



**Department of Pesticide Regulation
Environmental Monitoring Branch, Enforcement Branch
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Study 303, Source Identification for Urban Pyrethroid Use in California: Bifenthrin in Placer County

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1.0 Introduction

Pyrethroids are a class of pesticides that are frequently detected in surface waters throughout California at concentrations potentially toxic to aquatic species [1, 2, 3]. Pyrethroids dissipate slowly from hardscape applications with residual concentrations detected in runoff up to 112 days post application on concrete surfaces [4]. To address concerns that pyrethroid concentrations found within California surface waters are negatively affecting water quality, the California Department of Pesticide Regulation (CDPR) adopted Section 6970 in the Title 3 of the California Code of Regulations (3CCR; “Surface Water Protection in Outdoor Nonagricultural Settings”) in July 2012. The aim of these regulations is to reduce the amount of runoff from seventeen pyrethroids commonly applied outdoors by any person performing pest control for hire (Pest Control Business [PCB]). Primarily, the regulations restrict applications made to and around impervious horizontal surfaces (e.g., building exteriors, foundations, walkways, and driveways), which are believed to be the primary transport conduit of pesticides from urban landscapes [4, 5]. Typical examples of PCBs in the urban areas are Pest Control Companies and Landscape Gardeners. An outcome from this study will assess PCB’s knowledge of surface water regulations through enhanced field inspections of PCBs.

Bifenthrin is the most frequently detected pyrethroid in urban monitoring studies above toxicity thresholds [2, 6] and therefore is a pyrethroid of high concern. Due to potential toxicity, high urban use, and high detection frequency, bifenthrin is the focus of this study. However, unlike the other sixteen pyrethroids, bifenthrin has other additional restrictions. In 2011, bifenthrin registrants and manufacturers signed a memorandum of agreement (MOA) with CDPR that states they would voluntarily change bifenthrin professional product labels to further limit outdoor use of bifenthrin products on non-porous (impervious) surfaces [7]. These restrictions prohibit applications of bifenthrin to horizontal impervious surfaces unless the surface is protected from rainfall and spray from sprinklers. Applications to vertical impervious surfaces that abut horizontal impervious surfaces are also prohibited unless they are protected from rainfall and spray from sprinklers, or the horizontal surfaces do not drain into sources of storm water. Pyrethroid products that do not contain bifenthrin do not need this label language.

The additional label language on some bifenthrin products will prohibit differentiating the effects from the surface water regulations (3CCR 6970) and the MOA. However, since the results of this study will be used in conjugation with CDPR’s urban monitoring studies to understand trends in

bifenthrin runoff [8], bifenthrin will be investigated in this study. Other pyrethroids are detected less frequently or are less of a toxicity concern to warrant being investigated before bifenthrin [9].

2.0 Objectives

Study 303 is a focused effort to evaluate bifenthrin use patterns. The overall objectives of this project are to determine and identify the sources of bifenthrin used in urban areas and address pesticide use enforcement. It is focused in Placer County, the location of CDPR urban monitoring sites in northern California. Future work may expand to other counties, or other pesticides, based on the conclusions of the Study 303.

Several sub-objectives have been established to assist CDPR's evaluation:

- 1) Investigate potential errors in the Pesticide Use Reporting (PUR) bifenthrin data;
- 2) Determine trends in PCB bifenthrin use in urban Placer County;
- 3) Identify bifenthrin products available to non-professional users;
- 4) Identify and evaluate contributions of potential sources of bifenthrin not addressed by 3CCR 6970 to urban runoff load;
- 5) Assess the level of 3CCR 6970 compliance by professional applicators; and
- 6) Assess consistency and adherence of bifenthrin labels to CDPR's MOA with registrants for designated bifenthrin products.

3.0 Personnel

This study will be conducted by staff from CDPR's Environmental Monitoring (EM), Enforcement (ENF), and Pesticide Registration (PR) branches, in consultation with Placer County Agricultural Commissioner (Placer CAC), under the general direction of:

Kean Goh, Environmental Program Manager I, (EM)

Regina Sarracino, Environmental Program Manager I, (ENF)

Ken Everett Environmental Program Manager I, (ENF)

Key personnel are listed below:

Environmental Monitoring Branch:

Co-Project Leader: Michael Ensminger, Ph.D.

Reviewing Scientist: Robert Budd, Ph.D.

Statistician: Dan Wang, Ph.D

Laboratory Liaison: Sue Peoples

Enforcement Branch:

Co-project leader: Mara Johnson, Ph.D.

Enforcement Branch Liaison: Rick Strider

Pesticide Registration Branch:

Carlos Gutierrez (alternate, Denise Alder)

4.0 Project Plan

4.1 Environmental Monitoring Branch Tasks

Quality Control Analysis of Bifenthrin Use Data: EM staff will conduct an evaluation of bifenthrin PUR data to: 1) identify potential reporting errors by specific businesses within Placer County; 2) determine use trends in Placer County. (*Addresses sub-objectives #1 and 2*)

Retail Store Survey: A survey of California home use pesticide products was conducted in 2010 [10]. EM staff will conduct a similar survey of local retailers in Roseville to inventory bifenthrin products currently on the market. (*Addresses sub-objective #3 and 4*)

Sales Data: Using results from the Retail Store Survey, EM staff will explore whether the products most frequently sold in retail stores have high volume in sales database or mill fee data. (*Addresses sub-objective #4*)

Residential Use Survey: EM staff will obtain the results of the city of Roseville's homeowner use survey. (*Addresses sub-objective #4*)

Recycled Water for Irrigation: EM staff will collect water samples from recycled water used by the City of Roseville for outdoor irrigation. (*Addresses sub-objective #4*)

Outreach: Contract 15-C0056, titled "Training Pesticide Control Operators (PCOs) and PCO Companies in Urban Pyrethroid Applications" will be summarized. (*Addresses sub-objective #5*)

4.2 Enforcement Branch Tasks

Field Inspections of Pest Control Businesses: ENF staff will coordinate with the Placer CAC to conduct oversight inspections of PCBs that conduct structural and landscape pest control (e.g., landscape maintenance companies) within the study area in Placer County. For urban structural inspections, staff will develop and test the "Surface Water Regulations Supplemental Form" to accompany the standard form, PR-ENF-108. The supplemental form will address bifenthrin use and gather information about the surface water regulations (3CCR 6970) and PUR reporting. The benefits of having a specific form to address surface water regulations in the field will be assessed. (*Addresses sub-objective #5*).

Headquarter Inspections of Pest Control Businesses: ENF staff will collect a listing of all PCBs registered to work in Placer County. ENF staff will coordinate with the Placer CAC to conduct oversight headquarters records inspections on a representative sampling of structural, landscape maintenance, and turf management PCBs, including selected PCBs identified from the Quality Control Analysis of PUR data. The inspections will include a review of PUR methods/protocols, pyrethroid application practices, familiarity with surface water regulations, and provide opportunity for education and outreach. Working with Placer CAC and PUR specialists, PUR data entry errors will be pinpointed to the PCB, CAC, and/or DPR levels. (*Addresses sub-objectives #1 and #5*).

Identify Other Potential Sources of Bifenthrin: ENF staff will coordinate with the Placer CAC to identify whether there are other potential sources of bifenthrin (in addition to structural PCB

applications). Within the study area, these potential sources (and the entity to contact) include residential landscape applications (homeowner and landscape maintenance companies), professional streetscape applications (PCB under contract with City of Roseville), Diamond Creek Elementary School (IPM Coordinator, Roseville City School District), and Leonard “Duke” Davis Park (PCB under contract with City of Roseville). (*Address sub-objective #4*)

4.3 Registration Branch Tasks

Review Bifenthrin Product Labels: Pesticide Registration staff will review current bifenthrin labels to determine if they adhere to the 2011 MOA (*Addresses sub-objective #6*)

5.0 Reporting

Yearly report: Yearly report to management written by end of 1Q of following year, written jointly by EM and ENF project leads.

Final report: Final report written within six months of the conclusion of the project, written jointly by EM and ENF project leads.

6.0 Timeline

6.1 Environmental Monitoring Branch Tasks

Pyrethroid Use Evaluation: May 31, 2016

Retail Store Survey: June 30, 2016

Sales Data Review: December 31, 2016

City of Roseville Homeowner Survey Results: September 31, 2016

Outreach: Yearly updates for year-end reports

6.2 Enforcement Branch Tasks

Develop Addendum to Inspection Form: February 1, 2016

Oversight Inspection Evaluations: December 31, 2016

Identifying other Potential Sources of Bifenthrin: June 30, 2016

6.3 Registration Branch Tasks

Bifenthrin Label Evaluation: Quarterly updates.

7.0 References

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8. CDPR. 2013. Environmental Monitoring Protocols. <http://www.cdpr.ca.gov/docs/emon/pubs/protocol.htm>.
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10. Osienski, K., Lisker, E., and R. Budd, *Surveys of pesticide products sold in retail stores in northern and southern California, 2010.*, 2010, Department of Pesticide Regulation: Sacramento, CA.