CEQA Scoping Meeting

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

Outline

- **Regulatory Background**
- **Project Schedule**
- **Pyrethroids Background**
- **Project Proposal**
- **Project Alternatives**
- **CEQA Scoping Comments**

California Water Boards

- Nine Regional Water Boards under State Water Board
- Duty to protect water quality
  - Porter-Cologne
  - Clean Water Act
- Water Quality Control Plans (Basin Plans)
  - Water quality standards

Legal Requirements

- **Clean Water Act**
  - Requires states to develop water quality standards
  - §303(d) requires that impaired segments are identified & addressed by developing a TMDL
- **Porter-Cologne** requires the Water Boards to develop:
  - water quality objectives for the protection of surface water
  - a program of implementation to achieve objectives

303(d) List

- Clean Water Act requirement
- California Listing Policy
- 303(d) list of impaired water bodies
  - Do not meet water quality standards
  - Requires Regional Board, State Board & USEPA approval
  - TMDL required

TMDLs

- Determine loading capacities
- Assign loading capacity allocations among sources
- Program of Implementation
  - Monitoring and reporting requirements

Basin Plans

- Required by Porter-Cologne & CWA
- Chapters
  1. Basin Description
  2. Existing and Potential Beneficial Uses
  3. Water Quality Objectives
  4. Implementation
  5. Surveillance and Monitoring

Basin Planning

- Basin Plan Amendments
  - Changes in regulations
  - Approval by Regional & State Boards, Office of Administrative Law, & USEPA
- Public Process
  - Meetings, workshops, Board hearings
  - Response to comments received

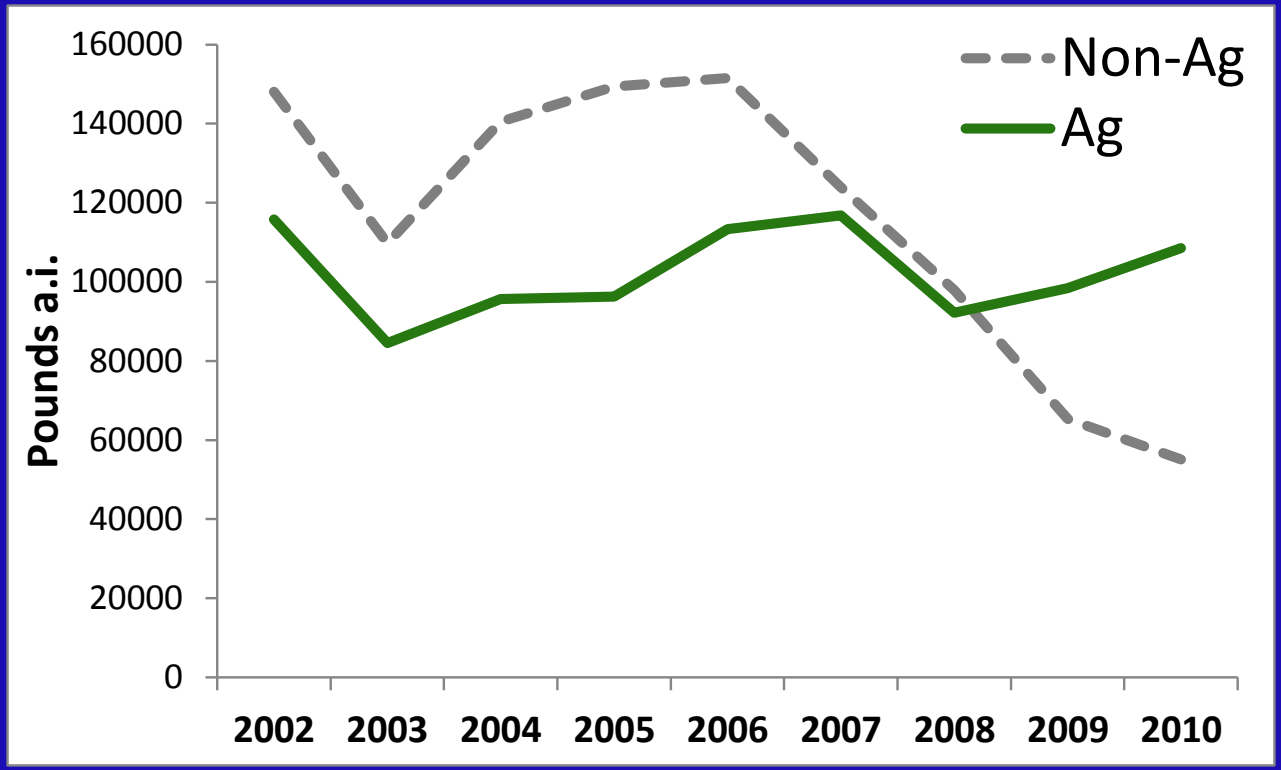
Project Schedule

Milestone	Estimated Date
CEQA Scoping Meeting	**October 2012**
Draft Staff Report for Peer Review	Late 2013
Draft Staff Report for Public Comment	Mid 2014
Stakeholders Workshop(s)	Late 2014
Regional Board Hearing	Early 2015
State Board Approval	Mid 2015
Office of Administrative Law Approval	Late 2015
USEPA Approval	Early 2016

Pyrethroids Background

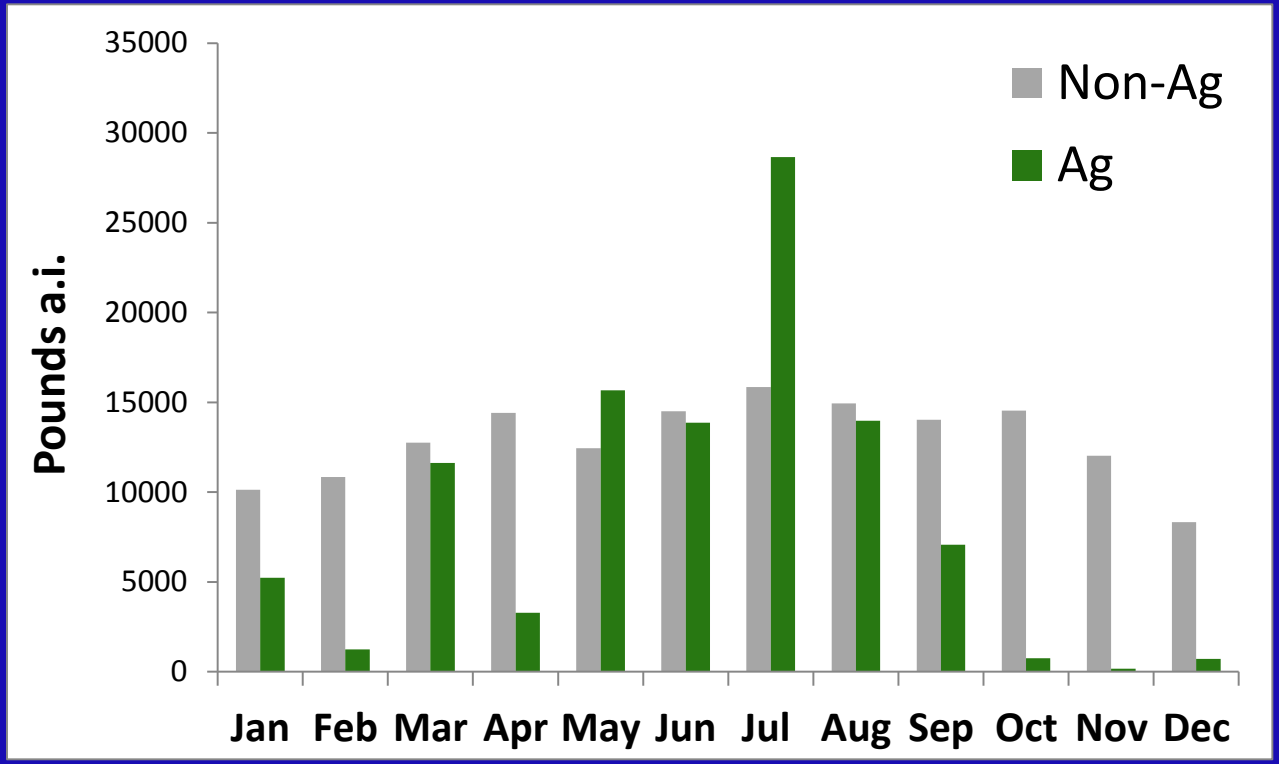
- Class of insecticides (25 a.i. registered in CA)
- Broad spectrum control of invertebrates
- Agricultural & urban uses
- Environmental fate:
  - Low water solubility
  - High tendency for sorption to sediments and particles
  - Moderate persistence ($t_{1/2}$: weeks-months)
- High toxicity to aquatic & benthic invertebrates & fish

Pyrethroids Background



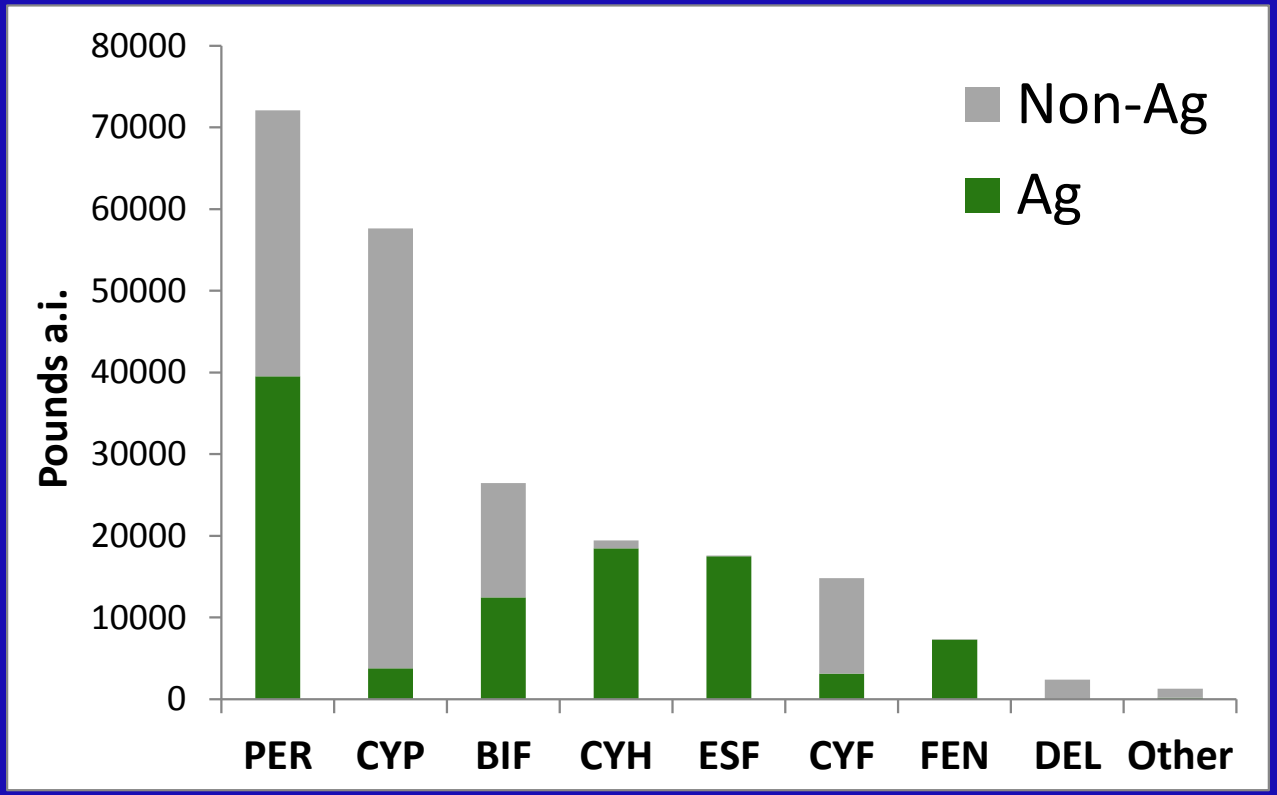
Annual ag & non-ag pyrethroid use in SacR & SJR basins (2002-2010; DPR PUR)

Pyrethroids Background



Average annual pyrethroid use in SacR & SJR basins (2002-2010; DPR PUR)

Pyrethroids Background



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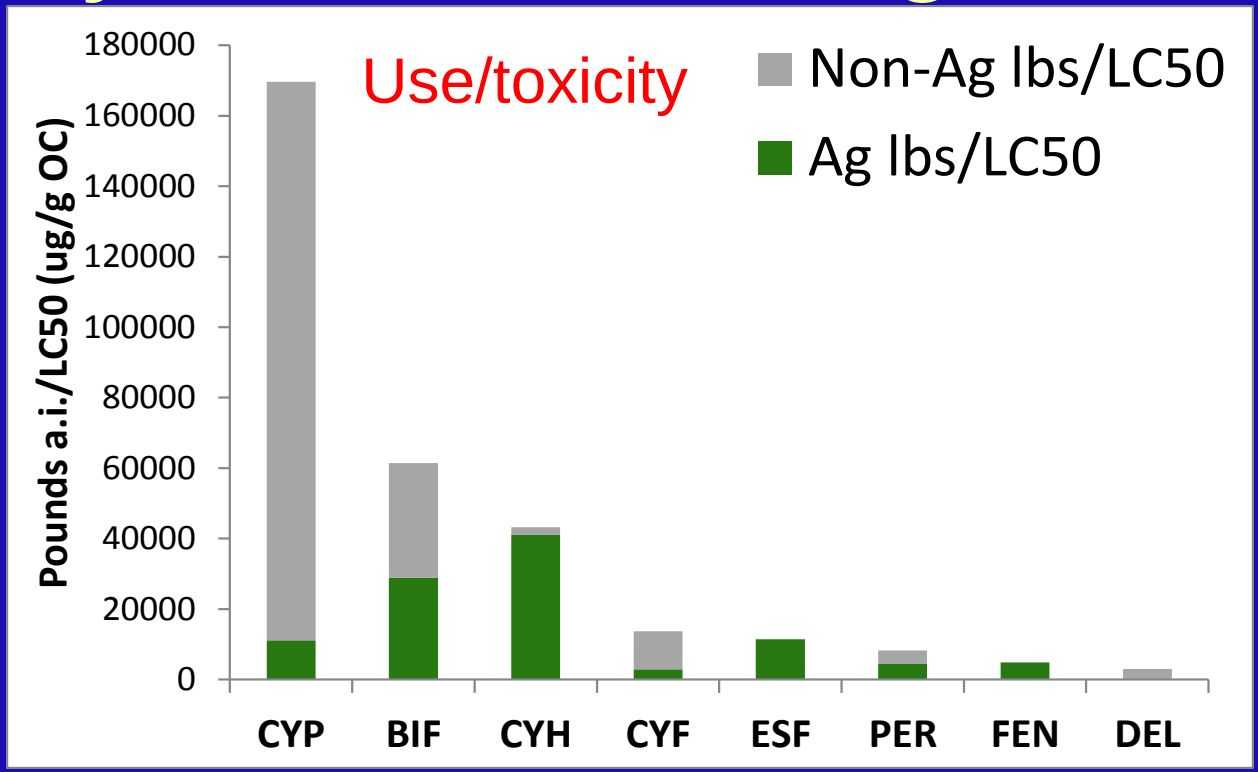
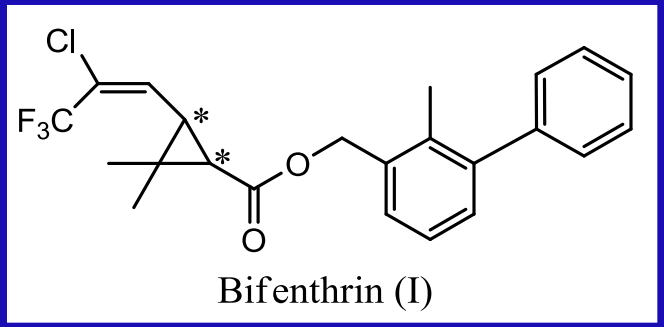
Pyrethroids Background



Average annual pyrethroid use (lbs.) divided by 10-d sediment *H. azteca* LC_{50}

Pyrethroids Background

- **Priority pyrethroids**
  - Bifenthrin
  - Cyfluthrins
  - Cyhalothrins
  - Cypermethrins
  - Esfenvalerate
  - Permethrin
- **Additive toxicity**



Bifenthrin (I)

Project Proposal

Develop a Basin Plan amendment for pyrethroids to establish:

1. Water quality objectives
   - Water column
   - Sediment
2. TMDLs for 303(d) listings
3. Implementation program

Project Alternatives

1. Geographic Scope
2. Beneficial Uses
3. Water Quality Objectives
4. Implementation

Geographic Scope

- Sacramento and San Joaquin River Basins
  - Or a subset of these water bodies based on beneficial use or other factors

Geographic Scope

TMDLs are required for:

- Water bodies not meeting standards
  - 303(d) listings

Geographic Scope

303(d) Listings

Sacramento River Basin

Sacramento area

- Arcade Creek
- Chicken Ranch Slough
- Strong Ranch Slough
- Morrison Creek
- Elder Creek

Roseville area

- Curry Creek
- Kaseberg Creek
- Pleasant Grove Creek
- Pleasant Grove Creek, South Branch

Geographic Scope

303(d) Listings

San Joaquin River Basin

- **Del Puerto Creek** (bif & sed tox)
- **Hospital Creek**
- **Ingram Creek** (Hospital Creek to Hwy 33)
- **Ingram Creek** (confluence with San Joaquin River to Hospital Creek)
- **Mustang Creek** (cis-permethrin)

Beneficial Uses

- WARM and/or COLD uses appear to be most sensitive to pyrethroids
- WARM/COLD are widely designated in project area
- Intend to link WQOs to BUs

Water Quality Objectives

Limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or prevention of nuisance within a specific area

- Narrative or numeric

Water Quality Objectives

Narrative objectives in Basin Plan:

- No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses.
- Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses.
- Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies.
- Pesticide concentrations shall not exceed the lowest levels technically and economically achievable.
- All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

Water Quality Objectives

- Aqueous concentrations
- Sediment concentrations
- Both aqueous & sediment concentrations

Water Quality Objectives

Alternatives

Aqueous concentrations

→ Cumulative toxicity

1. No change to narrative objectives
2. No pyrethroids in water
3. UC Davis criteria
4. CDFG criteria (US EPA method)

Water Quality Objectives

Aqueous concentrations

1. No change to narrative objectives

Numeric evaluation guidelines used to interpret narrative objectives

– change as new info becomes available

- Aqueous concentrations
- Toxicity bioassays

Water Quality Objectives

Aqueous concentrations

2. No pyrethroids in surface waters

Detectable concentrations of pyrethroids in the water column would not be allowed

Water Quality Objectives

Aqueous concentrations

3. UC Davis criteria

- Acute and chronic criteria for 5 pyrethroids
  - Additive
- Peer reviewed
- Scientific methodology uses high quality toxicity data for multiple species
- Derived to protect aquatic life

Water Quality Objectives

Aqueous concentrations

4. CDFG criteria (US EPA method)

- Acute criteria for permethrin & cypermethrin
- Peer reviewed
- Scientific methodology uses high quality toxicity data for multiple species
- Derived to protect aquatic life

Water Quality Objectives

Aqueous concentrations

Cumulative Toxic Units

$$\Sigma TU = \frac{C_{bif}}{O_{bif}} + \frac{C_{cyf}}{O_{cyf}} + \frac{C_{cyh}}{O_{cyh}} + \frac{C_{cyp}}{O_{cyp}} + \frac{C_{esf}}{O_{esf}} + \frac{C_{per}}{O_{per}}$$

Exceedance: $\Sigma\, TU > 1$

Compliance: $\Sigma\, TU \leq 1$

Water Quality Objectives

Table 1 Aqueous concentrations (ng/L)

Alternative	1 2010 303(d)	2 No pyr.	3 UCD Crit. Acute	 Chronic	4 CDFG Acute Crit.
Bifenthrin	**0.93**	No detectable pyrethroids	**4**	**0.6**	--
Cyfluthrins	--		**0.3**	**0.05**	--
Cyhalothrins	--		**1**	**0.5**	--
Cypermethrins	**2**		**1**	**0.2**	**2**
Esfenvalerate	--		In development		--
Permethrin	**30**		**10**	**2**	**30**

Water Quality Objectives

Table 1 Aqueous concentrations (ng/L)

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Cyhalothrins	--		**1**	**0.5**	--
Cypermethrins	**2**		**1**	**0.2**	**2**
Esfenvalerate	--		In development		--
Permethrin	**30**		**10**	**2**	**30**

Water Quality Objectives

Alternatives

Sediment concentrations

→ Cumulative toxicity

1. No change to narrative objectives
2. No pyrethroids in sediment
3. No-effect level
   - MATCs or sediment quality criteria

Water Quality Objectives

Sediment concentrations

1. No change to narrative objectives

Numeric evaluation guidelines used to interpret narrative objectives

– change as new info becomes available

- Sediment concentrations
- Toxicity bioassays

Water Quality Objectives

Sediment concentrations

2. No pyrethroids in sediment

Detectable concentrations of pyrethroids in sediment would not be allowed

Water Quality Objectives

Sediment concentrations

3. No-effect level (MATC or SQC)

Approximations of no-effect levels

- **MATC** for most sensitive species
  - Geomean(NOEC, LOEC) from single species tox tests
  - Data currently available
- **Criteria** protect all species in an ecosystem
  - In development by UC Davis (2013-2014)

Water Quality Objectives

Sediment concentrations

Cumulative Toxic Units

$$\Sigma TU = \frac{C_{bif}}{O_{bif}} + \frac{C_{cyf}}{O_{cyf}} + \frac{C_{cyh}}{O_{cyh}} + \frac{C_{cyp}}{O_{cyp}} + \frac{C_{esf}}{O_{esf}} + \frac{C_{per}}{O_{per}}$$

Exceedance: $\Sigma\, TU > 1$

Compliance: $\Sigma\, TU \leq 1$

Water Quality Objectives

Table 2 Sediment concentrations (μg/g OC)

Alternative	1 2010 303(d) (LC_{50}s)	2 No pyr.	3 No-effect level
Bifenthrin	0.52	No detectable pyrethroids	Lowest **MATC** or UCD **SQC** (in development 2013-14)
Cyfluthrins	1.08		
Cyhalothrins	0.45		
Cypermethrins	0.38		
Esfenvalerate	1.54		
Permethrin	10.83		

Water Quality Objectives & TMDLs

TMDL allocations will be consistent with the numeric water quality objective(s)

Implementation

Porter-Cologne requires an implementation program for achieving water quality standards

- Actions necessary to achieve objectives
- Time schedule for actions
- Surveillance to be undertaken to determine compliance

Implementation

Control of discharges for WQOs and TMDLs:

- Programs
  - ILRP, waste water, storm water
- Regulatory controls
  - NPDES, WDRs, waivers, prohibitions
- Coordination with DPR, CACs, EPA

CEQA Scoping
Environmental Impacts to Consider

- Aesthetics
- Agriculture & forest resources
- Air Quality
- Biological resources
- Cultural resources
- Geology & soils
- Greenhouse gas emissions
- Hazards & hazardous materials
- Hydrology & water quality
- Land use & planning
- Mineral resources
- Noise
- Population & housing
- Public services
- Recreation
- Transportation / traffic
- Utilities & service systems

Current Status & Next Steps

- Draft staff report under development
- E-mail updates sign up:

  http://www.waterboards.ca.gov/resources/email_subscriptions/reg5_subscribe.shtml

- Project website

  Central Valley Pyrethroid Pesticides TMDL and Basin Plan Amendment

Comment Submission

Due November 13, 2012

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