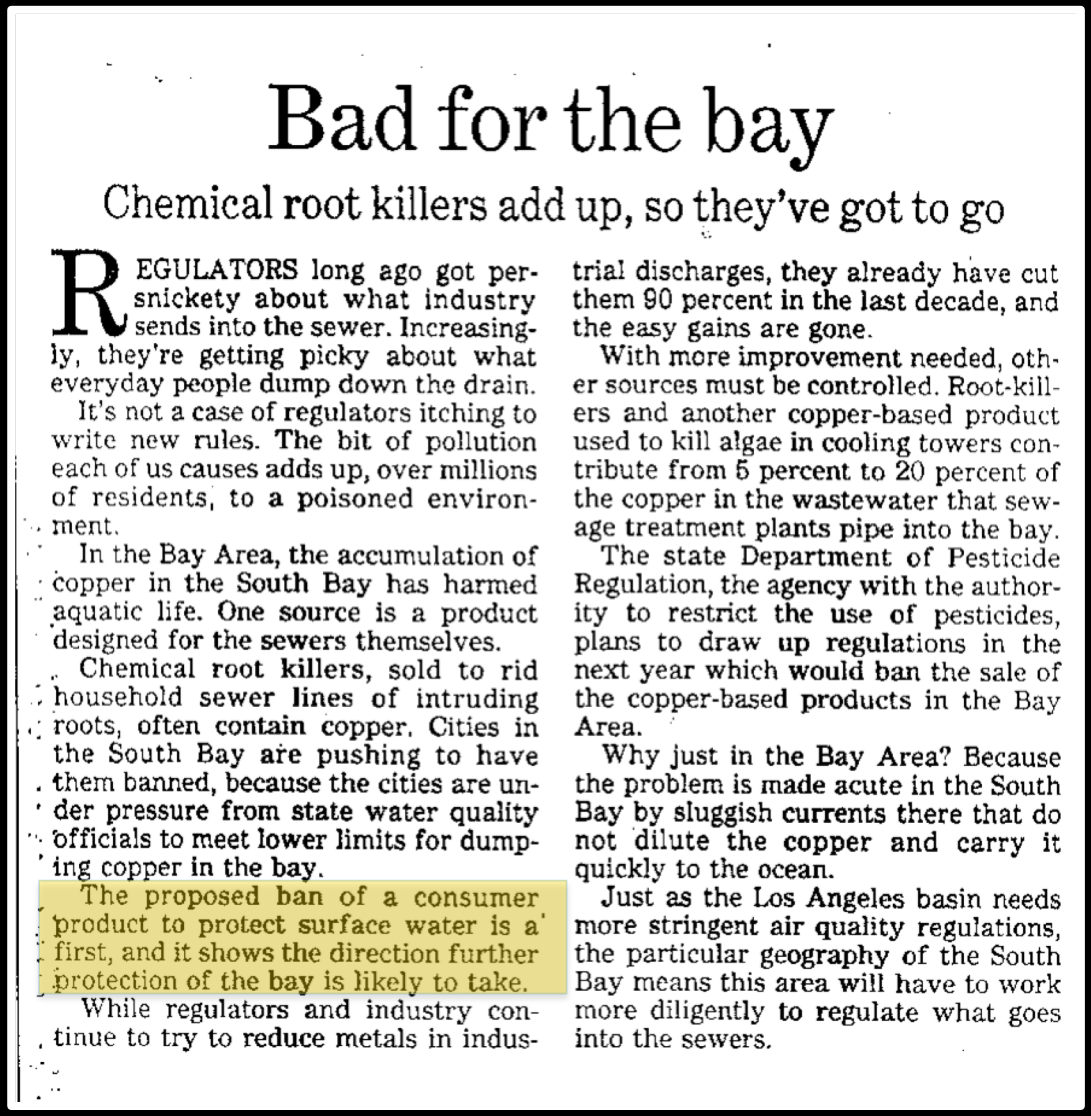
BAPPG POTW Pesticides Update

Kelly D. Moran, Ph.D.
TDC Environmental, LLC

BAPPG/BACWA has engaged in current pesticides management since 1990s



Bad for the bay

Chemical root killers add up, so they've got to go

REGULATORS long ago got persnickety about what industry sends into the sewer. Increasingly, they're getting picky about what everyday people dump down the drain.

It's not a case of regulators itching to write new rules. The bit of pollution each of us causes adds up, over millions of residents, to a poisoned environment.

In the Bay Area, the accumulation of copper in the South Bay has harmed aquatic life. One source is a product designed for the sewers themselves.

Chemical root killers, sold to rid household sewer lines of intruding roots, often contain copper. Cities in the South Bay are pushing to have them banned, because the cities are under pressure from state water quality officials to meet lower limits for dumping copper in the bay.

The proposed ban of a consumer product to protect surface water is a first, and it shows the direction further protection of the bay is likely to take.

While regulators and industry continue to try to reduce metals in industrial discharges, they already have cut them 90 percent in the last decade, and the easy gains are gone.

With more improvement needed, other sources must be controlled. Root-killers and another copper-based product used to kill algae in cooling towers contribute from 5 percent to 20 percent of the copper in the wastewater that sewage treatment plants pipe into the bay.

The state Department of Pesticide Regulation, the agency with the authority to restrict the use of pesticides, plans to draw up regulations in the next year which would ban the sale of the copper-based products in the Bay Area.

Why just in the Bay Area? Because the problem is made acute in the South Bay by sluggish currents there that do not dilute the copper and carry it quickly to the ocean.

Just as the Los Angeles basin needs more stringent air quality regulations, the particular geography of the South Bay means this area will have to work more diligently to regulate what goes into the sewers.

San Jose Mercury News Editorial – Tuesday August 16, 1994

BAPPG Pesticides Timeline

1994-1996 Copper Root Killer/Tributyltin Cooling Water Additives

- First DPR POTW discharge analysis

1996-2012 Urban Pesticides Committee

1997 Our Water Our World (OWOW) founded

2002 First POTW letters to EPA

- First EPA POTW discharge modeling

2004 UP3 Partnership founded (WB, POTW, MS4)

2006 DPR Pyrethroids Reevaluation initiated

- BAPPG gets POTWs included
- DPR requires POTW pyrethroids survey

2015 RMP/BACWA Fipronil/Imidacloprid study results

- BAPPG initiates Pet flea alternatives work

BAPPG Role in POTW Pesticides Expert Funding

2001-2004 – Water Board Contracts

2004-2010 – Water Board Grants

2010-2014 – BAPPG/BACWA via CASA

2014 – BAPPG/BACWA Takes the lead

<u>POTW Pesticides Expert Main Activities</u>

- Science
  - Priority pesticides list, literature review, science conferences
- Regulatory engagement
  - Tracking, letters, meetings

Lots of Pesticides of Interest

BACWA Wastewater Pesticides Watch List

Currently registered pesticides that may occur in wastewater

Priority	Basis for Priority Assignment	Pesticides	
1 – High Concern	a) POTW effluent monitoring data* exceeding benchmarks b) Known cause of process interference c) Present in recycled water or biosolids at concentrations that limit use d) SF Bay area receiving water 303(d) listing for the pesticide or degradate	Pyrethroids (21 chemicals**) Fipronil Imidacloprid	
2 – Moderate Concern	a) Pesticide contains a Clean Water Act Priority Pollutant b) SF Bay area receiving water 303(d) listing for the pesticide, degradate or contaminant that also has non-pesticide sources	Copper pesticides Silver pesticides Zinc pesticides	
3 – Possible Concern	Monitoring data* approaching or wastewater discharge modeling predicting: a) effluent or receiving water benchmark exceedances b) process interference c) limitations on use of recycled water or biosolids	ADBAC 1,2-Benzisothiazolin-3-one (BIT) Bronopol (Bioban) Carbendazim (MBC) Chlorhexidine Chlorinated isocyanurates DDAC Dichlobenil Dinotefuran Diquat dibromide Folpet	Imidazolidinedione Indoxacarb IPBC Malathion (lice) Metam sodium Methoprene Nanopesticides (all) o-Benzyl-p-chlorophenol Octhilinone *o*-Phenyl phenol Polyhexamethylenebiguanide (PHMB)

Both Fipronil and Imidacloprid

POTW Pesticides Conundrum

- 100s of Pesticides used & discharged
- Many pass through POTWs
- Some toxic as low as ng/L
- Toxicity now common in CA surface waters
  - Nearly always linked to current pesticides
- State Water Board toxicity policy coming soon
- POTW treatment changes unrealistic
  - So many pesticides, such low concentrations!
- State law prohibits local pesticide regulation

Special pesticides management framework needed

R2 + State Water Board & Region 9 EPA get this

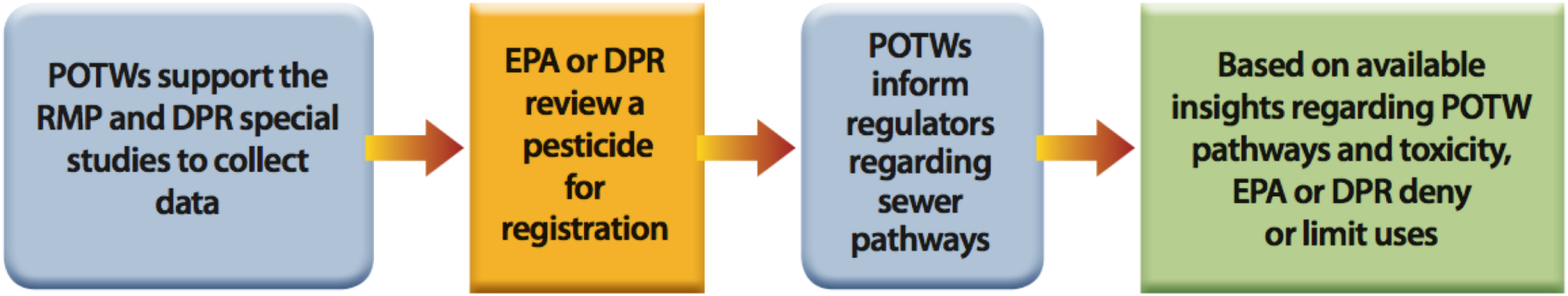
DPR gets this

EPA Washington DC hasn’t quite figured it out

BACWA Pesticides Management Vision (2016)

Move management upstream from CWA → FIFRA

Focus = Prevention

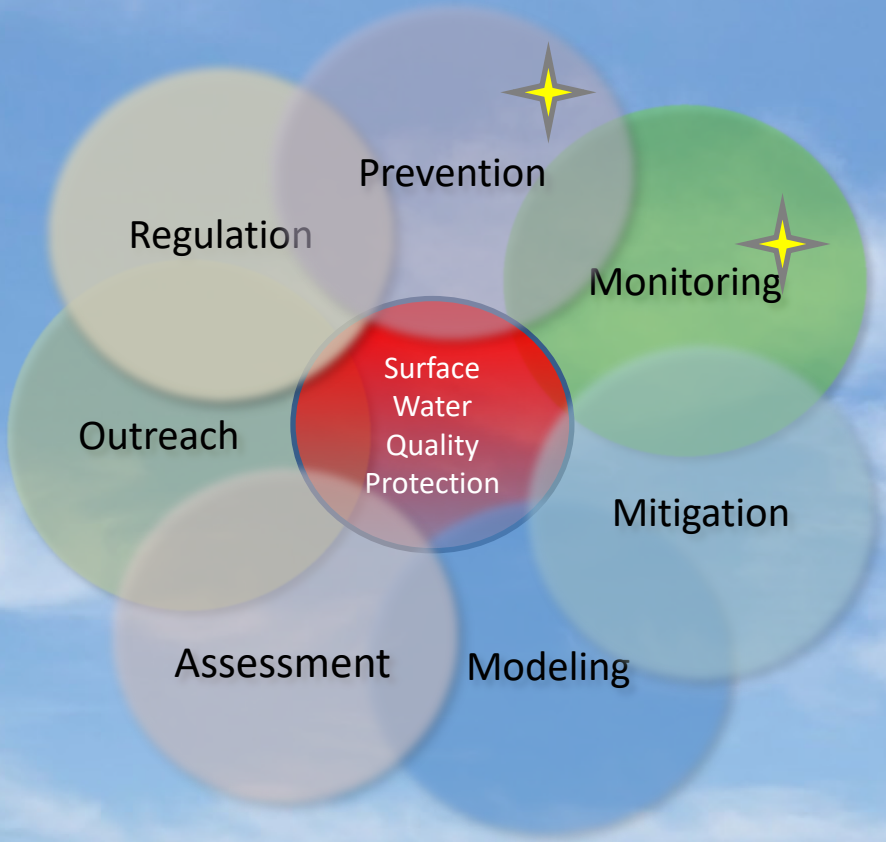


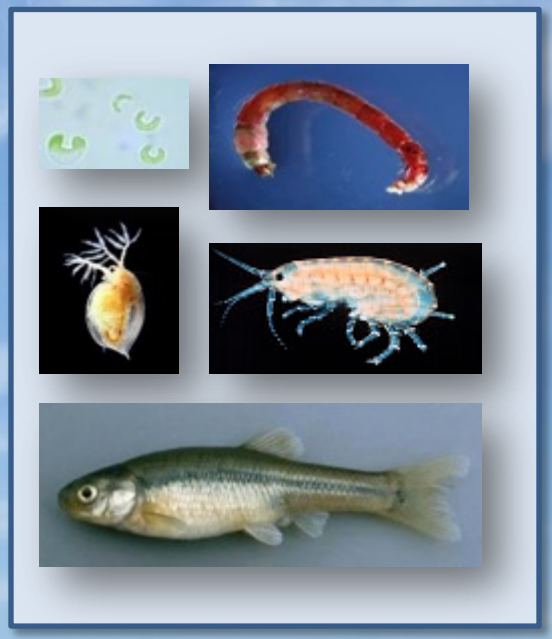
Progress is Promising!

Highlight

California Department of Pesticide Regulation (DPR) Surface Water Protection Program POTW Activities

Department of Pesticide Regulation
Surface Water Protection Program





Research & Development

Slide Source: California DPR

DPR Involvement in POTW Scientific Studies

- POTW Pyrethroids Survey 2013 (required by DPR)
- RMP/BACWA Fipronil + Imidacloprid Influent and Effluent Study 2016 (Co-author, focus on pet flea control source)
- DPR Fipronil Pet Flea Control Dog-wash Study 2017
- DPR/Palo Alto Sewershed Study 2018

DPR POTW Program Plan

- Improved Product Registration Process for POTWs
- Data to support POTW discharge mitigation actions
  - Temporal and spatial monitoring
  - Source identification

Prevention – DPR Registration

- All products must first registered by EPA (controls labels)
- CA Registration Process Can Include POTW Discharge Review
- At Registration burden of proof is on manufacturers
  - With scientific justification, DPR can require data
  - DPR can do scientific evaluations

DPR Can Say "No" to Protect Water Quality and Support POTWs

California Department of Pesticide Regulation
Environmental Monitoring Branch

EVALUATION REPORT – PESTICIDE **Date: June 19, 2018**
Environmental Monitoring – Yina Xie

Tracking ID No.	:	280177, 280178
Product Name	:	EFT Ioniser70, EFT Ioniser90
Applicant	:	Elemental Fluid Technologies
EPA Reg. No.	:	92374-1, 92374-2
Document No.	:	
Active Ingredient	:	Metallic Copper (70%, 90%) Metallic Silver (30%, 10%)
Use	:	Antimicrobial
Registration Action	:	Section 3 Registration
Area of Review	:	Environmental Fate and Aquatic Risk
Registration Specialist	:	Jolynnn Mahmoudi-Haeri

[ ] Data/Information Support Registration
[ ] Data/Information Support Conditional Registration
[X] Data/Information Does Not Support Registration
[ ] No Registration Action Required
[ ] AI Flagged for Future Surface Water Review

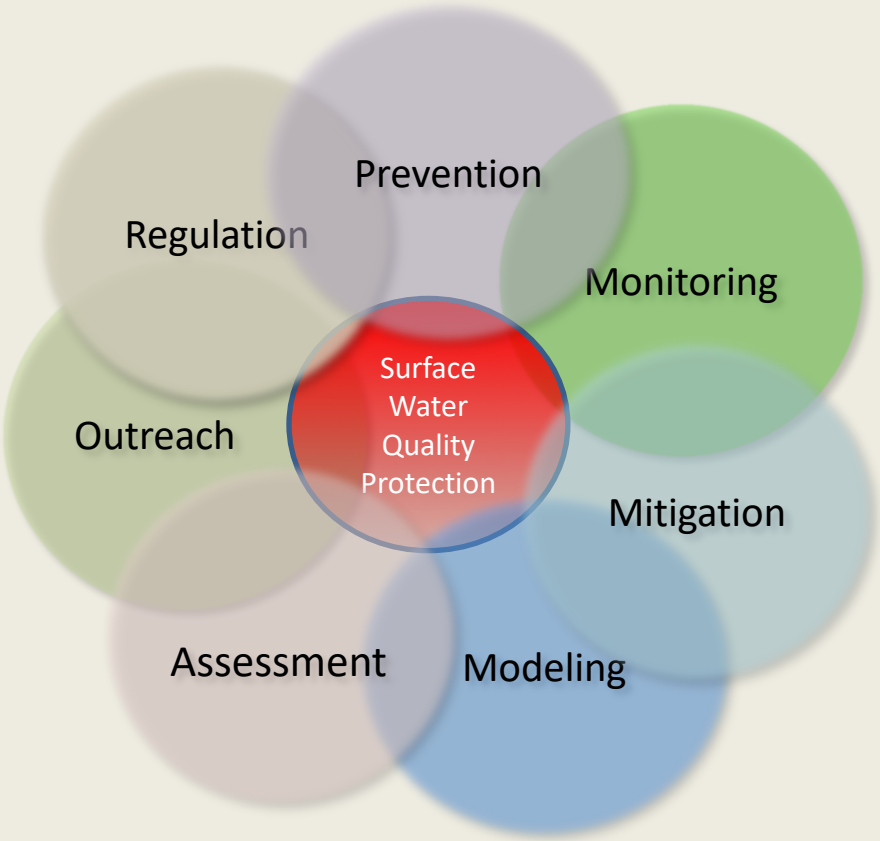
Background

Elemental Fluid Technologies submitted the products, EFT Ioniser70 and EFT Ioniser90, containing an alloy of copper and silver (70:30% and 90:10%, respectively) for Section 3 Registration with DPR. The product is a copper and silver ionization device for use to control microbial contaminants (i.e., odor, staining, and corrosion, including bacteria) for secondary treatment of commercial potable water supplies (including both hot and cold water) in certain commercial, institutional, and commercial sites. The product is comprised of three parts: 1) a flow cell, which is an electrolytic compartment and houses a series of copper/silver electrodes; 2)

Monitoring Data Crucial

- After registration, burden of proof likes on regulators
- Monitoring data = most robust proof
- EPA periodically reviews pesticides
- DPR has “continuous evaluation”
  - Must initiate pesticide-specific reviews individually
  - Usually based on monitoring data

DPR Next Steps



Budget Change Proposal 2018-2019

- Research Scientist III
- Senior Environmental Scientist
- Ongoing analytical support

Slide source: California DPR

DPR Next Steps

- Spatial trends
- Temporal trends

Slide source: California DPR

DPR Next Steps

- Prevention through Product Registration
  - Dr. Yina Xie developing Down-the-Drain model
    - Using Palo Alto study to calibrate model
    - Evaluating product use scenarios

Pet Products

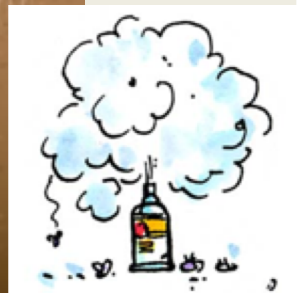
Swimming Pools/Cooling Towers

Sewer/Drain Products

Laundry Related

Indoor Pest Control

Slide source: California DPR



Slide source:
California DPR

DPR Next Steps

- Source identification and quantification

Indoor Products

Nursery Operations

Industrial Laundry

Slide source: California DPR

Spot-on Products

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

- Wash volunteer dogs 2, 7, or 28 days post application.

Slide source: California DPR

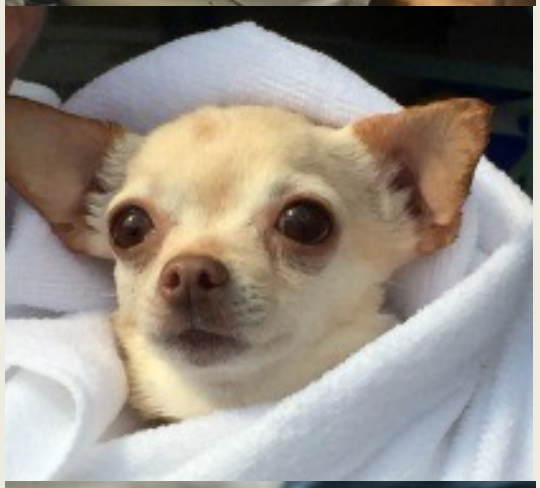
Palo Alto Sewershed Sampling

- Routine Monthly Sampling
  - 10 sub-sewershed laterals
  - Influent
  - Effluent
- Specialty Sites
  - Laundromat
  - Pest Control Operator (PCO)
  - Groomer
- 24-hour time-weighted composites

Slide source: California DPR

Groomer

- Confirms pet use products enter wastewater catchment
- Additional residues may be introduced through:
  - Laundering pet bedding and human clothes
  - Human showering, hand washing, excretion
  - Cleaning indoor surfaces



Slide source: California DPR

BAPPG/BACWA is Being Proactive on Pesticides

1. Safer Alternatives (Stephanie Hughes)
   - Flea/tick control alternatives to pet “spot treatments”
   - Outreach & education – key audiences, general public
2. Monitoring partnerships (RMP, DPR)
   - Data are essential for DPR & EPA science-based regulatory programs
3. Regulatory engagement
   - Educate with science & advocate POTWs be addressed
   - Formal = Letters
   - Informal = in person and telephone meetings, science conferences

Recent Regulatory Engagement Highlights

- EPA Risk Assessments (letters, calls)
  - Pet flea control/misc. indoor
    - Pyrethroids, Fipronil, Imidacloprid, Spinetoram, Indoxacarb, Pyriproxyfen, Dinotefuran, Clothianidin, Thiamethoxam
    - **Outcome: Pending**
  - Swimming pools (discharge language)
    - Copper, Hypochlorites, Boric Acid
    - **Outcome: Requirement to contact local agency and follow discharge instructions**
  - Root Control (POTW notification)
    - Diquat dibromide, dichlobenil
    - **Outcome: POTW notification will be required**

Recent Regulatory Engagement Highlights

- DPR Surface water review requests (emails)
  - **Outcome: Ensure surface water program review for key pesticides registration applications**
  - **Demonstrated need for DPR review of pesticide POTW discharges**

Upcoming Regulatory Engagement Highlights

BACWA Pesticides Regulatory Tracking List – October 2018

Item/Next Steps	Comments Due
U.S. EPA	
Pesticide Registration Review (15-year cycle) *Registration Review Environmental Risk assessments*: • Zinc Metals/Salts • Fipronil *Registration Review Proposed Decisions:* • Pyriproxyfen (pet flea control), Indoxacarb (pet flea control); Dichlobenil (root control) • Pyrethroids (pet flea control, other indoor uses) • Neonics: Imidacloprid (pet flea control), Dinotefuran (pet flea control), Clothianidin (indoor uses), Thiamethoxam (indoor uses); **Other EPA Actions** *Proposed rule to eliminate some pesticide public notices* • Formal rule proposal to eliminate Federal Register notices for many pesticides regulatory actions	 Dec/Jan? Early 2019? Oct 9 Dec/Jan? Dec/Jan? Oct? (delayed)
DPR	

Recent & Upcoming Science Engagement Highlights

- American Chemical Society Conferences
  - 2016 (Philadelphia) - POTW modeling improvements
    - **Outcome: EPA agreement that model improvements needed**
  - 2017 (SF) – RMP Pet flea control study
    - **Outcome: Confirmed scientific acceptance of POTW pesticides sources conceptual model, pet spot-on flea control pathway**
- Society of Environmental Toxicology & Chemistry Conference
  - 2018 (Sacramento) – POTW pesticides science review (DPR, SFEI lead)
- ACS Book Chapter (DPR, SFEI Lead)
  - POTW pesticides science review

State Water Board Pesticides Plan

(MS4 only)

Promising model for POTWs

A. Primary Pesticides Solution = DPR + EPA

B. TMDL alternative for MS4s

- "Deemed in compliance"
- As many as 100 current pesticide 303(d) listings expected

C. Anticipated MS4 permit requirements:

- Outreach/education (OWOW etc.)
- Limit municipal pesticide use (IPM)
- EPA/DPR Regulatory participation (UP3 Partnership)
- Replace local monitoring with *useful* joint statewide pesticides & toxicity monitoring

Anticipated Adoption Spring 2019

Future is Promising

- It’s a marathon – not a sprint
- Change will only occur with active POTW engagement
- POTW monitoring partnerships are crucial
- Regulatory programs are driving a new paradigm for consumer product design

Prevention

CECs
Current Pesticides

2018

Clean Bay

Consumer Products
Benign by Design

2028
Vision

Green CHEMISTRY