

Pyrethroids Basin Plan Amendment Strawman Regulatory Approach

JULY 2016 DRAFT FRAMEWORK FOR DISCUSSION ONLY

Phased Approach using a Conditional Prohibition, TMDLs, and guidelines to support Category 4b Demonstrations to Address Current 303(d) listings

This document provides an overview of a potential regulatory approach for a pyrethroids basin plan amendment. This overview is written in outline form meant to provide a basis for discussion about the potential regulatory approach. Draft Basin Plan amendment language will be written following discussion on this strawman document at the August 2016 Board Meeting. The potential control program would regulate pyrethroid discharges from the identified sources of municipal separate storm sewer systems (MS4s), agriculture, and publicly-owned treatment works (POTWs).

Summary of overall approach

1. Phased approach requiring the implementation of reasonable management practices, coordination with pesticide regulators, and data gathering required in the near term to inform the Board on possible future actions.
 - a. Re-visitation of requirements and targets before the TMDL compliance date
 - b. Commitment by the board to consider adoption of basin-wide water quality objectives in the future
2. Main components of this approach:
 - a. Monitoring and data gathering to inform the Board's future actions
 - b. A **conditional prohibition** of pyrethroid discharges to all waterbodies with aquatic life beneficial uses in the Sacramento River and San Joaquin River basins. Discharge above concentration triggers would be prohibited unless management practices (see potential practices below) to reduce discharges of pyrethroids are being implemented.
 - c. **Phased TMDLs** to address 9 impairments in urban waterbodies (Sacramento & Roseville). Under the phased approach, the TMDL would be re-visited before the compliance deadline.
 - d. Guidelines and triggers that would support Integrated Report **Category 4b demonstrations** that would meet the EPA expectations for demonstrating that for waterbodies in which existing regulatory requirements are expected to result in attainment of pyrethroid concentrations that are no longer exceeding water quality standards, TMDLs are not required.
 - e. Coordination with Department of Pesticide Regulation (DPR) and USEPA Office of Pesticide Programs

A. Monitoring requirements

1. Monitoring needs to be designed to provide information necessary to meet certain goals (not specific monitoring locations or frequencies). (Similar to previous diazinon and chlorpyrifos amendments)
2. Put into the Basin Plan as instructions for a 13267 order and/or permit requirements and/or prohibition conditions
3. Baseline monitoring to determine whether discharges exceed the prohibition trigger
 - a. Baseline monitoring would be performed within the first two years after the amendment effective date
4. Trend monitoring to track trends in pyrethroid concentrations and to determine effectiveness of management practices
 - a. Trend monitoring would continue unless it can be demonstrated that pyrethroids in the discharge no longer cause or contribute to exceedances of water quality objectives in receiving waters
5. Baseline and trend monitoring may be representative – collective monitoring is encouraged. The Central Valley Water Board may approve participation in collective monitoring programs to meet all or a portion of monitoring requirements.
6. Monitoring would include water column chemistry and sediment toxicity and/or water column toxicity, depending on the type of discharge.

B. Conditional Prohibition

1. Within three years of the effective date of the Basin Plan Amendment, discharges of pyrethroids above the prohibition trigger would be prohibited unless dischargers implement management practices to reduce discharges of pyrethroids.
 - a. Management practices must be identified in an approved management plan that is addressing pyrethroids.
 - b. Agricultural dischargers
 - i. For dischargers utilizing representative monitoring, if the prohibition trigger is exceeded in a receiving water (because it is a non-point source), dischargers in the areas represented by that receiving water monitoring must implement an Executive Officer-approved management plan for pyrethroids.
 - ii. Management plans can be part of management plans developed for the Irrigated Lands Regulatory Program (ILRP), dairy order, or other water board regulatory programs.
 - c. NPDES dischargers – POTWs
 - i. If discharge exceeds prohibition trigger, dischargers must implement management practices (see list on p. 6) to reduce pyrethroid discharges
 - ii. Management plans are implemented through NPDES permits, possibly as Pollution Prevention Plans

- d. NPDES dischargers - MS4s
 - i. If discharge exceeds prohibition trigger, dischargers must implement management practices (see list on p. 6) to reduce pyrethroid discharges
 - ii. Implementation can be conducted by MS4s specifically and/or through regional or statewide programs addressing urban pesticide water pollution, such as the Statewide Framework for Urban Pesticide Reduction that is being developed as part of the Strategy to Optimize Resource management of Stormwater (STORMs), and/or through such organizations as California Stormwater Quality Association
 - iii. Management plans are implemented through MS4 permits with management practices identified in Storm Water Management Programs (SWMPs)
2. The conditional prohibition applies to dischargers to all waterbodies with aquatic life beneficial uses (WARM/COLD) in the Sacramento River and San Joaquin River basins

C. Phased Total Maximum Daily Loads (TMDLs)

1. TMDLs would apply to 9 303(d)-listed waterbody segments in Sacramento and Roseville urban areas
 - a. In these waterbodies, the only sources are point sources (MS4s/urban runoff)
2. Numeric targets for receiving waters
 - a. UC-Davis water quality criteria with bioavailability and additivity (see E. below)
 - b. Sediment toxicity (based on 10-d toxicity test with *Hyalella azteca*)
3. Wasteload allocations are concentration-based (no load allocations because no nonpoint sources) and are equal to the numeric targets.
4. Implementation
 - a. Water Quality-Based Effluent Limitations (WQBELs) will be required in the form of best management practices (BMPs)
 - b. Implementation can be conducted by MS4s specifically and/or through regional or statewide programs addressing urban pesticide water pollution, such as the Statewide Framework for Urban Pesticide Reduction that is being developed as part of the Strategy to Optimize Resource management of Stormwater (STORMs), and/or through such organizations as California Stormwater Quality Association
 - c. TMDL dischargers would be required to coordinate with DPR on urban pesticide issues in addition to other BMPs
5. Timeline for achieving the numeric targets: 20 years

D. Guidelines and triggers to support Category 4b demonstrations

1. Category 4b can be used in some cases as an alternative to the establishment of TMDLs. Category 4b is a classification of the of the Clean Water Act section 303(d)/305(b) Integrated Report that refers to water bodies that are not required

- to be included on the section 303(d) list of impaired waters if pollution controls other than a TMDL are in place that will achieve water quality standards in a reasonable time period.
2. The approach may apply when the pyrethroid source to an impaired waterbody is irrigated agricultural runoff and dischargers are covered by existing regulatory requirements (e.g. Irrigated Lands Regulatory Program, Dairy Program)
 - a. Requires demonstration to USEPA
 - b. Basin Plan guidelines, such as establishment of water quality triggers, and other implementation and monitoring requirements could support the Category 4b demonstrations as TMDL alternatives.
 3. The approach could be applied to 5 impaired waterbodies in San Joaquin Valley agricultural area, as well as potentially other ag-impaired waterbodies
 4. Numeric trigger
 - a. In order to qualify for Category 4b, a numeric trigger is required
 - b. Triggers
 - i. UC-Davis water quality criteria with bioavailability and additivity (see E. below)
 - ii. Sediment toxicity (based on 10-d toxicity test with *Hyalella azteca*)
 - c. Trigger would likely be established in the ILRP monitoring and reporting program, but could be put in the Basin Plan or in WDR's
 5. Implementation of management practices through the ILRP
 6. Timeline to achieve triggers: 10 years, as consistent with WDRs for irrigated ag
 7. Subject to EPA approval
 - a. Not including waterbody segments as impaired by pyrethroids on the 303(d) list as needing a TMDL is subject to EPA approval when they approve changes to the 303(d) list.
 - b. The numeric triggers and implementation requirements would need to provide adequate assurance that the triggers will be achieved for EPA to approve moving listings to category 4b – this is not guaranteed
 - c. If EPA does not approve the category 4b demonstration, development of a TMDL would still be required.

E. Coordination with Department of Pesticide Regulation (DPR) and USEPA Office of Pesticide Programs (OPP)

1. Recognition that in order for urban dischargers to reduce pyrethroids in discharges to levels below the trigger values, mitigation or other actions by DPR and USEPA Office of Pesticide Programs may be needed.
2. Commitment for the Central Valley Water Board to coordinate with DPR and USEPA Office of Pesticide Programs.
3. The Basin Plan amendment will include:
 - a. Recommendations to these agencies from the Central Valley Water Board.
 - b. Encouragement for these agencies and dischargers to coordinate.

F. Water quality triggers

1. These values would be used as prohibition triggers, TMDL numeric targets, and numeric triggers for category 4b waterbodies
2. Trigger values are from UC Davis water quality criteria for six pyrethroids
 - a. 5th percentile criteria

Pyrethroid	Acute Criteria (ng/L)	Chronic Criteria (ng/L)
Bifenthrin	0.8	0.1
Cyfluthrin	0.8	0.2
Cypermethrin	1	0.3
Esfenvalerate	2	0.3
Lambda-cyhalothrin	0.7	0.3
Permethrin	6	1

- b. Bioavailability would be accounted for by comparing the dissolved concentration of pyrethroids in a sample to the trigger.
 - i. The dissolved concentrations can be estimated via an equation using partition coefficients and the dissolved organic carbon (DOC) and particulate organic carbon (POC) concentrations for the sample.
 - ii. Partition coefficients can be site-specific values or default values provided in Basin Plan amendment.
- c. Additivity of 6 pyrethroids
 - i. Additive toxicity of the six pyrethroids would be accounted for by using an additivity formula. The sum of the additivity formula would be used to determine if the triggers are exceeded.

G. Phased water quality objective adoption

1. Reopener after 15 years to assess data collected and determine if appropriate to adopt pyrethroid water quality objectives
2. Data from paired sampling of water column chemistry and toxicity would be used to validate and/or adjust bioavailability and additivity assumptions

Potential management practices for MS4 and/or POTW dischargers:

Education and outreach activities

1. Targeted outreach programs to encourage communities within a discharger's jurisdiction to reduce their reliance on pesticides that threaten water quality, focusing efforts on those most likely to use pesticides that threaten water quality;
2. Work with DPR, County Agricultural Commissioners, and the University of California Statewide Integrated Pest Management Program to coordinate education and outreach programs to minimize pesticide discharges.
3. Encourage public and private landscape irrigation management that minimizes pesticide runoff;
4. Encourage public and private pest management practices that minimize pesticides from entering sewer systems and coordinate education and outreach programs to minimize pesticide discharges with the DPR, County Agricultural Commissioners, the University of California Statewide Integrated Pest Management Program, or other entities as appropriate;
5. Facilitate appropriate pesticide waste disposal, and conduct education and outreach to promote appropriate disposal.

Pesticide pollution prevention activities

1. Reduce reliance on pyrethroids and other pesticides that threaten water quality by adopting and implementing policies or procedures that minimize the use of pesticides that threaten water quality in the discharger's operations and on the discharger's property;
2. Track progress by periodically reviewing the discharger's pesticide use and pesticide use by its hired contractors;
3. Train employees to use integrated pest management techniques and require that they adhere to integrated pest management practices to the maximum extent practicable;
4. Require contractors to practice integrated pest management;
5. Coordinate with DPR and USEPA OPP to reduce pesticide impacts on water quality from pesticide applications. This may include tracking USEPA and DPR pesticide evaluation and registration activities as they relate to surface water quality, encouraging these agencies to accommodate water quality concerns within their pesticide registration processes, assembling and submitting available information (such as monitoring data) to USEPA and DPR during public comment periods as needed to assist in their pesticide evaluation and registration activities. This best management practice would be implemented most effectively through a cooperative, regional or statewide approach such as through organizations such as California Stormwater Quality Association (CASQA) that coordinate with DPR and other organizations taking actions to protect water quality from the use of pesticides in the urban environment.
6. Report violations of pesticide regulations (e.g., illegal handling) to County Agricultural Commissioners.