

Board Workshop

Central Valley Pyrethroid Pesticides Total Maximum Daily Load and Basin Plan Amendment



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Why are we here?

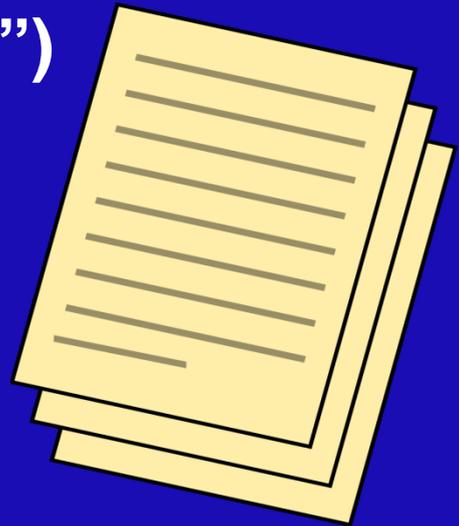
- Pyrethroid pesticides are impairing waters
- Staff developing Basin Plan amendment to control pyrethroid discharges
- Complex technical and regulatory issues

Board Workshops

- Feb: Nine regulatory alternatives
- June: Monitoring need and challenges
- **Today:** Present draft regulatory approach
 - **Seek input from Board and stakeholders before developing draft Basin Plan language**

Outline

- **Pyrethroids background**
- **Draft regulatory approach (“strawman document”)**
- **Public comments**
- **Discussion**



Pyrethroids

Commonly used pesticides

- Urban/residential uses
- Agricultural uses



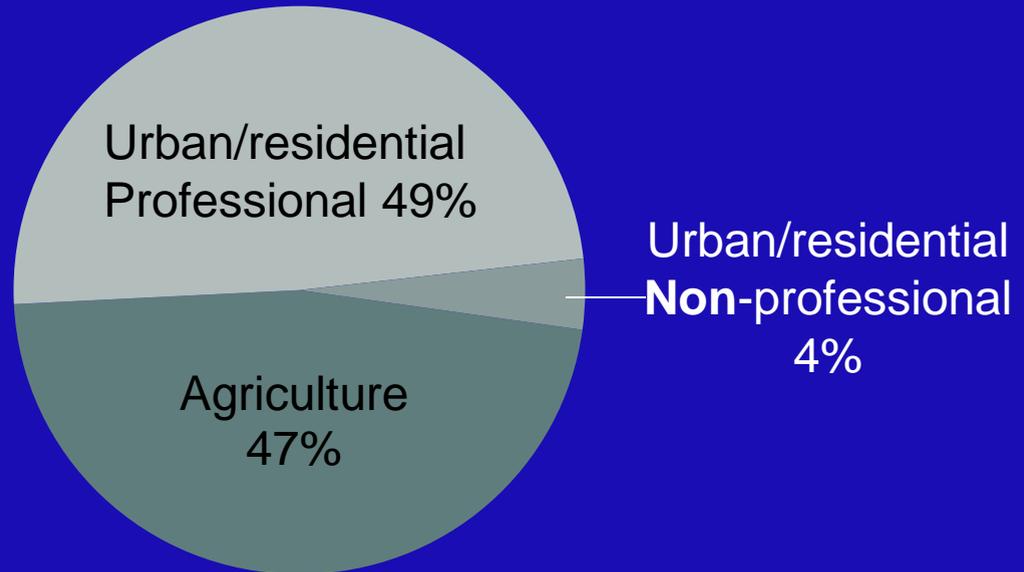
Sources to surface waters

- Urban stormwater runoff
- Agricultural runoff
- Municipal wastewater effluent

Pyrethroids

Pyrethroid Use (lbs)

Sacramento-San Joaquin Basins 2002-2011

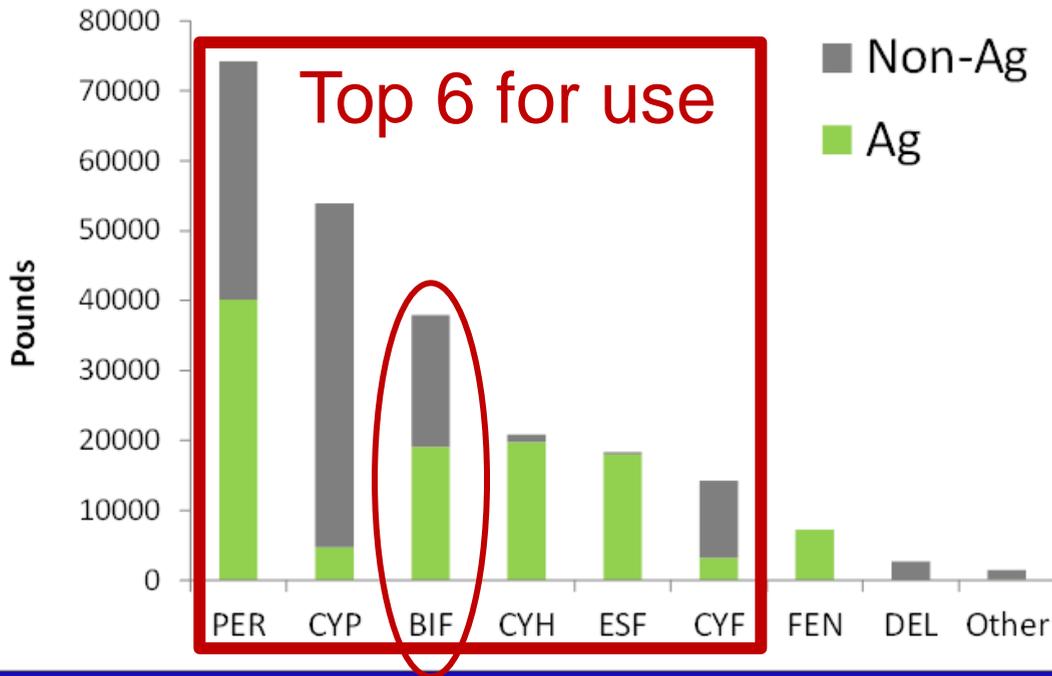


Pyrethroids

Prio

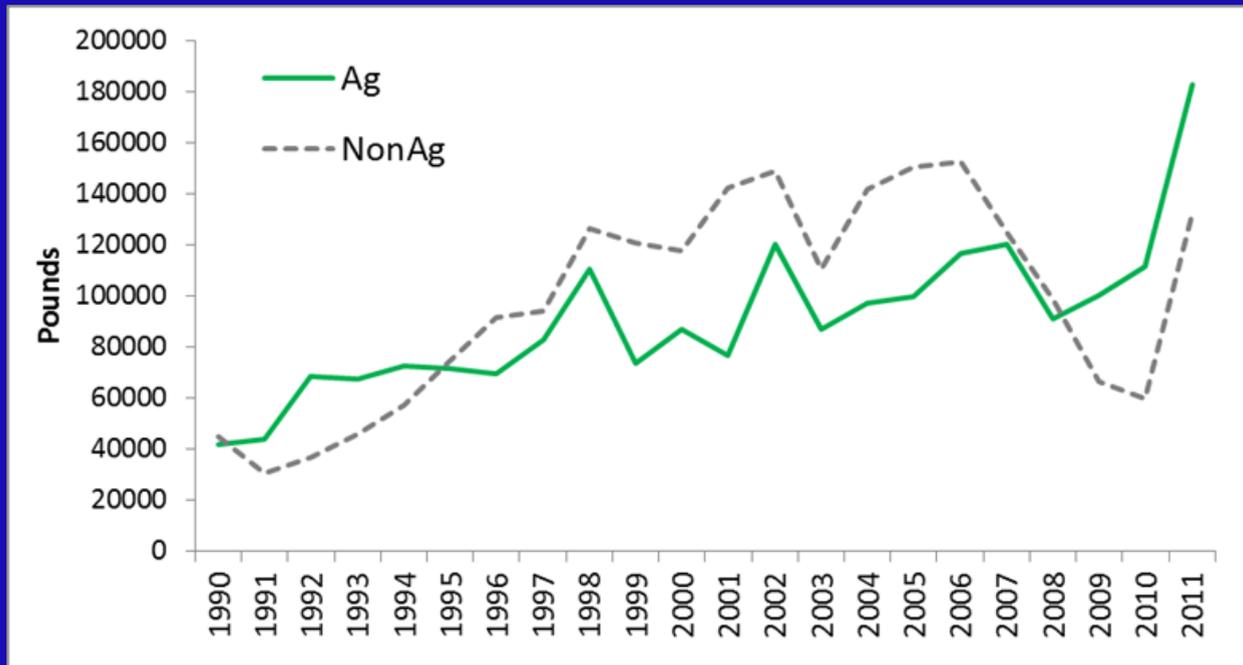
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Pyrethroid Use (lbs) Sacramento-San Joaquin Basins 2002-2011



Pyrethroids

Ag and Non-Ag Use Trends Sacramento-San Joaquin Basins



Concentrations

- CEDEN data 2003-2013
- **Sediment** detections more frequent than **water** sample detections
- Detections and exceedances more frequent in **urban** waters than **ag** waters
- Bifenthrin has highest detection frequencies and exceedances in all cases
 - More persistent than other pyrethroids

Management Practices

- Agricultural dischargers
 - Source control
 - Improved pest management
 - Practices to reduce drift and overspray
 - Practices that reduce or slow runoff and reduce or capture sediments in runoff
- Urban dischargers
 - Education and outreach
 - Reducing municipalities use of pesticides
 - Coordination with regulators of pesticide use

303(d) Listings



- **303(d) listings**
 - 14 water bodies
 - 9 urban
 - 5 agricultural
- **Aquatic life beneficial uses impaired**
 - Sediment toxicity
 - Water column exceedances

Implementation

- Need: Ecological concerns & regulatory requirement to address impairments
- Challenges
 - Limited data set
 - Significant reductions likely needed
 - Cost for all dischargers
 - Limited info on treatments that attain levels
 - Possible unintended consequences
 - Municipal wastewater (POTWs)

Implementation Goals

- Address current impairments and framework to address future pyrethroid issues
- Increase database
 - Occurrence, bioavailability, BMP effectiveness
- Build on existing efforts
 - Engage agencies with regulatory authority – DPR, EPA
 - STORMS framework for MS4s
- Compatible with other regulatory programs
 - Avoid unintended regulatory consequences
 - Reasonable time for attainment

Draft Regulatory Approach



Summary

- 5 main regulatory components
 - Monitoring & data gathering (**all dischargers**)
 - Conditional prohibition (**all dischargers**)
 - Phased TMDLs – 9 water bodies (**MS4s**)
 - Guidelines to support Category 4b demonstrations – 5 water bodies (**ag dischargers**)
 - Coordination with DPR and USEPA

Phased Approach

Year

0-2

- Baseline monitoring

2

- Develop management plans

3

- Prohibition in effect
- Implement management plans

10

- ILRP trigger achievement date

15

- Board re-visits TMDL, prohibition, and control plan

20

- TMDL achievement date

Monitoring

- Baseline monitoring (0-2 years)
 - Determine if discharges exceed prohibition trigger
- Trend monitoring (ongoing)
 - Trends in concentrations/toxicity
 - Effectiveness of BMPs

Monitoring

- Monitoring designed to meet goals
- Required through 13267 orders, permits, or prohibition conditions
- Monitoring may be collaborative & representative
- Recommended monitoring
 - Chemistry and toxicity
 - Water and sediment
 - Particulate and dissolved organic carbon



Monitoring

– Potential monitoring goals

Determine whether:

- Discharges and/or receiving waters are exceeding pyrethroid prohibition triggers
- Implementation of management practices are sufficient to meet the pyrethroid prohibition triggers
- Bed sediments are attaining the narrative toxicity objective as it relates to pyrethroids

Conditional Prohibition

- Prohibition in effect at year 3
- If discharges of pyrethroids exceed the prohibition **trigger**:
 - Discharge is prohibited, or
 - Dischargers must implement management practices to reduce pyrethroid discharges to their best effort
- Management practices must be identified in a management plan

Prohibition Triggers

UCD Criteria	1 st percentile		5 th percentile		PWG
	Acute (ng/L)	Chronic (ng/L)	Acute (ng/L)	Chronic (ng/L)	
Bifenthrin	0.06	0.01	0.8	0.1	1.3
Cyfluthrin	0.07	0.01	0.8	0.2	1.5
Cypermethrin	0.04	0.01	1	0.3	3.0
Esfenvalerate	0.2	0.03	2	0.3	2.3
Lambda-cyhalothrin	0.03	0.01	0.7	0.3	0.8
Permethrin	--	--	6	1	19

Prohibition Triggers

- Bioavailability
 - Compare dissolved concentration to trigger
 - Calculate dissolved concentration via an equation
 - Use DOC and POC
- Additive toxicity
 - Additive toxicity accounted for with additivity formula
 - Sum of additivity formula used to determine if trigger is exceeded

Conditional Prohibition

- NPDES – MS4s
 - Triggers apply to discharges
 - Management plans would be implemented through MS4 program
 - Storm Water Management Program (SWMP)
 - Implementation could be through regional/statewide program

Conditional Prohibition

- NPDES – POTWs
 - Triggers apply to discharges
 - Management plans would be implemented through NPDES wastewater program
 - e.g., Pollution Prevention Plans

Conditional Prohibition

- Agricultural dischargers
 - Receiving waters would be monitored because non-point source
 - Management plans would be implemented in all watersheds represented by monitoring station if trigger exceeded
 - Management plans can be part of existing programs (e.g., ILRP, dairies, etc.)

Phased TMDLs



- Apply to 9 **urban** 303(d)-listed waterbodies
 - Sacramento and Roseville areas
 - Only sources are MS4s

Phased TMDLs

- Numeric targets
 - UC Davis water quality criteria
 - Bioavailability & additive toxicity
 - Sediment toxicity
 - 10-d toxicity test with *Hyalella azteca*
- Wasteload allocations
 - Concentration-based for water column
 - Equal to numeric targets

Phased TMDLs

- Implementation
 - WQBELs required in the form of BMPs
 - Can be conducted by MS4 or through regional/statewide programs
 - e.g., STORMS, CASQA
 - Coordination with DPR required
- 15 years: Board will re-visit
- 20 years to achieve targets

Category 4b Guidelines

- Category 4b of Integrated Report
 - Pollution controls in place that will achieve standards in reasonable time
 - e.g., ILRP
 - TMDL not required
- May apply for 303(d)-listed waters in agricultural areas
 - 5 waterbody segments currently listed for pyrethroids



Category 4b Guidelines

- Numeric triggers required
 - UC Davis water quality criteria
 - Bioavailability & additive toxicity
 - Sediment toxicity
 - 10-d toxicity test with *Hyalella azteca*
 - Triggers established in ILRP monitoring and reporting program or Basin Plan or WDRs

Category 4b Guidelines

- Implementation of management practices through existing programs (e.g., ILRP, dairies, etc.)
- 10 years to achieve triggers
 - Same as WDRs for irrigated ag
- Subject to EPA approval
 - If not approved, a TMDL is required

Coordination with Agencies

- For urban dischargers to reduce pyrethroids below triggers, actions by DPR and USEPA may be needed
- Commitment for Board to coordinate with DPR and USEPA
- Basin Plan amendment would include:
 - Recommendations to the agencies from the Board
 - Encouragement for agencies and dischargers to coordinate

Phased Water Quality Objective

- Re-opener after 15 years
 - Determine if appropriate to adopt pyrethroid water quality objectives
- Assess data collected
 - Data from paired sampling of water column chemistry and toxicity used to validate:
 - Bioavailability assumptions
 - Use of UC Davis 5th percentile values
 - Economics/costs of implementation

Phased Approach

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Conclusions

- Approach meets overall goal
 - Meets identified implementation needs
- Compatible with other programs and plans (ILRP, STORMS)
- Avoids pitfalls of traditional approach
- Some uncertainty
- Requires follow up

Project Timeline

Milestone	Estimated Date
CEQA scoping meeting	Oct 2012
Stakeholder meetings	Sept 2014-Jun 2016
Board workshop	Feb 2016
Board info item	Jun 2016
Board workshop	Aug 2016
Release draft staff report	Oct 2016
Board hearing – hear comments	Dec 2016
Board hearing – consider adoption	Feb 2017