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January 14, 2010

Danny McClure
Water Resources Control Engineer
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

SUBJECT: Draft Bifenthrin Criteria Derivation

Dear Mr. McClure:

The Sacramento Regional County Sanitation District (SRCSD) appreciates the opportunity to comment on the *Draft Bifenthrin Criteria Derivation* (draft criteria) developed by the University of California, Davis (UCD). SRCSD owns and operates the Sacramento Regional Wastewater Treatment Plant (SRWTP), and provides wastewater collection, conveyance and treatment services to over 1.3 million residents and thousands of commercial and industrial customers in the Sacramento region. Our mission is to protect human health and the environment by keeping the Sacramento River clean and safe. We take our mission very seriously and work on a daily basis to meet our obligations to protect water quality and beneficial uses in the River and Delta. Our excellent compliance record with our National Pollutant Discharge Elimination System (NPDES) permit speaks to this commitment and performance.

SRCSD has concerns with how the draft criterion was derived, even though the criteria were derived in agreement with risk assessment practices for developing toxicity screening values. Additionally, our primary concern with the overly protective draft criteria directly relates to our ability to maintain our excellent compliance record should the Central Valley Regional Water Quality Control (Regional Board) staff use this draft criterion to interpret narrative objectives in the Sacramento-San Joaquin Basin Plan.

Concerns with Draft Criteria as Derived

As confirmed by UCD, the main problems with bifenthrin criteria development are the lack of good toxicity data. Because the necessary toxicity studies are insufficient to use standard EPA methodology to develop the criteria the draft criteria were developed based on unique criteria derivation techniques. Minimal acute toxicity data were used to develop an acute criterion of 4 ng/L. A factor of 2 was applied to the 5th percentile LC50 to achieve this draft acute criterion because of the sparse data set, including the few taxa in the species-sensitivity distribution.

The suggested chronic criterion (0.3 ng/L) was derived using a literature derived acute-to-chronic ratio (ACR) of 12.4 instead of using of actual chronic toxicity data. This final chronic value is highly-speculative due to this lack of

data, and is potentially more overprotective than the acute value. The resulting draft criteria (4.0 and 0.3 ng/L acute and chronic, respectively) create a number of problematic analytical issues for SRCSD. Both criteria are below reporting limits and detection limits for most, if not all, labs (in clean matrix such as deionized water). Although not recognized in the draft criteria document, analytical quantitation limits have an impact on the ability of SRCSD achieving compliance with effluent limitations and receiving water limits derived from the draft criteria. Moreover, the ability to detect concentrations below one ppt (less than one ng/L) in a complex matrix such as effluent is even more challenging than detecting these low concentrations in a clean matrix. In fact, because of the challenges, detections below one ppt have yet to be demonstrated. Currently, one ppt detection limits are the goal of California organizations evaluating pyrethroids (i.e., DPR, TriTAC, and the Pyrethroid Working Group (PWG).

Further, the lack of a standard EPA methodology for analyzing pyrethroids may also pose a problem for pyrethroid analyses. For example, the academic lab of Dr. Mike Lydy (University of Southern Illinois) claims one of the lowest reporting limits (3 ng/L) for pyrethroids, yet it is still 10 times higher than the suggested chronic criterion in the draft criteria. Questions have been raised about the possibility of interferences or false positive identifications without confirmation by other methods. To achieve such low reporting limits, Dr. Lydy must perform multiple clean-up steps that are not available or commonly performed by commercial labs, and samples are concentrated 20,000 times (1,000x is normal). These extreme steps have an unknown effect on analytical precision and accuracy.

The draft criteria authors' note that the dietary pathway for chronic exposure from bifenthrin is poorly understood and that evidence points to toxicity from the freely-dissolved fraction as being the crucial component. The presence of suspended solids and sediments in samples greatly modified and decreased toxicity. Based on this information, the authors' concluded that bioavailability has to be estimated based on dissolved phase measurements or from calculations. Thus, to estimate bifenthrin toxicity in natural waters, detailed site-specific data on suspended sediments and organic fractions is essential. Likewise, temperature is an important factor in determining pyrethroid toxicity and should be included in any model for determining the bifenthrin criteria because pyrethroid toxicity increases at lower temperatures when enzymes break down these chemicals more slowly.

Moreover, the measurement of the draft criteria in whole water, as recommended by the UCD authors, is contrary to applicable literature, which suggests strong and highly variable interactions with suspended particulates and bifenthrin concentrations in the dissolved phase. As a result, the authors acknowledge that the suggested criteria are likely to be overprotective.
Further, supportive data were inconclusive or unavailable on the effects of pesticide mixtures, temperature effects for freshwater organisms, and the effects on the most sensitive species. For example, for effects to sensitive species the UCD authors cited the lowest reported sensitive freshwater invertebrate chronic toxicity value of 1.9 ng/L. However, contrary to this value, the UCD authors propose a chronic criterion value of 0.3 ng/L.

With respect to sensitive species, epibenthic invertebrates (e.g., *H. azteca*) are the most sensitive model species for toxicity tests with pyrethroid. This sensitive species drives criteria development. However, tests with species similar to local, listed species of fish yielded toxicity values of 5 to 10-fold higher than the suggested chronic criterion. Therefore, these criteria are highly protective of fish.

Because of the lack of confidence in the chronic criterion, and over-protectiveness of the proposed value SRCSD, cannot support their use by the Regional Board until there is a better understanding

of fate and transport, chronic toxicity, and affects of dissolved solids and suspended particles that can be accounted for in an empirical model.

Concerns with Use of Draft Criteria to Interpret Narrative Water Quality Objectives

Besides being concerned with the development of the draft criteria, SRCSD is concerned with the Regional Board's proposed use of the draft criteria to interpret narrative water quality objectives. The specific concern is the Regional Board's potential use of the criteria to set water quality based effluent limitations in NPDES permits, as it will create liability for SRCSD. Considering the liability associated with complying with such effluent limitations, the Regional Board should take care in using only criteria that are well-developed and well-founded. As indicated above, the draft criteria for bifenthrin are most likely overly-protective, thereby creating unnecessary liability for wastewater dischargers. Effluent limitation violations may subject dischargers to the Regional Board's discretionary administrative civil liability authority, mandatory minimum penalties, or to third party lawsuits brought under the CWA's citizen suit enforcement provisions. (See 33 U.S.C. § 505.)

SRCSD is concerned with the use of the draft criteria to interpret narrative objectives as it creates de facto water quality objectives that have not been adopted in accordance with the law. Under Porter-Cologne Water Quality Control Act (Porter-Cologne), the Regional Board is required to regulate water quality in a manner that attains the highest level of water quality which is reasonable, considering all demands being made and to be made on those waters. (See Wat. Code, § 13000.) Further, water quality objectives are supposed to be established to ensure reasonable protection of beneficial uses, considering a number of different factors. The factors that must be considered include: past, present and probable future beneficial uses; environmental characteristics of the hydrographic unit under consideration, including the quality of water; water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area; economic considerations; the need for developing housing; and the need to develop and use recycled water. (Wat. Code, § 13241.) Also, the Regional Board is required to adopt a program of implementation for achieving water quality objectives at the time of adoption. (See Wat. Code, § 13242.) In other words, when adopting water quality objectives, the Regional Board must determine if the objective is necessary to provide for reasonable protection of the beneficial uses, and the Regional Board must balance all of the competing demands on the water and consider the economic implications associated with adoption of water quality objectives. SRCSD respectfully requests that the Regional Board refrain from using the draft criteria for bifenthrin until the criteria are properly adopted as water quality objectives pursuant to all requirements in Porter-Cologne.

Thank you for your considerations. Please contact me at (916) 876-6030 if you have any questions.

Sincerely,

Linda Dorn
Environmental Program Manager

cc: Debbie Webster, CVCWA
Mary Snyder, SRCSD
Stan Dean, SRCSD
Terrie Mitchell, SRCSD