January 23, 2017

Ms. Tessa Fojut
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95624

Subject: **Comments on the Draft Water and Sediment Quality Criteria Report for Fipronil, October 2016**

Dear Ms. Fojut,

The Central Valley Clean Water Association (CVCWA) represents over 50 publicly-owned treatment works (POTWs) that provide wastewater collection, treatment, and disposal for over 7 million people in the Central Valley. CWCWA's mission is to represent the interests of wastewater agencies in the Central Valley in regulatory matters that balances the need for environmental protection based on sound scientific information with a fair and reasonable economic basis.

The California Association of Sanitation Agencies (CASA) represents more than 100 local public wastewater agencies engaged in collecting, treating, and recycling wastewater to ensure the protection of public health and the environment. Collectively, CASA member agencies serve over 90 percent of the sewered population of California. CASA's member agencies operate wastewater treatment and water recycling facilities that may be impacted by the proposed water quality criteria.

The Department of Environmental Toxicology at the University of California, Davis (UCD) prepared the *Draft Water and Sediment Quality Criteria for Fipronil* (October 2016) for the Central Valley Regional Water Quality Control Board (Central Valley Water Board). This report forms the scientific basis for the water quality criteria development for fipronil and several degradates (i.e., fipronil-sulfide, fipronil-carboxamide, fipronil-sulfone, fipronil-desulfinyl). CVCWA previously submitted a comment letter, dated November 14, 2016, related to the identifying scientific topics and conclusions that should be considered during the peer review process. CVCWA and CASA appreciate this opportunity to provide joint technical comments on the draft report.

Insufficient Data and Its Impacts

As noted in the draft report, there are insufficient data to utilize the well-established methodology developed by the United States Environmental Protection Agency (USEPA) in developing the proposed water quality criteria for fipronil and its degradates. As an alternative to the USEPA methodology, a methodology was developed by UCD that requires three fewer taxa to develop the proposed water quality criteria for fipronil and its' degradates. The Central Valley

Regional Water Board does not provide adequate information to support the use of the UCD methodology over the USEPA methodology, which has been traditionally used to derive water quality criteria throughout the country. As stated in the draft report, fipronil and its degradates do not meet the minimum data requirements to develop the proposed water quality criteria using the USEPA methodology. According to USEPA (1985), "if all required data are not available, a numerical criterion should not be derived expect in special cases…Confidence in a criterion usually increases as the amount of pertinent data increases. Thus, additional data are usually desirable."

In the development of the proposed water quality criteria for fipronil and its' degradates, such criteria can only be developed using the UCD approach because there is insufficient data to apply the standard USEPA approach. Further, for fipronil and fipronil-sulfone, only sufficient data for using the UCD methodology are available for developing the proposed acute water quality criteria. Insufficient data are available for developing the proposed chronic water quality criteria for all constituents under consideration. A summary for the constituents meeting the taxa requirements needed to develop water quality criteria using both methodologies is presented in the table below.

Constituent	USEPA Methodology (1985)		UCD Method (2009)	
	Acute	Chronic	Acute	Chronic
Fipronil			X	
Fipronil-sulfide				
Fipronil-carboxamide				
Fipronil-sulfone			X	
Fipronil-desulfinyl				

Key: X = sufficient toxicity data available to develop water quality criterion.

Also, the data requirements for using the UCD Sediment Methodology (UCDSM), which is a framework and not a final method, are also not met for developing the proposed sediment quality criteria for fipronil and its degradates.

To accommodate the lack of sufficient data to develop water quality criteria using either the USEPA or UCD methodology, the draft report relies on the assessment factor (AF) procedure that is outlined in the UCD methodology to develop the proposed acute water quality criterion for fipronil-sulfide and all acute sediment quality criteria for fipronil and its degradates. As discussed in the draft report, the AFs are developed using data collected from organochlorine, organophosphate, and pyrethroid pesticides, which have different modes of toxicity to organisms compared to fipronil and its degradates. Additionally, the draft report also states that the mechanism of toxicity caused by fipronil and its' degradates is unclear.

Because chronic water and sediment quality criteria are based directly on calculated acute water quality criteria, the use of AF factors can introduce uncertainty, the potential for error, and/or over-conservatism when developing the chronic water and sediment quality criteria. As indicated

in the table above, there are insufficient available chronic toxicity data to utilize either the USEPA or UCD methodology for developing water and sediment quality criteria. In the development of the proposed chronic water quality criteria, there was only one paired acute and chronic test result for fipronil, fipronil-sulfide, and fipronil-sulfone and no paired acute and chronic test results for fipronil-desulfinyl and fipronil-carboxamide.

The lack of paired data resulted in the use of default acute-to-chronic ratios (ACR) to develop the final multispecies ACR for converting proposed acute water quality criteria to chronic water quality criteria for fipronil, fipronil-sulfide, and fipronil-sulfone. At least three ACRs are required to develop the final multispecies ACR. In each of these situations, two default ACRs (11.4) were used with unknown reliability on whether these are sufficiently protective of organisms. Additional toxicity testing for organisms needed to meet the minimum criteria for developing water quality criteria should be conducted to reduce the potential margin for error.

A similar lack of paired data resulted in the use of default ACRs for the proposed chronic sediment quality criteria for fipronil and its' degradates except fipronil-carboxamide, which did not have acute data on which to base the chronic criterion.

Resulting from the lack of sufficient data, multiple layers of conservative assumptions and adjustments are used to derive the proposed water and sediment quality criteria for fipronil and its' degradates in the draft report. The cumulative effect of the conservative assumptions and adjustments result in proposed water and sediment quality criteria that appear to be overly stringent with unknown implementation implications. CVCWA and CASA believe that additional research is necessary to develop technically- and scientifically-sound water quality criteria for these constituents.

Specific Concerns on Toxicity Test Data Used

There are several issues with the toxicity test data set that is used to develop the proposed water and sediment quality criteria in the draft report.

- In general, the toxicity test results from Weston and Lydy (2014) should be further evaluated to determine if they are appropriately categorized as acceptable data for the development of the proposed water quality criteria.
    - Toxicity test results from Weston and Lydy (2014) represent a significant portion of the toxicity data that were used to develop the proposed water quality criteria. These toxicity tests relied on test organisms that were collected from urban streams approximately 24-hours prior to initiation of the toxicity tests. Because these test organisms were collected from and tested in distinctively different matrices (i.e., urban streams, laboratory water), an evaluation should have been conducted on the test organisms to determine if there were stressors that could affect the outcome of the toxicity tests due to the significant change in environment. Additionally, it is unknown if the test organisms used were of the appropriate age, size, quality, and/or condition that is necessary for toxicity testing. Stressed test organisms that are not allowed to appropriately acclimate may be unreliable for toxicity testing.
    - Toxicity test controls, such as requiring 90% control survival, is an accepted test acceptability criterion to ensure that test organism acceptability. These controls are

critical to determine the acceptability of toxicity test results and allow for comparison to other toxicity test results. In some situations, it appears that results of the toxicity test controls were not included in the draft report or literature.

  - The toxicity tests from Weston and Lydy (2014) utilize subjective observations of sub-lethal endpoints (e.g., impaired movement, immobilization). These sub-lethal endpoints are used to develop the proposed acute water quality criteria. Inter-laboratory studies have indicated high variability when evaluating an immobilization endpoint. As discussed above, the test organisms used in the toxicity tests were collected 24-hours prior to toxicity test initiation. The lack of a sufficient acclimation period to the typical test conditions may have impacted the sub-lethal endpoints that were assessed in Weston and Lydy (2014).
  - It is inappropriate to consider sub-lethal toxicity test results in developing acute water quality criteria unless there is a clear linkage between the sub-lethal endpoint(s) and survival, growth, or reproduction. The USEPA clearly identifies acute toxicity as that which is based on mortality over a short time period (USEPA 2002).

- The UCDSM relies on toxicity test results from a benthic crustacean (i.e., *Hyalella azteca* in the draft report) in order to use an AF when insufficient test data are available to meet the five taxa requirements for developing the species sensitivity distribution (SSD). Available data for *Chironomus dilutus* indicate that it is more sensitive than *H. azteca*. It appears that the method should be revised to accommodate this more sensitive species.

Available Analytical Test Methods

The proposed chronic water quality criteria for fipronil, fipronil-sulfide, and fipronil-sulfone are generally below analytical laboratory detection limits. The inability to accurately determine effluent concentrations from wastewater treatment plants can have significant implementation issues if the proposed water quality criteria are used by the Central Valley Water Board or others to interpret narrative water quality objectives. To date, analytical laboratories have been unable to demonstrate adequate ability to detect low concentrations of fipronil and its degradates in laboratory (i.e., clean) water matrices. Wastewater treatment plant effluent is a more complex matrix that will create further challenges that may result in interferences and/or false positive results.

Other Comments

There appears to be numerous calculation, data transcription, and other editorial errors in the draft report. The data used for developing the proposed water and sediment quality criteria must be comprehensively verified for accuracy. CVCWA and CASA reference the Sacramento Regional County Sanitation District comment letter for these issues.

Conclusion

Because of the potential significance associated with the proposed water and sediment quality criteria presented in the draft report, CVCWA and CASA believe additional study needs to be conducted and information needs to be developed prior to developing water quality criteria for fipronil and its degradates. The proposed water and sediment quality criteria are based on toxicity test results that may not meet minimum test acceptability standards, or are of insufficient quantity and quality. There are significant implications to wastewater treatment plants if the

Central Valley Water Board or others use these criteria, or adopts them as water quality objectives.

CVCWA and CASA are committed to working with its members, regulatory agencies, and other stakeholders in meeting the goals of protecting public and environmental health with technically- and scientifically-sound standards and policies. As new chemicals emerge, the science behind the effects of these chemicals on the environment is sometimes not fully understood. There needs to be consistent and reliable methods, and adequate scientific information need to be utilized when establishing enforceable water quality criteria. While many will remark that such criteria are not enforceable water quality standards, from experience, we know that such criteria are used to interpret narrative standards and are used in the Clean Water Act section 303(d) listing process. The use of criteria in this manner makes them enforceable water quality standards. Accordingly, such criteria should only be developed when there is sufficient data, in quantity and quality, available. For fipronil and its' degradates, that is not yet the case. The Central Valley Water Board should refrain from accepting the proposed water quality criteria for fipronil and its' degradates as developed and request that UCD refrain from finalizing the draft report.

CVCWA and CASA appreciate this opportunity to provide technical comments on the draft report. We look forward to working with you as this process moves forward. If you have any questions or wish to discuss our perspective further, please contact Debbie at (530) 268-1338, or Greg at (916) 844-5262. Thank you for consideration of our comments.

Sincerely,

Debbie Webster

Debbie Webster
Central Valley Clean Water Association
Executive Officer

Greg Kester

Greg Kester
California Association of Sanitation Agencies
Director of Renewable Resource Programs

cc: Jeannie Chilcott, Central Valley Water Board