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Office of Pesticide Programs (OPP)
Regulatory Public Docket (7502P)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, DC 20460-0001
Attn: Docket ID Number OPP-2006-0356

Docket No. OPP-2006-0356 - Linalool Registration Review

The purpose of this letter is to provide information to EPA to support its development of work plans for pesticides in Registration Review, using Linalool as an example. Tri-TAC appreciates that EPA is providing opportunity for input to inform its work planning for pesticides undergoing Registration Review.

Linalool is a relatively new insect repellent that is used on pets, as an indoor area treatment, and outdoors in candles and electronic fragrance generating devices. Linalool also is also used as a fragrance in non-pesticide products like soaps and detergents. Tri-TAC is concerned that the preliminary workplan for Linalool does not include an evaluation of the potential adverse water quality impacts associated with sewer discharges of Linalool, particularly Linalool used in indoor area treatments and pet products. While we have no data to suggest that Linalool itself is specifically of concern, we believe it important that EPA modify its procedures to include assessments of sewer discharges for pet treatments and other appropriate indoor use products during Registration Review.

As background, Tri-TAC is a technical advisory committee for publicly owned treatment works (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.

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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 biocidal soaps. Products such as these will result in pesticide releases when soaps are used for washing, treated surfaces are cleaned with water, treated fabrics are washed, and pets are shampooed. 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 transfer into the biosolids or flow out in the effluent.

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. 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.

Our concerns about the impacts of pesticides on POTWs have been expressed in previous letters to U.S. EPA from Tri-TAC. We appreciate that U.S. EPA has recognized these concerns and has responded to them with actions that include addition of down-the-drain assessments to environmental risk assessments for pesticides in reregistration like lindane, permethrin, and resmethrin.

Indoor Pesticide Uses Need Consideration in Environmental Risk Assessments

The EPA preliminary workplan for Linalool assumes that non-target organisms like aquatic organisms will not be exposed to Linalool. This assumption is incorrect, because Linalool's use patterns will cause it to be discharged to drains, where it will flow to a POTW. We have provided the information below to support our request that EPA modify its procedures to include environmental risk assessments for indoor use pesticides that can be discharged to drains.

There are many ways that indoor use pesticides like Linalool can enter a sewer system (please see the enclosed flowchart). Discharges can occur when a pesticide-treated surface (created by using the pesticide directly on the surface or by deposition and dispersion of area treatments onto the surface), is cleaned. Wastewater containing the pesticide can be produced by cleaning these surfaces with sponges, cloths, and mops that are later washed with water or washed in a washing machine, and by using a carpet-cleaning machine or a bucket of water for cleaning that is later emptied into a drain.

A pesticide can also enter the sewer when a pesticide-containing solution is directly disposed of down a drain and when a pesticide-containing product is applied directly in a toilet or drain. The normal use of Linalool-containing pet shampoos, dips, and sprays also includes a direct pathway to sewers, from rinsing of the shampoos and sprays after application, and an indirect pathway to sewers, from subsequent washing of the treated pet. Even when pets are rinsed outdoors, the rinse water can enter storm drains and flow directly to creeks and rivers.

Once washed into a sewer system, the pesticide will typically flow to POTWs. Although POTWs break down or remove pesticides to a varying degree, they are not designed to remove pesticides. Pesticides can potentially interfere with treatment plant operation, ability to recycle reclaimed water and biosolids, and compliance with National Pollutant Discharge Elimination System (NPDES) permits. Protecting POTWs from pass through of pesticide discharges was a key reason for EPA's development of categorical pretreatment requirements for the pesticide formulating, packaging, and repackaging industry as well as the pesticide manufacturing industry.¹

Linalool is certainly present in POTWs. In the 1980s, it was detected, albeit at relatively low concentrations (up to 2.4 micrograms per liter), in municipal wastewater effluent.² (We could not find any biosolids concentration data.) Because current use of linalool is reportedly greater than its use in the 1980s, this decades-old limited data does not ensure that current Linalool levels are below levels of concern (which are difficult to determine because EPA has very limited aquatic toxicity data—and does not appear to have any chronic toxicity data).

Tri-TAC requests that EPA conduct an Aquatic Exposure, "Down the Drain Assessment", similar to the analysis conducted for permethrin,³ to evaluate the potential impacts to aquatic organisms from the indoor uses of pesticides like Linalool. If the Aquatic Exposure, "Down-the-Drain" Assessment shows that acute and/or chronic levels of concern for aquatic organisms are exceeded from the indoor uses of Linalool, Tri-TAC requests that EPA propose mitigation measures for Linalool during Registration Review.

¹ 40 Code of Federal Regulations Part 455

² Ellis, D. D., Jone, C. M., Larson, R. A. & Schaeffer, D. J. (1982) Organic constituents of mutagenic secondary effluents from wastewater treatment plants. *Arch. Environ. Contam. Toxicol.*, 11, 373-382; Hutchins, S. R., Tomson, M. B. & Ward, C. H. (1983) Trace organic contamination of ground water from a rapid infiltration site: A laboratory-field coordinated study. *Environ. Toxicol. Chem.*, 2, 195-216; Bedient, P. B., Springer, N. K., Baca, E., Bouvette, T. C., Hutchins, S.R. & Tomson, M. B. (1983) Ground-water transport from wastewater infiltration. *J. Environ. Eng. (N.Y.)*, **109**(2), 485-501.

³ EPA, EFED Revised Risk Assessment for the Reregistration Eligibility Decision on Permethrin After Error Corrections Comments from the Registrant, Phase I, July 12, 2005

Tri-TAC also requests that EPA modify its procedures to recognize that pesticides with indoor uses may be discharged to POTWs and to surface waters and that such discharges need to be evaluated in an environmental risk assessment.

Data Needs and Modeling for Down-the-Drain Assessments

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. With a relatively small amount of data, pesticide discharges can be evaluated in the same way. Mass balance data can be put into simple models to estimate concentrations of a pesticide in POTW effluent and biosolids. EPA's E-FAST model uses the mass balance approach together with an assessment methodology that should be refined to better predict potential impacts to aquatic organisms and POTWs (see our previous letters⁴ for our recommended refinements to this model).

Tri-TAC has been able to identify existing measurements of the mass balance of only a few pesticides in POTWs. The most complete available data sources are the U.S. EPA Office of Water Treatability Database⁵ and the supporting documentation for the Federal categorical discharge standards for pesticide manufacturers.⁶ EPA will probably need to require generation of POTW mass balance data for pesticides that are not included in these data sets.

EPA should not limit its Down-the-Drain assessments to effluent - biosolids and air emissions should also be considered. 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 503.¹

Conclusion

In conclusion, wastewater agencies need EPA's assistance to protect surface waters from contamination from pesticides used indoors. POTWs are required by NPDES

⁴ Docket ID Number OPP-2004-0385 - Permethrin Preliminary Risk Assessments (October 20, 2005); Docket ID Number OPP-2004-0385 - Permethrin Reregistration Eligibility Decision (September 27, 2006).

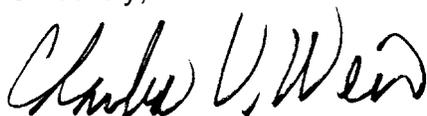
⁵ The U.S. EPA Office of Water maintains an extensive database of wastewater treatment plant removal efficiencies for various pollutants, including pesticides (the National Risk Management Research Laboratory Treatability Database). This data set is one of many resources that can be used to estimate environmental concentrations of pesticides discharged to the sewer system.

⁶ 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.

permits to meet aquatic toxicity standards but do not have the authority to regulate domestic sources of pesticides. Tri-TAC requests EPA conduct an Aquatic Exposure, "Down-the-Drain" Assessment, similar to the analysis performed for permethrin, to evaluate potential aquatic toxicity impacts from the use of all pesticides in consumer products with pathways to the sewer. If the model shows that acute and/or chronic levels of concern for aquatic organisms are exceeded from the indoor uses of resmethrin, Tri-TAC requests that EPA propose mitigation measures for these pesticides during Registration Review.

Thank you for your consideration of this matter. If you have any questions or require additional information, please contact Ms. Preeti Ghuman by phone at (562) 699-7411, extension 2904, or by e-mail at pghuman@lacsdsd.org.

Sincerely,



Charles V. Weir
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Enclosure

Figure – "Wastewater Carries Pesticides to POTWs, Biosolids, Recycled Water & Surface Water"

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Wastewater Carries Pesticides to POTWs, Biosolids, Recycled Water & Surface Water

