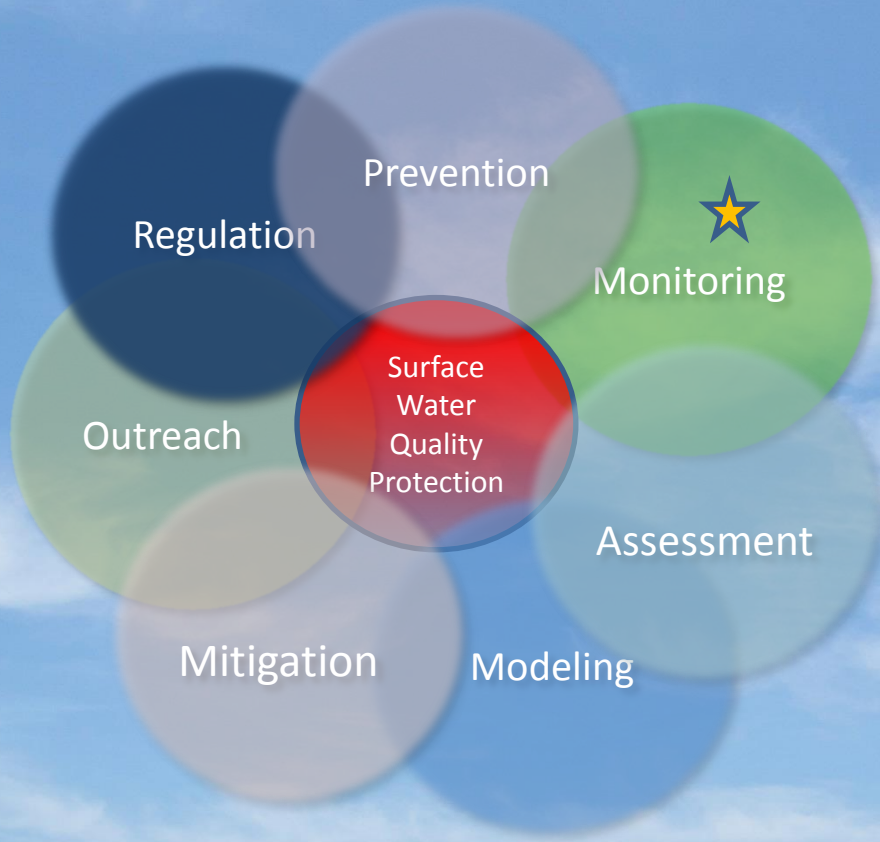


Making the Most of Analytical Dollars: Collecting Meaningful Pesticide Data

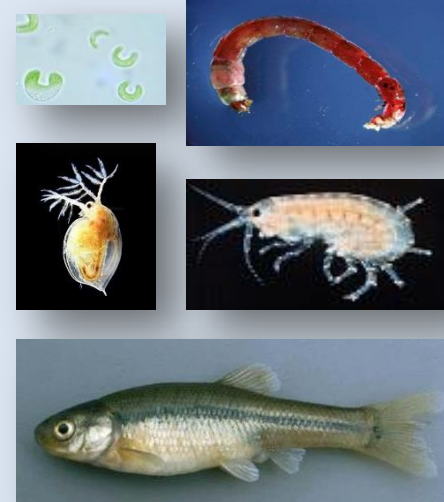
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Regulation

Department of Pesticide Regulation
Surface Water Protection Program



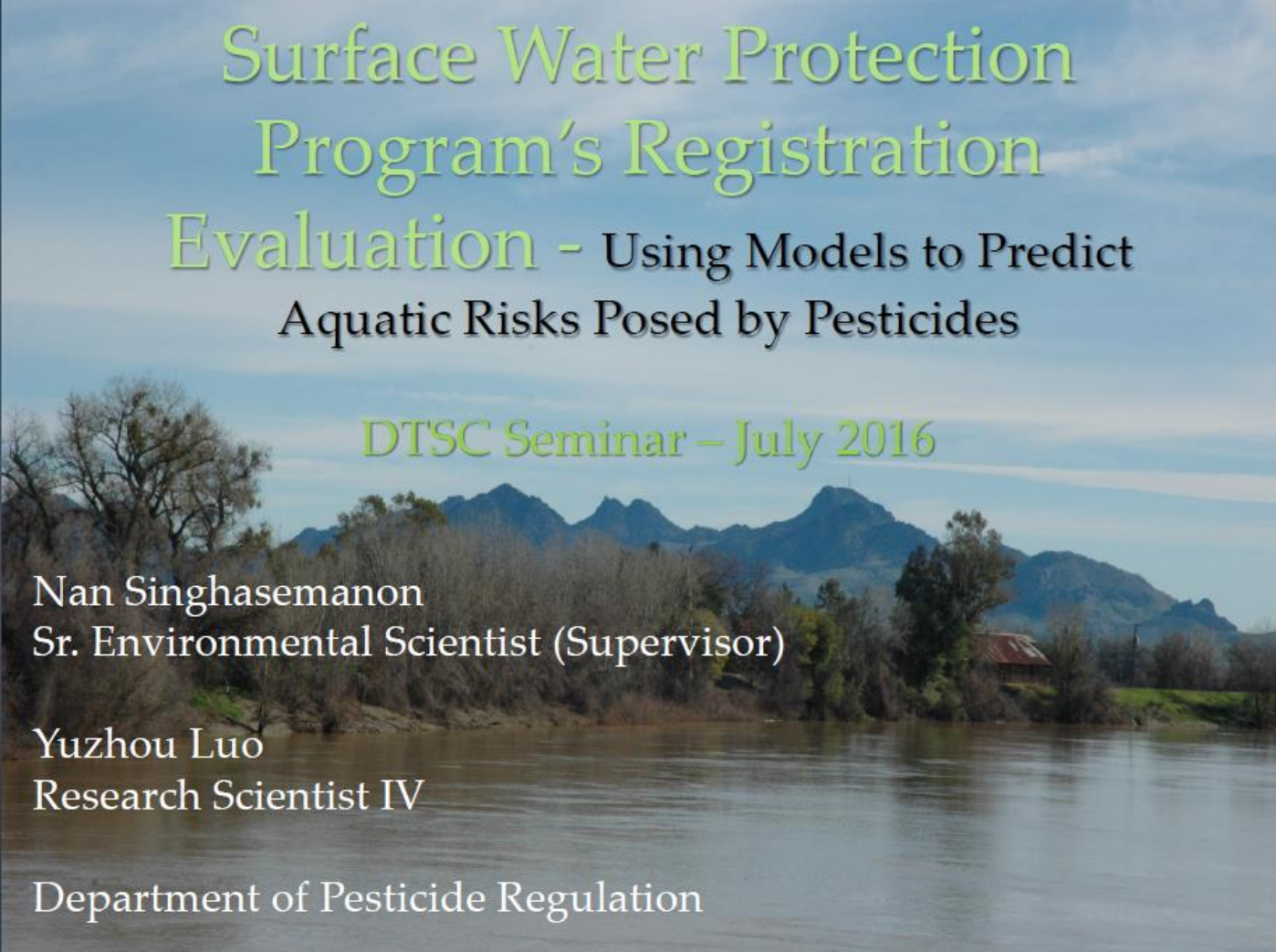
Research & Development



Making the Most of Analytical Dollars

1. Prevention
2. Prioritizing Pesticides for Analysis
3. Focused Representative Sampling
4. Develop Understanding of Transport
5. Collaboration
 - Sampling
 - Data Assessment

1. Prevention



Surface Water Protection Program's Registration Evaluation - Using Models to Predict Aquatic Risks Posed by Pesticides

DTSC Seminar – July 2016

Nan Singhasemanon
Sr. Environmental Scientist (Supervisor)

Yuzhou Luo
Research Scientist IV

Department of Pesticide Regulation

2. Prioritization Model 3.0

- Publically Available
- Inputs
 - Pesticide Use Reporting (PUR) Database
 - Physical & Chemical Properties
 - Toxicity

Pesticide Prioritization for Surface Water Monitoring, V...

Help

Configuration | Advanced Options | Watershed

Use patterns

☒ Agricultural use ☐ Urban use ☐ "Rights of way" (site_code=40)

☐ Or, user-specified site_code(s)=

PUR data

Based on PUR data from to

Toxicity data

☒ Acute ☐ Chronic ☐ Both

☒ USEPA Aquatic Life Benchmarks

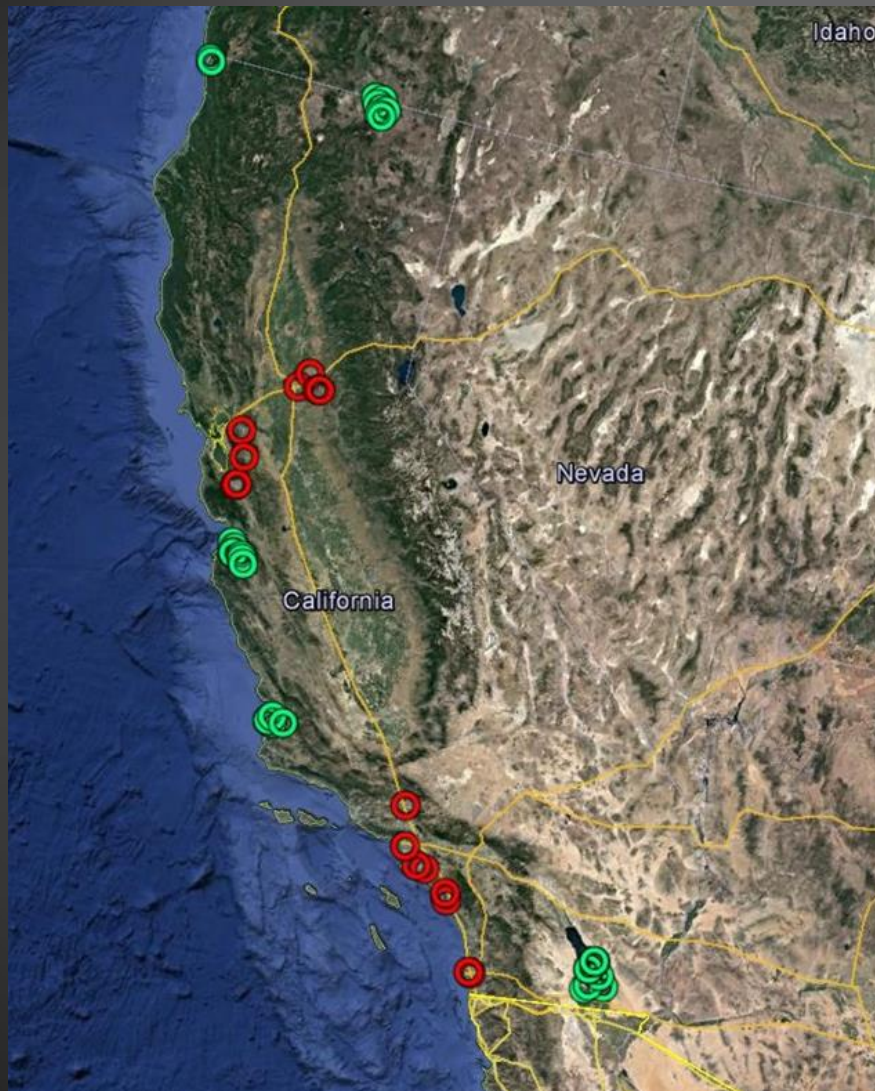
☒ Supplemented by Benchmark Equivalent (based on FOOTPRINT PPDB)

☐ USEPA Drinking Water Standard

☐ USEPA Human Health Benchmark

Note: if multiple toxicity databases are selected, the lowest toxicity value for each pesticide will be used for prioritization

3. Focused Representative Sampling





Urban

5 Counties
11 Watersheds
27 Sites

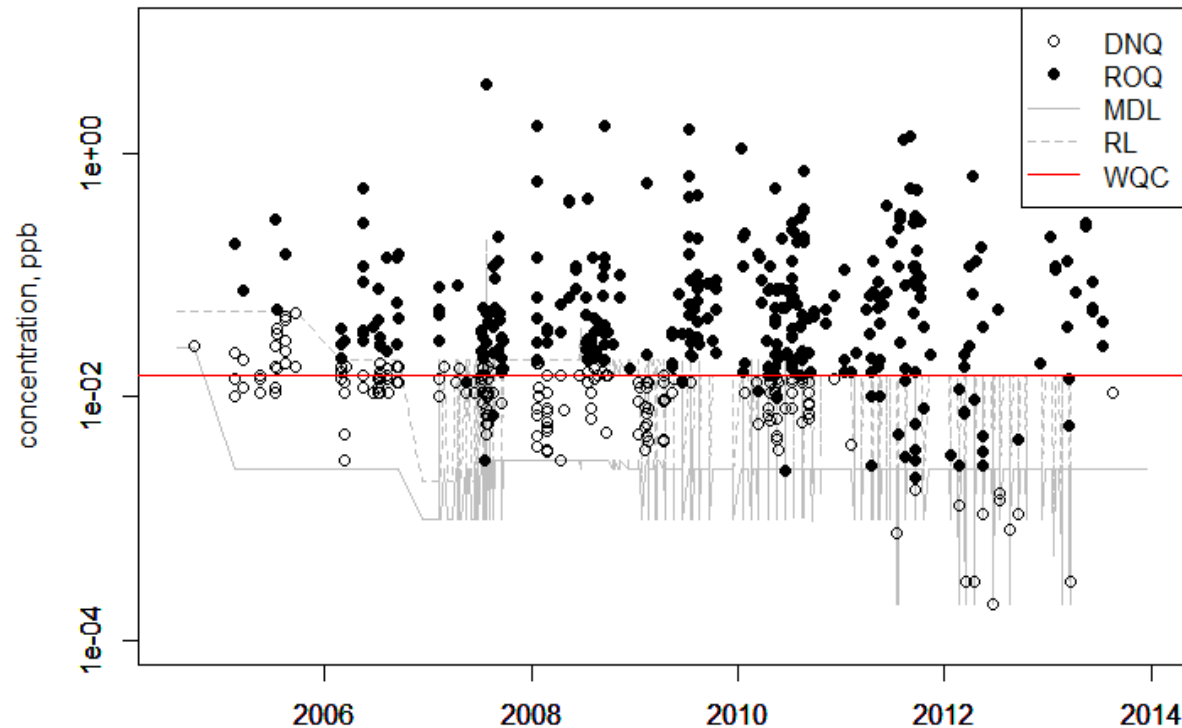
Agricultural

7 Counties
6 Watersheds
16 Sites

-  Agricultural Monitoring Site
-  Urban Monitoring Site

4. Develop Understanding of Transport

5. Collaboration



Wang, D., N. Singhasemanon, and K.S. Goh. 2016. **A statistical assessment of pesticide pollution in surface waters using environmental monitoring data: Chlorpyrifos in Central Valley, California.** *Science of The Total Environment* 571:332-341.

TIER 4
HIGH
CONCERN

MODERATE
OR HIGH IMPACT

None currently

TIER 3
MODERATE
CONCERN

LOW IMPACT

PFOS

Fipronil

Nonylphenol

PBDES

TIER 2
LOW
CONCERN

NO IMPACT

HBCD

Pyrethroids*

Pharmaceuticals

Personal Care Product Ingredients

PBDDs and PBDFs

TIER 1
POSSIBLE
CONCERN

UNCLEAR

Alternative Flame Retardants

Fluorinated Chemicals

Pesticides, Plasticizers

Microplastic

Many others

5. Collaboration

Modeling Pesticide Inputs to the Bays



contributing hydrological areas:

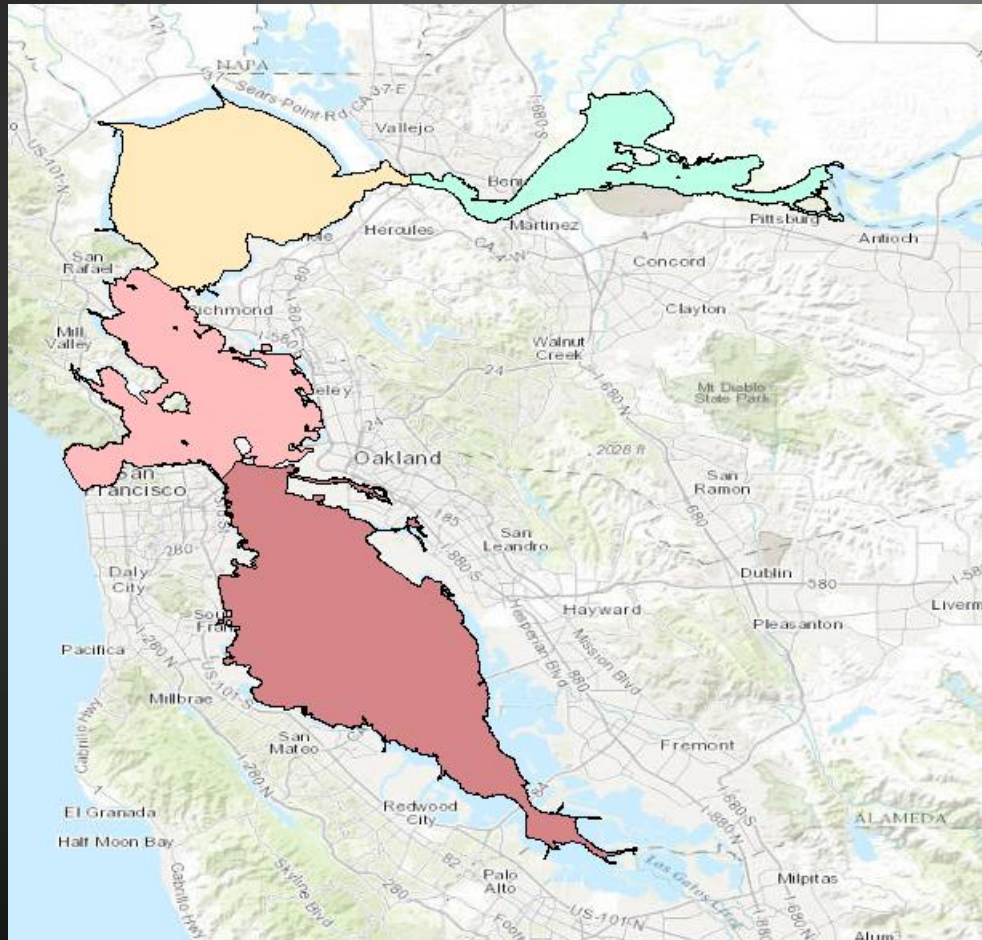
- Sac River Basin
- SJ River Basin
- Bay-Delta Estuary



Dr. Dan Wang
Dan.Wang@cdpr.ca.gov

5. Collaboration

Modeling Pesticides Inputs to the Bays

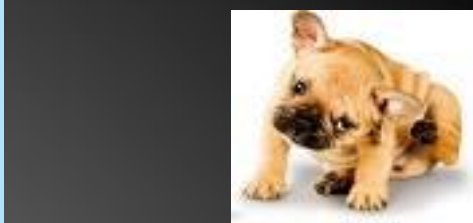


- Majority of Prioritized Pesticides Common Actors
- North has more agricultural influence.
- South has more urban influence (including wastewater).

197 Wastewater Treatment Plants in California



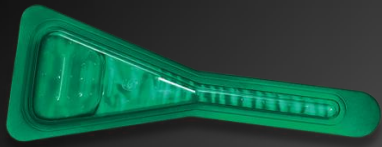
Solutions!



Managing Pesticides in Wastewater

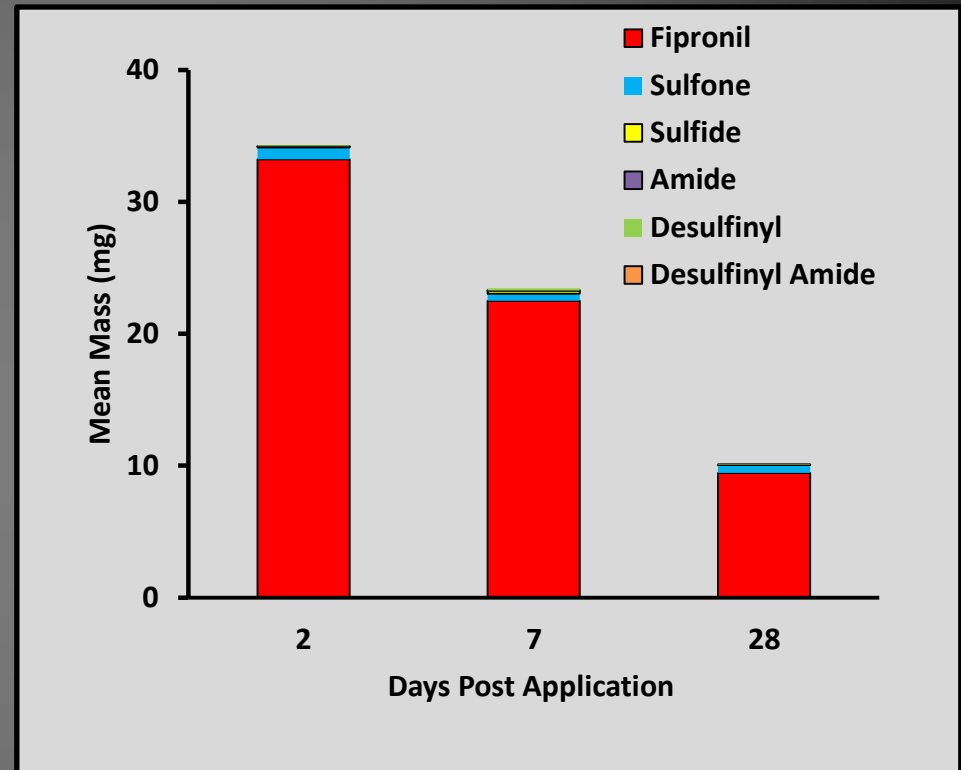
- Prevention – Down-the-Drain model to support registration recommendations
- Monitoring and source identification





Dog Washoff Study

- 9.1% Fipronil
- Recommended frequency of application 30 days
- Products “waterproof” once dry



Pesticide Source Identification



- 24-hour Composite Samples
 - Influent
 - Effluent
 - 10 Routine Sewershed Sites
 - 3 Targeted Sites (Limited Samples)
- Monthly (May-December 2016)
- Weekdays and Weekends
- Seasonal Variability



Sampling Sites

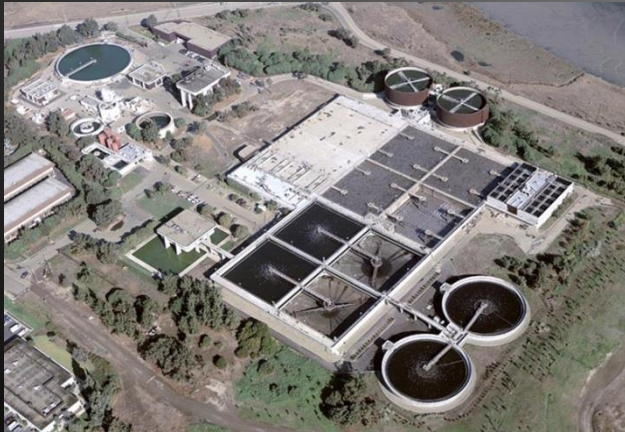


Residential

- Age of homes
- Density of homes

Wastewater treatment plant

- Influent
- Effluent



Institutional



Hospital



University

Commercial



Laundry

Pest control operators



Pet grooming

Nursery



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www.cdpr.ca.gov/docs/emon/surfwtr/

