

ITEM: 28

SUBJECT: Proposed Basin Plan Amendment and TMDL for the Control of Pyrethroid Pesticide Discharges – *Board Hearing to Receive Oral Comments*

BOARD ACTION: No formal action. Staff will give a presentation, and the Board will receive comments from interested parties. A hearing to consider adoption of the proposed Basin Plan Amendment is scheduled for June 2017.

BACKGROUND: Central Valley Water Board staff has developed a proposed amendment to the Water Quality Control Plan for the Sacramento-San Joaquin River Basins (Basin Plan) to establish a control program for pyrethroid pesticides that addresses water bodies that are listed as impaired by pyrethroid pesticides on the Clean Water Act Section 303(d) list, as well as potential future impairments.

Pyrethroids are commonly used pesticides and have been found at toxic concentrations in water and sediment in both urban and agricultural areas within the Central Valley region. The main sources of pyrethroids to surface waters are urban runoff and agricultural runoff. Wastewater treatment plant effluents are known to contain pyrethroids, but typically at levels much lower than found in urban or agricultural runoff. Wastewater treatment plants do not discharge to any of the waters currently listed as impaired by pyrethroids.

There are currently 14 water bodies that are impaired (listed on the 303(d) list of waters not meeting water quality standards) due to pyrethroid pesticide concentrations in sediment and/or water. Pyrethroid pesticides have also been identified as a potential concern for aquatic life in the Delta. The 2014 Delta Strategic plan included a goal to amend the Basin Plan to include a control program to reduce pyrethroid insecticide concentrations in sediment and water in the Delta to safe levels.

Pyrethroid pesticides are toxic to aquatic organisms at very low concentrations. In some cases the level at which they are toxic is below current analytical detection limits. There is considerable uncertainty in the characterization of the extent of the pyrethroid problem, the potential reductions needed, and the effectiveness of management practices and technology to control pyrethroid discharges. The available data indicate that significant reductions would be needed to attain the proposed concentration goals. One primary concern is the feasibility of meeting the proposed numbers, especially in urban environments since storm water and municipal wastewater dischargers do not have control over the use of pesticides by individuals in their service areas. In these areas, the approach most likely to succeed in attaining adequate pyrethroid reductions would include a combination of dischargers implementing reasonable best management practices and the Board and/or dischargers coordinating with DPR and USEPA's Office of Pesticide Programs to address pesticide uses/products with high potential to impact surface water.

For these reasons, the proposed amendment would establish a phased approach. During the first phase (15 years), the Board would gather data, require the implementation of best management practices to reduce pyrethroid concentrations, and emphasize coordination with pesticide regulators. Based on data gathered during that interim period, the Board may then consider additional Basin Plan amendments such as revisions to the then-existing pyrethroid

control program requirements and TMDLs, additional TMDLs, and/or pyrethroids-specific water quality objectives.

To ensure that water quality improvements will begin even though additional information is still being developed, the proposed amendment includes TMDLs for nine urban water bodies already listed as impaired, “category 4b” demonstrations for five water bodies receiving agricultural discharges (i.e. demonstrations that the Board’s existing regulatory programs adequately address impairments in agricultural water bodies), and a conditional prohibition of discharges that exceed identified triggers (discussed below). The proposed amendment can be implemented through existing Central Valley Water Board regulatory programs.

Because pyrethroids have additive toxic effects, the concentration goals proposed for prohibition triggers and TMDL numeric targets are based on the sum of the concentrations of six individual pyrethroids relative to their individual water quality criteria. The water quality criteria utilized were derived via the University of California Davis method, which utilizes laboratory toxicity data for a range of species to generate a statistical distribution of the concentrations at which toxicity is observed (species sensitivity distribution). The proposed concentration goals are based on the lower 5<sup>th</sup> percentile of the species sensitivity distributions, which is consistent with USEPA guidance. Pyrethroids tend to bind to sediments and organic matter rather than remain dissolved in the water column. When they are bound, their toxicity to aquatic organisms is reduced because they are less bioavailable. The proposed concentration goals are expressed as “freely dissolved” concentrations and include a formula to calculate the freely dissolved concentrations to account for bioavailability.

A number of alternatives were considered and concentration goals based on the 5<sup>th</sup> percentile criteria are recommended, recognizing and considering the need to provide reasonable beneficial use protection (i.e., balance the required level of protection with achievability and economic cost), the significant water quality improvements that will be needed to attain these criteria, uncertainty about potential costs and attainability, potential impacts of alternative pesticides, and the proposed phased regulatory approach which allows the concentration goals to be adjusted if needed.

The proposed pyrethroid Basin Plan amendment has been in development since 2012. During that time, staff has held nine stakeholder meetings at which regulatory approaches, technical issues and preliminary draft Basin Plan amendment language were discussed. The Board also held a February 2016 workshop on potential regulatory options, a June 2016 information item on monitoring needs and challenges associated with pyrethroids, and an August 2016 workshop on the proposed regulatory approach. The proposed amendment was developed based on input from the stakeholder meetings and workshops. The draft proposed Basin Plan amendment and the corresponding Staff Report were released for public review on 25 January. The deadline for written comments is 17 March 2017, after which staff will prepare responses to comments, including any appropriate changes to the proposed amendment and Staff Report. A hearing for the Board to consider adoption of the proposed amendment is scheduled for June 2017. The purpose of this hearing is to receive comments on the proposed amendment.

## ISSUES:

Comments have not been received on this item yet. Issues identified by staff based on previous discussions include:

1. The pyrethroid concentration goals proposed for prohibition triggers and TMDL targets are very low concentrations. There is uncertainty as to the reductions needed, the effectiveness of management practices, and the resulting feasibility of attaining the targets and triggers.
2. Some stakeholders have expressed concern that the proposed concentration goals may be under-protective for a number of reasons, including:
  - a. The 5<sup>th</sup> percentile criteria are at concentrations that are at the threshold of potential toxic effects for the most sensitive species tested, the invertebrate *Hyalella azteca*.
  - b. Other factors such as temperature effects and other pollutants can increase pyrethroid toxicity.
  - c. Calculation of freely dissolved concentrations to account for bioavailability could result in underestimation of toxicity.
3. Some stakeholders have expressed concern that the proposed concentration goals may be over-protective for a number of reasons, including:
  - a. There are a number of conservative assumptions utilized in the UC Davis criteria derivation to account for uncertainty
  - b. The proposed additivity formula could over-estimate toxicity.
  - c. The laboratory populations of *Hyalella azteca*, the most sensitive species used in criteria derivation and toxicity testing, are more sensitive to pyrethroids than wild populations in the Region.
4. Attaining the proposed concentrations will be a significant water quality improvement, requiring significant reductions in discharges in many areas. The costs to the regulated community of implementing practices to control pyrethroids and related monitoring as proposed are estimated in the Staff Report and would be significant
5. State law prohibits local public entities from regulating the sale or use of pesticide products, and thus municipal storm water and wastewater dischargers cannot directly limit the use of pyrethroids within their service area.
6. The proposed regulatory approach is different from the approach used for past pesticide basin plan amendments and TMDLs. These differences are to address issues of uncertainty in attainability of triggers and to avoid potential unintended regulatory consequences, while ensuring data are collected to resolve these uncertainties and practices implemented to move toward water quality improvement.

## RECOMMENDATION

No Board action is required.