

Summary Chart

Updated 8/11/08

California Notice 2006-13: Pyrethroid Reevaluation Active Ingredient Specific Data Requirements.

Click on the hyperlink to open specific details regarding the conduct of each type of study, including citations to study protocols.

Active Ingredient Common Name	Environmental Fate Data						Sediment Data				Other Data	
	Water solubility	Octanol/water partition coefficient	Soil adsorption coefficient	Hydrolysis (pH @ 5, 7, & 9)	Photolysis, water	Aerobic/ anaerobic soil half-lives	Sediment analytical method	Sediment acute and chronic toxicity	Aerobic/anaerobic CA sediment half-lives ⁴	Monitoring in areas appropriate to use pattern	ID offsite movement method	Data demonstrating reduced movement offsite
Data Requirement Group I												
Bioallethrin	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Pending Review						
D-Allethrin			Pending Review	Pending Review	Pending Review	Pending Review						
Imiprothrin			Satisfied		Required ⁵	Satisfied						
Phenothrin	Pending Review	Pending Review	Pending Review	Pending Review		Pending Review						
Prallethrin	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review						
Resmethrin			Pending Review									
Tetramethrin	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review						
Data Requirement Group II ² (Memorandum dated February 20, 2007)												
Tau-Fluvalinate							Waived	Waived	Waived	Waived		
Tralomethrin							Waived	Waived	Waived	Waived		
Data Requirement Group III												
(S)-Cypermethrin ¹						Required	Satisfied	Required	Protocol Acceptable		Required	Required
Beta-Cyfluthrin							Satisfied	Required	Protocol Acceptable		Required	Required
Bifenthrin							Satisfied	Pending Review	Protocol Acceptable		Required	Required
Cyfluthrin							Satisfied	Pending Review	Protocol Acceptable		Required	Required
Cypermethrin							Satisfied	Pending Review	Protocol Acceptable		Required	Required
Deltamethrin							Satisfied	Required	Protocol Acceptable		Required	Required
Esfenvalerate			Satisfied				Satisfied	Pending Review	Protocol Acceptable		Required	Required
Fenpropathrin							Satisfied	Required	Protocol Acceptable		Required	Required
Gamma-Cyhalothrin						Required	Satisfied	Required	Protocol Acceptable		Required	Required
Lambda-Cyhalothrin							Satisfied	Required	Protocol Acceptable		Required	Required
Permethrin							Satisfied	Required	Protocol Acceptable	Required ³	Required	Required

¹Also known as zeta-cypermethrin

²Label mitigation language developed for Group III active ingredients will apply to Group II active ingredients.

³This applies to products containing uses where residues are likely to enter wastewater treatment plants. (e.g., pet shampoos, products impregnated into or sprayed onto clothing/bedding, products used to treat sewers.)

⁴Final results are due to DPR no later than December 3, 2009.

⁵No outdoor uses of imiprothrin registered in California at this time. An acceptable study must be submitted prior to DPR approval to add outdoor uses.

Pyrethroid Reevaluation Active Ingredient Specific Data Requirements.

Environmental Fate Data:

The required environmental fate studies are to be conducted utilizing the U.S. Environmental Protection Agency's (U.S. EPA's) Pesticide Assessment Guidelines: Subdivision N, Chemistry: Environmental fate, and OECD Guidelines or OPPTS Harmonized Test Guidelines:

1. Water solubility;
2. Octanol/water partition coefficient;
3. Soil adsorption coefficient. Report K_D and K_{OC} (L/Kg). Use three California soils with approximately 0.5%, 1.0%, and 2% organic carbon;
4. Hydrolysis half-life at pH 5, 7, and 9;
5. Photolysis half-life in water; and
6. Aerobic and anaerobic soil half-lives (metabolism). Use the same soils as used for soil adsorption coefficient study, if possible. Use three California soils with approximately 0.5%, 1.0%, and 2% organic carbon.

Pyrethroid Reevaluation Active Ingredient Specific Data Requirements.

Sediment Data:

1. Aerobic and anaerobic aquatic degradation half-lives using three California sediments with approximately 0.5%, 1.0%, and 2.0% organic carbon. Use U.S. EPA's Pesticide Assessment Guidelines: Subdivision N, Chemistry: Environmental Fate.
2. Sediment acute and chronic toxicity data for *Chironomus tentans* and *Hyallela azteca* in three California sediments with approximately 0.5%, 2.0%, and 5% organic carbon. Use U.S. EPA's Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates, Second Edition. EPA 600/R-99/064.
3. Sediment analytical method for sediment with a maximum Minimum Detection Limit (MDL) of 1 ng/gram (dry wt. basis) calculated based on U.S. EPA method (40CFR, Part 136, Appendix B; 7/1/90).
4. Monitoring in areas appropriate to use pattern. For the identified pyrethroids, which have not been previously monitored for, monitoring data to determine the scope of contamination under selected circumstances (e.g., effluent of water treatment plants). The outcome of this monitoring may require identifying the process by which pyrethroids are moving off the site. Submit protocols for review prior to initiation of studies.

Pyrethroid Reevaluation Active Ingredient Specific Data Requirements.

Other Data:

1. Data identifying the processes by which pyrethroids are moving off the site of application to aquatic sediments. Submit protocol(s) for review prior to initiation of studies.
2. Data demonstrating the reduction or elimination of pesticide residue movement from application sites to aquatic sediments. Submit protocol(s) for review prior to initiation of studies.



Mary-Ann Warmerdam
Director

MEMORANDUM

Arnold Schwarzenegger
Governor

TO: John S. Sanders, Ph.D., Chief
Environmental Monitoring Branch

FROM: Frank Spurlock, Ph.D. *Original signed by*
Research Scientist III
Environmental Monitoring Branch
(916) 324-4124

DATE: February 20, 2007

SUBJECT: REEVALUATION DATA REQUIREMENTS OF GROUP II SYNTHETIC
PYRETHROIDS

Background

Three groups of synthetic pyrethroids were identified in the recent pyrethroid reevaluation notice (CDPR, 2006) based on (1) the availability of monitoring data and (2) persistence of the individual pyrethroid chemicals. Each group had different data requirements. Group 2 pyrethroids consisted of those for which there were no available monitoring data and that also appeared to have potentially similar persistence characteristics as group 3 pyrethroids. The latter conclusion was based on preliminary evaluations of pyrethroid environmental chemistry. The group 3 pyrethroids are pyrethroids that have already been detected in California sediments. Tau-fluvalinate and tralomethrin are the two group 2 pyrethroids.

The data requirements for the group 2 pyrethroids fall into 3 categories: sediment persistence data (aerobic and anaerobic half-life data), sediment acute and chronic toxicity data, and monitoring in areas appropriate to their use pattern. The purpose of this memorandum is to provide a more in-depth discussion of fate characteristics of the group 2 pyrethroids, and to evaluate the usefulness of the data requirements for these two pyrethroids.

Tau-fluvalinate

Similar to other data group 3 pyrethroids, tau-fluvalinate is highly hydrophobic. However, the existing aerobic soil dissipation and aqueous photolysis data suggest that tau-fluvalinate is somewhat less persistent than the other group 3 pyrethroids. Tau-fluvalinate aerobic soil degradation half-lives are 8 and 15 days respectively for the two available California-approved aerobic soil degradation studies, and the sole California-approved tau-fluvalinate aqueous photolysis study yielded a photolysis half-life of less than one day (CDPR, 2007). Median aerobic half-lives for other group 3 pyrethroids range from 12 days (cyfluthrin) to 123 days (bifenthrin), with a mean of 43 days. While Laskowski (2002) reports an aqueous photolysis half-life for cyfluthrin of < 1 day, the Department of Pesticide Regulation's (DPR's) registration data yields a median cyfluthrin aqueous photolysis half-life of 4.5 days. The remaining aqueous photolysis half-life for group 3 pyrethroids reported by Laskowski (2002) are comparable to



John S. Sanders, Ph.D.

February 20, 2007

Page 2

those in DPR's database, and range from 17 to 603 days. Finally, the U.S. Environmental Protection Agency (EPA) has also concluded that tau-fluvalinate "is expected to be rapidly degraded in both soil and aquatic environments under aerobic conditions," although the chemical is expected to be more persistent under anaerobic conditions (U.S. EPA, 2005).

Two liquid formulation tau-fluvalinate products were included in DPR's pyrethroid re-evaluation data all-in: Mavrik Perimeter, EPA Reg. No. 2724-478-ZC and Mavrik Aquaflow Insecticide/Miticide, EPA Reg. No. 2724-478-AA. Registered application sites for Mavrik Perimeter include landscape plantings, outdoor ornamental and nursery-type sites, and structural sites such as building perimeters. Mavrik Aquaflow is registered for these same sites, but also includes special local need registrations for carrot seed crops and brassica/cole seed crops. Both products are "commercial use only" so all applications are required to be reported in California's pesticide use report (PUR). Total PUR reported tau-fluvalinate use has been steadily decreasing for several years (Figure 1). Reported use in 2004 and 2005 was 1581 and 1143 pounds active ingredient, respectively. Approximately 80% of reported use was in nurseries, and approximately half of those nursery applications occurred inside greenhouses.

Given the tau-fluvalinate use pattern, the most appropriate monitoring sites would be in sediment of receiving waterways near nurseries or large-scale outdoor ornamental plantings where tau-fluvalinate has been recently used. However, given the relatively small (and steadily declining) use in California, monitoring for tau-fluvalinate in selected California surface waters may not provide a meaningful indication of whether tau-fluvalinate is moving off-site under current use conditions.

Tralomethrin

Tralomethrin degrades rapidly to deltamethrin under both anaerobic and aerobic conditions (<1 to 5 d half-lives; Laskowski, 2002; Erstfield, 1999). Deltamethrin is a group 3 synthetic pyrethroid that has already been detected in California sediments.

Nineteen tralomethrin products were included in the initial reevaluation data call-in. Eighteen of the 19 products are home use products: 15 are RTU liquid formulations intended for home use (typically indoor and outdoor use on ants, fleas, and ticks), 2 products are home use granular formulations for control of ants and fire ants in lawns, and one product is a home use pellet/cake/tablet/briquet formulation that is a roach bait. Total reported 2004 sales of these 18 products was 260 lbs active ingredient.

The nineteenth tralomethrin product included in the data call-in was solely for use by professional applicators on "residential and nonresidential structures and their immediate surroundings, and on various modes of transportation." This product accounted for >99% of the

2004 and 2005 tralomethrin PUR reported use of 131 and 38 lbs active ingredient, respectively, but is no longer registered as of January 1, 2007. There is no new label revision or sub-registration of the product.

Given the extremely low use amounts, low use density and the labile nature of tralomethrin, monitoring for tralomethrin in California surface waters will probably not provide a meaningful indication of whether tralomethrin is moving off-site under current use conditions.

Conclusion

Given the low use and low persistence of tau-fluvalinate and tralomethrin, monitoring, sediment persistence, and sediment toxicity data for the two active ingredient ingredients would be of limited value at this time. One goal of the re-evaluation is to reduce or eliminate off-site movement of synthetic pyrethroids. As an alternative to the monitoring and sediment data requirements, tau-fluvalinate and tralomethrin registrants can commit to accepting mitigation measures developed for other pyrethroids with similar uses. For example, granular tralomethrin products registered for control of ants in lawns would be required to include any use practices developed to reduce off-site movement of other granular pyrethroid product from lawns. The two tau-fluvalinate products would be required to include mitigation measures developed to reduce or eliminate pyrethroid off-site movement from nurseries. Mavrik Perimeter would also be required to include mitigation measures for structural applications, including those practices developed during DPR's re-evaluation to mitigate off-site movement of other structural pyrethroids.

One basis for this recommendation is the low use of these two active ingredients in California. Future proposed label changes may result in increased use of these active ingredients. Therefore, future proposed label changes and/or new labels might result in reconsideration of the need for sediment persistence, toxicity or environmental monitoring data on these two active ingredients.

John S. Sanders, Ph.D.
February 20, 2007
Page 4

References

Erstfield, K.M. 1999. Environmental fate of synthetic pyrethroids during spray drift and field runoff treatments in aquatic microcosms. *Chemosphere* 39 (10) 1737-1769.

Laskowski, D.A. 2002. Physical and chemical properties of pyrethroids. *Reviews in Environmental Contamination and Toxicology* 174: 49 - 170.

CDPR PESTCHEM. 2007. CDPR *PESTCHEM* database. Data from registrant submissions.

CDPR 2006. Notice 2006-13. Notice of Decision to begin Reevaluation of Certain Pesticide Products Containing Pyrethroids.

U. S. EPA 2005. Environmental fate and ecological risk assessment for tau-fluvalinate, Environmental Fate and Effects Division, 7/11/2005, Re-registration Eligibility Decision docket number OPP-2005-0230, <www.regulations.gov>.

