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April 26, 2007

Pyrethroid Reevaluation  
Attn: Denise Webster  
California Department of Pesticide Regulation  
P.O. Box 4105  
Sacramento, CA 95812-4015

Dear Ms. Webster:

### **Pyrethroid Working Group Proposal to Address the Question of the Fate of Pyrethroids in POTWs**

In March 2007, the California Department of Pesticide Regulation (DPR) received a proposal from the Pyrethroid Working Group (PWG) for actions to address DPR's requirement that pyrethroid registrants monitor wastewater treatment plant effluent. Tri-TAC appreciates that DPR has requested comments on this proposal from California Publicly Owned Treatment Works (POTWs). The purpose of this letter is to provide comments on the PWG proposal and to share background information relevant to implementing the first steps of PWG's proposal.

As background, Tri-TAC is a technical advisory committee for POTWs in California. Tri-TAC is jointly sponsored by the California Association of Sanitation Agencies, the California Water Environment Association, and the League of California Cities. The constituency base for Tri-TAC collects, treats, and reclaims more than two billion gallons of wastewater each day and serves most of the sewered population of California. Tri-TAC member agencies have been treating municipal wastewater for decades—some for as long as 75 years.

Tri-TAC's member agencies are very concerned about the water quality impacts of residential pesticide uses. We have noted the increased marketing of household products that contain pesticides, such as mattress liners and clothing impregnated with permethrin. Products such as these will result in pesticide releases when clothing and mattress liners are laundered. Although POTWs can break down pesticides to a varying degree, they are not designed to remove pesticides. Pesticides that flow into a POTW may be decomposed to some extent; the portion that does not break down will

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transfer into the biosolids or flow out in the effluent. Our concerns about the impacts of pesticides on POTWs have been expressed in previous letters to DPR from Tri-TAC. We appreciate that DPR has recognized these concerns and has responded to them with several important actions, including initiating reevaluation of pyrethroid insecticides and establishing an Urban Pest Management Working Group.

### **Comments on PWG Proposal**

First and foremost, we are pleased to have the opportunity to collaborate with DPR and PWG on activities to address our concerns about pyrethroid discharges to POTWs. We would be happy to participate in the small working group proposed by PWG to provide information and to collaborate on the development of protocols for PWG's investigations. We request that DPR participate in the proposed working group. DPR participation will ensure that DPR is fully informed of all relevant scientific information and that proposed investigations will satisfy DPR's regulatory requirements.

Our primary comment is a request—we ask that DPR ensure that the PWG investigations achieve two objectives, which were laid out in our December 7, 2005 letter to DPR Director Mary Ann Warmerdam regarding the pyrethroids reevaluation. These two objectives are:

- (1) Estimate the removal efficiency of pyrethroids during wastewater treatment; and
- (2) Ensure that pyrethroid concentrations in POTW effluent and biosolids do not cause violations of NPDES permits, would not restrict options for recycled water and biosolids reuse, and would not contribute to exceedances of current or proposed numeric or narrative water quality standards.

The brief PWG proposal provides a short outline of a process to answer questions about pyrethroids in POTWs. We agree that the general approach of collecting information from the literature and exploring use of modeling prior to initiating laboratory and/or real-world monitoring is reasonable. We appreciate that PWG plans to gather existing data that may shed light on pyrethroid sources (e.g., laundering of treated clothing) and fate in POTWs. However, as we discuss below, we anticipate that actual measurements will almost certainly be necessary to provide a reasonable scientific basis for decision-making.

PWG has proposed to start with a review of U.S. EPA's "Down the Drain" methodology. Tri-TAC has previously reviewed this U.S. EPA methodology, which relies on the Exposure and Fate Assessment Screening Tool (E-FAST).<sup>1</sup> Tri-TAC found that E-FAST

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<sup>1</sup> U.S. EPA OPPTS (2006). *Exposure and Fate Assessment Screening Tool (E-FAST)*, Version 2.0. Prepared by Versar Inc., April.

appeared to be an appropriate screening model to evaluate wastewater effluent from pyrethroid use in consumer products, but that it needs some adjustments. E-FAST has some significant deficiencies. Most important are its lack of consideration of facilities with stream dilution factors of 1.0 or less, the fact that its outputs that cannot be directly compared with water quality criteria (particularly criteria related to chronic toxicity), and its omission of environmental endpoints related to biosolids and recycled water. E-FAST could be improved if appropriate input parameters and scenarios needed to generate representative surface water concentrations from the use of pyrethroids discharged to sewers are identified. If this course is pursued, we recommend that U.S. EPA's Offices of Pesticide Programs and Wastewater Management be invited to participate. Copies of two Tri-TAC comment letters to U.S. EPA detailing deficiencies identified in U.S. EPA's "Down the Drain" methodology are enclosed.

Modeling tools should be available for endpoints other than effluent. For example, U.S. EPA developed a risk assessment methodology for pollutants in biosolids when it developed the biosolids management regulations in 40 Code of Federal Regulations Part 503.<sup>2</sup>

The PWG proposal mentions possible laboratory treatability studies. Laboratory treatability studies have previously provided valuable information to the wastewater industry. If properly conducted, such studies could provide valuable information about pyrethroids in POTWs. If laboratory studies are pursued, we encourage PWG to work with an independent entity, such as a university, experienced in bench scale studies. With the assistance of the Water Environmental Research Foundation, we can help PWG identify appropriately experienced principal investigators.

As mentioned above, based on Tri-TAC's findings that there is little relevant available data on pyrethroids in POTWs, some monitoring will almost certainly be necessary. We ask DPR to require that chemical analysis methods be validated in municipal wastewater influent, effluent, and biosolids, and that method adjustments be made, if necessary, to ensure that environmentally relevant concentrations of pyrethroids can be measured in these media. To avoid unnecessarily delaying the progress of the reevaluation, chemical analysis method validation and necessary improvements should be completed in parallel with the initial modeling and literature review proposed by PWG.

The PWG proposal did not include a schedule. Given the potential compliance risks to POTWs from increased pyrethroids use, we ask that DPR require a schedule for timely planning and implementation of investigations. We suggest that limited time be devoted

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<sup>2</sup> This risk assessment process is described in the *U.S. EPA Guide to the Biosolids Risk Assessment for the EPA Part 503 Rule* (EPA 832-B-93-005), which is available on the Internet: <http://www.epa.gov/owm/mtb/biosolids/503rule/index.htm>

to the risk assessment step, since its value will be primarily to provide conceptual understanding of the issues and to inform design of subsequent investigations.

### **Background Information for Next Steps**

Simple mass balance models are commonly used by POTWs to estimate compliance risks for variable discharges like pesticides, as well as to forecast impacts of potential future pollutant discharge scenarios. This process is routinely performed to develop local limits for industrial and commercial dischargers to the POTW's collection system. Unfortunately residential Pyrethroid uses cannot be evaluated in the same way. Mass balance data are critical inputs for models to estimate concentrations of pyrethroids in effluent and biosolids. Tri-TAC has sought, but has been unable to identify any measurements of the mass balance of pyrethroids in POTWs. U.S. EPA similarly was unable to find these data.

For its modeling of pyrethroid discharges to POTWs, U.S. EPA used the "best available data" as the basis for assuming 52 to 94 percent removal (this estimate was based on the permethrin removal obtained by pretreatment systems of three pesticide manufacturers).<sup>3</sup> Although the pretreatment facility data used by U.S. EPA do not represent POTW capabilities (pretreatment systems are often very different from POTWs in processes and detention times), we have reason to believe that this range of removals is not unrealistic, because during rulemaking on the Federal categorical discharge standards for pesticide manufacturers, U.S. EPA concluded that the removal of permethrin at wastewater treatment facilities is expected to be lower than in systems using best available technology economically achievable for pretreatment.<sup>4</sup>

In its modeling of pyrethroids in wastewater, U.S. EPA did not estimate the percentage of pyrethroids transferred to biosolids. Based on pyrethroids' chemical properties, transfer to biosolids in POTW processes is likely. Tri-TAC has sought, but has not identified, data on the biodegradation of pyrethroids in POTW processes. Nor has Tri-TAC found data to evaluate the potential for pyrethroids to adversely affect biologically-based treatment processes at POTWs.

In our decades of experience managing discharges of toxic pollutants to POTWs, we have found that even when our plants can remove most (70%, 90% or even 99%) of a pollutant, the small remainder can, in some cases, be sufficient to pose compliance challenges. Seemingly miniscule pollutant concentrations can exceed our effluent limitations, which can be established at part per billion and even part per trillion levels.

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<sup>3</sup> U.S. EPA, OPP (2006). *Reregistration Eligibility Decision (RED) for Permethrin*. EPA 738-R-06-017. April. Page 53.

<sup>4</sup> United States Environmental Protection Agency, Office of Water, Development Document For Effluent Limitations, Guidelines, Pretreatment Standards, and New Source Performance Standards for the Pesticide Manufacturing Point Source Category, EPA-821-R-93-016, September 1993, pp.7-92 and 5-93.

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Transfer of pollutants like metals into biosolids has limited biosolids disposal options for some California POTWs. These experiences make us acutely aware that even though the vast majority of a pollutant may be removed by a POTW's treatment processes, remainders of less than 1% can be problematic in some conditions.

In conclusion, Tri-TAC appreciates DPR's actions to protect surface waters from contamination from pyrethroids. Tri-TAC looks forward to working with DPR and the PWG to explore the potential for water quality and/or compliance impacts from the discharge of pyrethroids into sewers and to identify mitigation measures, if necessary, to ensure that such impacts do not occur.

Thank you for your consideration of this matter. If you have any questions or require additional information, please contact Mr. Phil Bobel at 650-329-22854 or by email at [phil.bobel@cityofpaloalto.org](mailto:phil.bobel@cityofpaloalto.org).

Sincerely,



Charles V. Weir  
Chair, Tri-TAC

Enclosures:

1. Docket ID Number OPP-2004-0385 - Permethrin Preliminary Risk Assessments (October 20, 2005)
  2. Docket ID Number OPP-2004-0385 - Permethrin Reregistration Eligibility Decision (September 27, 2006)
- c: John Sanders, California Department of Pesticide Regulation  
Mark Rentz, California Department of Pesticide Regulation  
Nan Singhasemanon, California Department of Pesticide Regulation  
Patti TenBrook, U.S. EPA Region 9  
James Giannopoulos, California State Water Resources Control Board  
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