
Pesticides in Urban Runoff, Wastewater, and Surface Water



Annual Summary of Regulatory Activities to Protect Water Quality 2008

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San Francisco Estuary Partnership*

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PREFACE

This is a report of research performed by TDC Environmental, LLC for the San Francisco Estuary Partnership (SFEP). This report was prepared to fulfill the annual reporting requirement in Task 7.6.2.4 of SFEP's grant agreement with the State Water Resources Control Board (Agreement Number 09-305-550) for Taking Action for Clean Water. Funding for this project has been provided in part by the American Recovery and Reinvestment Act of 2009 and the Clean Water State Revolving Fund, through an agreement with the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the State Water Resources Control Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use. (Gov. Code, Section 7550, 40 CFR Section 31.20.)

During the time period covered by this review, TDC Environmental's technical support of the work described in this report was also funded by the California Stormwater Quality Association, the San Francisco Department of the Environment, and Tri-TAC and its individual member agencies. Views or information expressed in this report may not necessarily reflect those of the funding agencies.

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Clean Water
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TABLE OF CONTENTS

	<u>Page</u>
Executive Summary	1
1.0 Introduction	2
1.1 Pesticides and Water Quality—A Regulatory Gap	2
1.2 Scope of This Report.....	6
1.3 Data Sources.....	7
1.4 Report Organization	7
2.0 Scope of California Water Quality Agency Regulatory Activities Supported by the UP3 Project.....	9
2.1 U.S. EPA and California Department of Pesticide Regulation	12
2.2 Other Agencies.....	14
2.3 Coordination Among Agencies—Urban Pesticides Committee.....	14
3.0 Summary of 2008 Regulatory Engagement Supported by the UP3 Project.....	15
3.1 U.S. EPA	15
3.2 California Department of Pesticide Regulation.....	16
3.3 Structural Pest Control Board.....	22
3.4 Presentations and Events	23
4.0 Evaluation of the UP3 Project's 2008 Outcomes	26
4.1 Overview of Past Outcomes.....	27
4.2 Pesticide Regulatory Agency Decisions.....	27
4.3 Improving Effectiveness of Water Quality Agency Regulatory Engagement.....	34
5.0 Priority Regulatory Activities Anticipated in 2009.....	37
5.1 U.S. EPA	37
5.2 California Department of Pesticide Regulation.....	37
5.3 Structural Pest Control Board.....	39
6.0 Conclusions.....	40
Acronyms List.....	41

Tables

Table 1. Agencies Responsible for Water Quality Protection and Their Charges	2
Table 2. Summary of U.S. EPA and DPR Pesticide Review Processes	10
Table 3. Pyrethroid Reevaluation Events – Urban Runoff.....	19
Table 4. Pyrethroid Reevaluation Events – POTW Discharges	20
Table 5. Pyrethroid Reevaluation Events – Sediment Data	21
Table 6. Pyrethroid Reevaluation Events – Mitigation.....	21
Table 7. Examples of Presentations & Information Sharing Events – 2008.....	24
Table 8. Changes in Allowable Urban Uses for Pesticides of Concern, 1999-2008....	28
Table 9. Anticipated Pyrethroid Reevaluation Documents	38

EXECUTIVE SUMMARY

The Urban Pesticide Pollution Prevention Project (UP3 Project) has identified a “regulatory gap” between the different laws that govern pesticides and water quality as the root cause of ongoing and widespread impairments of water quality by pesticides. Since 1999, California water quality agencies (a term used here to refer to urban runoff management agencies, municipal wastewater treatment plants, the State Water Resources Control Board, and the Regional Water Quality Control Boards) have engaged in pesticide regulatory processes because they have identified regulatory actions as the most cost-effective way to prevent water pollution.

In 2008, urban runoff management agencies, municipal wastewater treatment plants, the State Water Resources Control Board and Regional Water Quality Control Boards continued their active engagement in both California and Federal pesticide regulatory processes. In support of this effort, the UP3 Project identified and tracked pesticide regulatory processes, analyzed pesticide regulatory documents to identify water quality protection gaps, and reviewed scientific studies to assemble the information needed to fill the identified gaps. The UP3 Project assisted water quality agencies with communicating this information to regulators at U.S. EPA, California Department of Pesticide Regulation (DPR), and the California Structural Pest Control Board through letters, meetings, informal communications, and presentations. Selected key areas of focus in 2008 included actions related to:

- Pyrethroid insecticides, which have been linked to widespread toxicity in creek waters and sediments across California. The UP3 Project facilitated participation in U.S. EPA’s pyrethroid insecticides reregistrations and California DPR’s pyrethroid “reevaluation,” which entailed scientific studies examining the linkage between urban pyrethroid use and water pollution and development of initial mitigation measures.
- Two water-pollutant-containing wood preservatives: pentachlorophenol—which contains trace dioxins and hexachlorobenzene—and creosote, which contains polyaromatic hydrocarbons (PAHs).
- Biocides discharged to municipal wastewater treatment plants: triclosan, various cooling water additives, swimming pool biocides, and silver-emitting products.

Although regulatory processes can take many years to reach outcomes, the results of the UP3 Project’s support for California water quality agency regulatory engagement are starting to be evident. Both U.S. EPA and DPR have expanded their review processes for all pesticides to address both urban runoff and wastewater discharges. Both agencies are actively responding to the water quality problems from pyrethroid insecticides: DPR with its pyrethroid reevaluation and U.S. EPA by implementing preliminary water quality protection measures and establishing accelerated timing for a joint “registration review” of all pyrethroids starting in 2010.

Since 1999, the engagement of the UP3 Project in both California and Federal regulatory processes has significantly narrowed the regulatory gap; however, the goals of California water quality agency engagement in pesticide regulatory processes have not yet been fully achieved. Strong participation by water quality agencies is necessary to resolve water quality problems with pyrethroids; to prevent new water quality problems from fipronil, nanosilver, and other emerging urban pesticide products—and to achieve the UP3 Project’s ultimate goal of ensuring that pesticides do not interfere with the ability of California’s urban runoff management agencies, municipal wastewater treatment plants, and surface waters to achieve compliance with the Clean Water Act.

1.0 INTRODUCTION

1.1 Pesticides and Water Quality—A Regulatory Gap

Numerous scientific studies have demonstrated that use of some pesticides registered in accordance with Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements can adversely affect aquatic species. Those impacts can, in turn, cause violations of water quality standards. As a result of discharges containing pesticides registered for use by the U.S. Environmental Protection Agency (U.S. EPA), many surface waters in California have been designated as “impaired” in accordance with Federal Clean Water Act §303(d). This finding means that the surface waters do not meet water quality standards. These listings demonstrate that current U.S. EPA and California Environmental Protection Agency (Cal-EPA) procedures for regulating pesticides are insufficient to ensure that pesticide use does not cause violations of the Federal Clean Water Act and California Porter-Cologne Water Quality Control Act.

Federal law provides U.S. EPA with the ability to protect surface water from pesticides. California law technically provides two parts of the California Environmental Protection Agency (Cal-EPA), the California Department of Pesticide Regulation (DPR) and California state water quality regulators, with the ability to protect surface water from pesticides. Except in extraordinary circumstances, the water quality regulators defer to DPR. Agencies charged with protecting water quality from pesticides have slightly different legal mandates, as summarized in Table 1.

Table 1. Agencies Responsible for Water Quality Protection and Their Charges

Regulatory Agency	Legal Authority	Water Quality Protection Goal
U.S. EPA Office of Water (OW)	Clean Water Act	To restore and maintain the chemical, physical, and biological integrity of the Nation’s waters. To prohibit discharge of toxic pollutants in toxic amounts. (33 United States Code §1251)
U.S. EPA Office of Pesticide Programs (OPP)	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	To prevent unreasonable adverse effects on the environment. (7 United States Code §136a[c]), taking into account the economic, social, and environmental costs and benefits of the use of any pesticide (40 Code of Federal Regulations §166.3)
California State Water Resources Control Board and Regional Water Quality Control Boards (“Water Boards,” part of Cal-EPA)	California Porter-Cologne Water Quality Control Act	To attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. (California Water Code §13000)
California Department of Pesticide Regulation (DPR, part of Cal-EPA)	California Food & Agricultural Code	To protect the environment from environmentally harmful pesticides. (California Food & Agricultural Code §11501)

While the mandates of these pesticide and water quality laws differ slightly, the approaches to implementing these two groups of laws are very different and have important ramifications for pesticides and water quality. In general, pesticide regulatory programs are structured to respond slowly when water quality problems occur—and without financial penalties to pesticide manufacturers or users. In contrast, water quality programs are generally structured to react quickly when water quality problems occur—with immediate financial consequences, particularly for municipalities. Pesticide regulators and water quality regulators employ very different procedures to manage pesticides. While these differences sometimes seem arcane, they create regulatory gaps that leave states and municipalities responsible for solving water quality problems that could have been prevented at the time a pesticide was registered or re-registered.

The agencies that manage California's water quality are working with pesticide regulators to address this regulatory gap.

California Water Quality Agencies

In California urban areas, three types of government agencies have water quality protection as their primary responsibility:

- The State Water Resources Control Board and Regional Water Quality Control Boards ("Water Boards") are responsible for maintaining water quality in California to protect designated uses of surface and ground waters. Among their important activities are solving water pollution problems ("impairments") with regulatory plans (Total Maximum Daily Loads, or TMDLs) and issuing permits for surface water discharges (National Pollutant Discharge Elimination System, or NPDES permits).
- Municipal wastewater treatment plants are also known as sewage treatment plants or publicly-owned treatment works (POTWs). These plants receive anything that is discharged into municipal sewer systems. While they can regulate large industrial dischargers and a few commercial businesses, they cannot readily control most commercial and all residential discharges. They have NPDES permits with many specific numeric limits based on water quality standards.
- Urban runoff management agencies oversee urban stormwater runoff drainage systems, which generally flow directly to surface waters without treatment. Under the Clean Water Act, municipalities in urban areas are issued permits for their discharges through storm drains, making them legally responsible for any water pollutants that wash off when it rains (or when irrigation, car washing, and other water flows into gutters and storm drains).

This report refers to the above agencies collectively as "California water quality agencies."

Consequences of the Regulatory Gap—Costs and Liabilities for Water Quality Agencies

California water quality agencies face significant consequences for pesticide toxicity in their jurisdictions. The Federal Clean Water Act requires California Water Boards to prepare resource-intensive total maximum daily loads (TMDLs) for pesticide-impaired waters. TMDLs must examine the water quality problem, identify sources of pollutants, and specify actions that create solutions to the problem. The Water Boards then must

mandate that municipalities and private businesses conduct expensive programs to implement the TMDLs to restore the impaired waters.

California estimates that its average cost for preparing a TMDL is \$600,000.¹ TMDL implementation costs vary. The San Francisco Bay Water Board estimated that the implementation cost for a pesticide-related TMDL for San Francisco Bay Area urban creeks would be roughly \$7 million annually.² The San Diego Water Board estimated that the implementation cost for a pesticide-related TMDL for one urban creek (Chollas Creek) could exceed \$1 million in the first year and plus ongoing costs of hundreds of thousands of dollars annually.³ Most TMDL implementation costs are borne by municipal wastewater treatment plants and urban runoff management agencies.

Pesticide-related toxicity in surface waters receiving urban runoff and in municipal wastewater treatment plant effluent creates regulatory burdens for municipalities. These burdens include costly pesticide-specific National Pollutant Discharge Elimination System (NPDES) wastewater and stormwater permit requirements and the threat of litigation under the citizen suit provisions of the Clean Water Act.

Municipal wastewater treatment plants can face permit violations (associated with numeric effluent limits and/or aquatic toxicity testing requirements) that would subject them to mandatory minimum penalties under California state law. Because municipal wastewater treatment plants are not designed to remove toxic pollutants like pesticides, adding additional treatment processes to address a problem pesticide is usually cost-prohibitive—and may be technically infeasible. Pesticides can also compromise wastewater treatment operations, flexibility in management of biosolids (sewage sludge), or compliance with other environmental permits (e.g., air quality permits).

Non-Regulatory Actions to Address Pesticides

California water quality agencies implement non-regulatory water quality protection strategies such as public outreach and education and use of least-toxic pest management practices at their own facilities. Advantages of these strategies are that they involve communities and a broad cross-section of agency staff in water quality protection, offer opportunities to demonstrate alternative pest management practices, and prepare pesticide users for larger changes.

Although public outreach and education about pesticides are important, they cannot provide sufficient water quality improvement for government agencies to meet their permit requirements. Government outreach on less-toxic pest control, for example, simply cannot compete with marketing programs for pesticide products that are legal to sell. This is one of many reasons that non-regulatory approaches to water quality problems caused by pesticides are more expensive and substantially less effective in improving water quality than preventing problematic pesticide uses through regulation.

¹ California State Water Resources Control Board (2001). *Structure and Effectiveness of the State's Water Quality Programs: Section 303(d) of the Federal Clean Water Act and Total Maximum Daily Loads (TMDLs)*. Report to the Legislature Pursuant to AB 982 of 1999. January. Page 17. Available on the Internet at http://www.waterboards.ca.gov/publications_forms/publications/legislative/2001.shtml

² Johnson, B. (2005). *Diazinon and Pesticide-Related Toxicity in Bay Area Urban Creeks. Water Quality Attainment Strategy and Total Maximum Daily Load (TMDL)*. Final Staff Report. Prepared by the California Regional Water Quality Control Board, San Francisco Bay Region. November 9.

³ Pardy, L., and J. Smith (2002). *Technical Report for Total Maximum Daily Load for Diazinon in Chollas Creek Watershed San Diego County*. Prepared by the California Regional Water Quality Control Board, San Diego Region. August 14.

Effectiveness evaluation data from water quality programs⁴ show that it is not technically feasible for voluntary strategies to reduce pollutant discharge to the extent necessary to end severe, widespread water quality problems—like current pyrethroid-related toxicity in urban creeks—without regulation.

In addition, both professional and non-professional (e.g., residential) pesticide users generally assume that pesticides available for sale can be used without causing environmental harm, especially if label directions are followed. Regulatory decisions that allow continued use of pesticides in manners that cause or contribute to water quality problems can undermine alternative water quality protection strategies that depend on voluntary individual behavior changes.

Why California Water Quality Agencies Are Working with Pesticide Regulators

California water quality agencies began regular engagement in pesticide regulatory processes because they had concluded that the most cost-effective approach to protecting surface water from pesticide-related toxicity is to prevent pesticide uses that have significant potential to cause water quality impairment, that interfere with municipal wastewater treatment plant operations, or that cause violations of NPDES permits. Preventing water quality problems at the source is well known to be more effective—and far less costly—than alternatives.

The recent scientific finding that pyrethroid insecticides are linked to widespread toxicity to sediment-dwelling organisms in California urban creeks⁵ has increased the importance of active California water quality agency participation in California and Federal pesticide regulatory processes. Since California law precludes local regulation of pesticides, municipal urban runoff programs and wastewater agencies must rely on pesticide regulators to solve this problem.

Actions to Address the Regulatory Gap

California water quality agencies have participated in selected U.S. EPA pesticide regulatory processes since late 1999. California water quality agencies have also worked less formally with DPR. The goals of these activities are:

1. To prevent surface water impairment.
2. To prevent violations of wastewater and stormwater NPDES permits.

The focus of these regulatory activities has been on pesticide use in urban areas (as opposed to pesticides used for agriculture).

Role of the Urban Pesticide Pollution Prevention Project (UP3 Project)

Because understanding and participating in regulatory activities is complex and time-intensive, scientific and regulatory support to help California water quality agencies achieve these goals has been provided by the Urban Pesticide Pollution Prevention (UP3) Project. The UP3 Project was established in mid-2004 to help California Water Boards, municipal wastewater treatment plants, and urban runoff management agencies prevent pesticide-related water quality problems. The UP3 Project is currently funded (through 2010) by a State Water Resources Control Board grant administered by the

⁴ Larry Walker Associates, *Tools to Measure Source Control Program Effectiveness*, prepared for the Water Environment Research Foundation, Project #98-WSM-2, 1999.

⁵ The many scientific studies documenting this toxicity are summarized in TDC Environmental (2008). *Pesticides in Urban Surface Water: Annual Review of New Scientific Findings 2008*, prepared for the San Francisco Estuary Project. April.

San Francisco Estuary Partnership (SFEP). TDC Environmental provides technical support for the project.

The UP3 Project supports California water quality agency participation in pesticide regulatory actions by identifying and tracking pesticide regulatory processes of significant interest for water quality, analyzing pesticide regulatory documents to identify water quality protection gaps, and reviewing scientific studies to assemble the information needed to fill the identified gaps. The UP3 Project assists water quality agencies with communicating this information directly to regulators at U.S. EPA, California Department of Pesticide Regulation (DPR), and the California Structural Pest Control Board through letters, meetings, informal communications, and presentations.

The UP3 Project also manages the Urban Pesticides Committee (UPC), which serves as a center for information exchange, coordination, and collaboration among local, regional, and state agencies and other stakeholders seeking to end pesticide-related surface water toxicity problems (see Section 2.3).

Uniqueness of California Efforts

Although California's long history of pesticide-related water quality and NPDES permit compliance challenges does not appear to be unique, California water quality agencies appear to be the only water quality protection agencies in the nation working with U.S. EPA to address pesticide use in urban areas.⁶ Also unique is California water quality agency teamwork with pesticide regulatory agencies and other stakeholders to address pesticide-related water quality problems in urban areas. To date, the UP3 Project has not identified any other U.S. state or region that has established a program to address pesticide-related water quality issues related to use of pesticides in urban areas, even though California data indicate that at least half of all pesticide use occurs in urban areas.⁷

The work by UP3 Project in bringing California water quality agencies into regulatory activities has been pioneering. Lessons learned will be applicable to many more municipalities and states throughout the U.S. that face pesticide-related urban water quality and NPDES permit compliance challenges.

1.2 Scope of This Report

This is the fifth UP3 Project annual review of California water quality agencies' urban pesticide water quality regulatory activities. This report aims to summarize the scope of regulatory involvement by California water quality agencies and to evaluate effectiveness of these efforts. This is one of three reports prepared annually by the UP3 Project. The other two reports review California urban pesticide sales and use trends and summarize recent scientific findings relevant to urban surface water quality management activities.⁸

⁶ The UP3 Project is seeking to identify other agencies working on these issues, but has yet to identify any such group of agencies. The most relevant groups identified to date are the Pacific Northwest Regional Pesticide Coordinating Committee, which focuses on urban pesticides use reduction, but has not generally engaged U.S. EPA on water quality issues, and the State-FIFRA Issues Research and Evaluation Group (SFIREG), which is a group of pesticide regulators that has a water quality subcommittee, but does not generally focus on urban issues.

⁷ TDC Environmental (2008). *Urban Pesticide Use Trends Annual Report 2008*, prepared for the San Francisco Estuary Project. July.

⁸ All UP3 Project reports are available on the Internet: www.up3project.org

Each year beginning in 2004, TDC Environmental reviewed and evaluated the outcomes of these efforts.⁹ Previous reports summarized the full record (since 1999) of California water quality agency input into urban water quality-related pesticide regulatory actions and evaluated the overall outcome of the program. This report focuses more narrowly on California water quality agency engagement in activities and outcomes that can be determined on the basis of information that became available between December 2007 and November 2008.

This report was prepared in November 2008 and reflects information available at that time.

This report summarizes the activities of many California water quality agencies and agency organizations. In addition to the UP3 Project, leading participants have included:

- California State Water Resources Control Board
- San Francisco Bay and Central Valley Regional Water Quality Control Boards
- California Stormwater Quality Association (CASQA)
- County of Sacramento Department of Water Resources
- Tri-TAC (the technical advisory committee representing California municipal wastewater management agencies¹⁰)
- Los Angeles County Sanitation Districts (LACSD)
- San Francisco Department of the Environment (SF Environment)

Other members of the Urban Pesticides Committee (an information-sharing, coordination, and collaboration forum provided by the UP3 Project that is described more fully in Section 2.3) have also participated in and supported these efforts.

1.3 Data Sources

This report is based on a review of:

- U.S. EPA pesticide risk assessments, registration eligibility decisions, and related documents
- Written responses to California water quality agency comments
- Other regulatory decisions made by U.S. EPA and California DPR relating to urban pesticides and surface water quality
- U.S. EPA and DPR presentations at interagency and public meetings
- Information on U.S. EPA, DPR, and California Structural Pest Control Board internet sites
- Informal discussion with U.S. EPA and DPR staff.

Information in this report was current as of November 2008.

1.4 Report Organization

This report is organized as follows:

- Section 1 (this section) provides the background and scope of the report.

⁹ Previous reviews are available on the UP3 Project Internet site:

http://www.up3project.org/up3_regulatory.shtml

¹⁰ Tri-TAC is a technical advisory committee on state and Federal regulatory issues affecting publicly owned treatment works that is jointly sponsored by the League of California Cities, the California Association of Sanitation Agencies, and the California Water Environment Association.

Annual Summary of Pesticide Regulatory Activities to Protect Water Quality

- Section 2 provides a general description of the scope and types of California water quality agency regulatory activities.
- Section 3 summarizes specific engagements by California water quality agencies in 2008 pesticide regulatory activities, including actions on individual pesticides under review.
- Section 4 evaluates the outcomes of activities through November 2008, to the extent that outcomes were known at that time (many regulatory processes that California water quality agencies have participated in are still underway).
- Section 5 summarizes anticipated 2009 pesticide regulatory activities of interest for urban surface water quality.
- Section 6 gives the conclusions of this evaluation.

2.0 SCOPE OF CALIFORNIA WATER QUALITY AGENCY REGULATORY ACTIVITIES SUPPORTED BY THE UP3 PROJECT

U.S. EPA and DPR Pesticide Review Processes

California water quality agencies primarily engage with pesticide regulators within the existing regulatory processes established by U.S. EPA and DPR. Both U.S. EPA and DPR have processes to review pesticides prior to their first use and processes to respond to human health and environmental problems that occur after a pesticide is approved for use. Both agencies also have the responsibility to review all pesticides periodically. Table 2 (on the next two pages) provides a brief description of the various pesticide review processes conducted by U.S. EPA and DPR and identifies the public input opportunities associated with each process.

In 2008, U.S. EPA completed a special set of one-time reviews called “reregistration,” which made significant changes in the allowable use patterns for many common pesticides, such as diazinon and chlorpyrifos. Subsequent periodic reviews—called “registration review”—are planned to occur in a 15-year cycle. These reviews are just getting underway. Although DPR annually reviews all pesticides, its review process is ordinarily a procedural exercise that is very different from the relatively robust reviews that U.S. EPA conducts.

Now that the landmark U.S. EPA pesticide reregistration process is essentially complete, the regulatory process that provides the most significant opportunity to prevent problem pesticide uses before water quality problems occur is the U.S. EPA registration review process. U.S. EPA registration review is the only ongoing process that combines an evaluation of the water quality impacts of pesticides with the regulatory authority to terminate or modify any use that causes significant impacts. While DPR has the authority necessary to prevent water quality impacts, its current annual pesticide registration renewal process does not include routine evaluation of these impacts.

Although the U.S. EPA processes for the initial registration of a pesticide and for approval of additional uses for currently registered pesticides provide significant opportunities to prevent pesticide-related water quality problems, these processes do not include any opportunity for public input. Lists of pending decisions are made available by both agencies—but none of the scientific information necessary for meaningful input is available to the public. Due to the lack of information, California water quality agencies have almost never participated in these processes.

If a pesticide-related water quality problem is documented in the environment, the DPR regulatory process offers the most immediate response mechanism. DPR’s pesticide “reevaluation” process is structured to respond to environmental problems more rapidly than the “special review” process at U.S. EPA. DPR has coordinated with its Cal-EPA sister agency the State Water Board on reevaluation decisions, including the decision to initiate reevaluation to address pyrethroid-related toxicity in California surface waters.

The following sections describe the scope of California water quality agency regulatory activities supported by the UP3 Project. While the focus is on engagement in formal regulatory processes, the UP3 Project has sought to extend the water quality agencies’ dialog with pesticide regulators to less formal situations, to facilitate a sharing of scientific information and to increase mutual understanding of the regulatory context provided by California and Federal pesticide and water quality legal frameworks.

Table 2: Summary of U.S. EPA and DPR Pesticide Review Processes

Agency	Process	Description	Overview of Public Input Opportunities
U.S. EPA	Registration	New pesticides must be registered or exempted by U.S. EPA before they may be sold. New uses of existing pesticides must also be registered. During registration, U.S. EPA evaluates effects on humans and the environment (including surface water).	Other than making its registration workplan available, ¹¹ U.S. EPA has no public involvement process for pesticide registration.
	Reregistration	A one-time process of evaluating all pesticides registered prior to November 1984. Reviews used available data and modern scientific methods to evaluate effects on humans and the environment. Most reviews were completed by 2006; a few are still underway.	Processes varied, but usually included opportunities to review U.S. EPA-prepared risk assessments, to provide recommendations for risk reduction measures, and to comment on U.S. EPA's proposed reregistration decision.
	Registration review	All currently registered pesticides are planned for review on a 15-year cycle. ¹² Each pesticide's review process starts with a "docket opening," which is an opportunity to submit scientific information and to comment on the registration review workplan. Subsequent steps are established by the workplan.	Public involvement opportunities after the docket opening depend on the workplan; these may include opportunities to review U.S. EPA-prepared risk assessments, to provide recommendations for risk reduction options, and to comment on U.S. EPA's proposed registration review decision.
	Special review	U.S. EPA initiates special review when it discovers that the use of a registered pesticide may result in unreasonable adverse effects on humans or the environment. The special review process usually involves intensive review of a specific problem. During special review, U.S. EPA may review scientific information, re-evaluate the identified risk, and select risk reduction measures.	Processes vary. At a minimum, the public is offered the opportunity to comment on the decision proposed by U.S. EPA on the basis of its special review.

¹¹ Conventional pesticides - <http://www.epa.gov/opprd001/workplan/> ; Biopesticides - http://www.epa.gov/pesticides/biopesticides/regtools/biopesticides_2010_workplan.html ; Antimicrobial pesticides - <http://www.epa.gov/oppad001/>

¹² Schedules are available on the Internet: http://www.epa.gov/oppsrrd1/registration_review/schedule.htm

Table 2: Summary of U.S. EPA and DPR Pesticide Review Processes (Continued)

Agency	Process	Description	Overview of Public Input Opportunities
DPR	Registration	California has a state requirement for pesticide registration. Like U.S. EPA, it evaluates effects on humans and the environment. Unlike U.S. EPA (which reviews products containing the same active ingredient as group) DPR registers each pesticide product individually. DPR determines whether to evaluate a pesticide product's potential to cause surface water quality or wastewater discharge impacts on a case by case basis.	Other than making lists of products entering review available, DPR has no public involvement process for pesticide registration. By providing these lists to its interagency advisory committee (the Pesticide Registration and Evaluation Committee), DPR provides an opportunity for interagency consultation.
	Annual Registration Renewal	California law requires annual renewal of all pesticide registrations. This review is very brief; ordinarily, registrations are renewed if fees are paid and if registrants certify compliance with the requirement to disclose factual or scientific evidence of any adverse effect or risk of the pesticide to human health or the environment.	DPR issues a formal notice of the proposed annual renewal for all pesticides and provides a comment period. Because the notice does not include pesticide-specific information, the process serves as an annual opportunity for the public to provide DPR with information about adverse effects of pesticides.
	Reevaluation	If DPR finds that a significant adverse impact has occurred or is likely to occur from the use of a pesticide, it initiates a reevaluation. During reevaluation, DPR reviews existing data and may require development of additional data related to the impacts of the pesticide. DPR's goal is to identify ways to reduce or eliminate confirmed problems.	DPR has no formal public involvement process for reevaluation; however, it has offered selected stakeholders opportunities to review various documents associated with the reevaluation of pyrethroid insecticides. DPR usually consults with its interagency advisory committee (the Pesticide Registration and Evaluation Committee) when approaching major reevaluation decisions.

2.1 U.S. EPA and California Department of Pesticide Regulation

With UP3 Project support, California water quality agencies participate in U.S. EPA and California DPR pesticide regulatory processes affecting urban surface water quality as follows:

- Identify and track U.S. EPA and DPR regulatory processes with implications for urban runoff quality, municipal wastewater treatment plant discharges and treatment processes, and urban surface water quality.
 - Keep an updated schedule of anticipated U.S. EPA public comment opportunities.
 - Review U.S. EPA *Federal Register* notices, U.S. EPA pesticide risk assessments, and relevant scientific information and consult with pesticide regulators, water quality agencies, and other experts to determine whether specific pesticides under U.S. EPA review have the potential to affect surface water quality, municipal wastewater, and/or urban runoff NPDES permit compliance.
 - Review DPR pesticide product registration notices. Each week, DPR announces which pesticide products it is considering for registration. Although the notices provide limited information, it is desirable to try to identify new pesticide active ingredient registrations for uses that could involve significant releases to urban runoff or POTWs.
 - Track water-quality related DPR pesticide reevaluations.
- Research pesticides and identify specific information that would be valuable for California water quality agencies to share with U.S. EPA and DPR.
 - Identify specific shortcomings in U.S. EPA environmental risk assessments for urban pesticide uses that have the potential to adversely affect surface water quality or NPDES permit compliance.
 - Obtain information missing from pesticide scientific assessments that is available from California or from the literature (e.g., water quality criteria, monitoring data, risk assessment methods, technical reports).
 - Identify critical data gaps in the information available to assess the impacts of urban pesticide use.
 - Peer review scientific study proposals and reports circulated by U.S. EPA and DPR to help pesticide regulators ensure that their studies and studies conducted by others under their oversight provide high-quality scientific information that will be useful to water quality managers as well as pesticide regulators.
- Where potentially significant risks are evident, review scientific data and use patterns to identify risk mitigation options.
 - Consider changes in allowable pesticide uses, application rates, and label language and develop recommendations for feasible use changes to prevent water quality problems.
 - Provide scientific information to support recommended risk mitigation actions. Pesticide regulators normally need to base their regulatory decisions on published scientific data.

- Communicate information to U.S. EPA and DPR.
 - The primary mechanism for agencies to share relevant information with U.S. EPA is by writing detailed letters, making specific points supported by scientific or other written evidence. U.S. EPA's pesticide evaluation processes are set up to accept letters with technical information during public review periods.
 - Participate in U.S. EPA and DPR advisory committee meetings. In response to their active involvement in pesticide regulatory processes, water quality agency representatives have been appointed to both of DPR's formal advisory committees, the Pesticide Registration and Evaluation Committee and the Pest Management Advisory Committee. A water quality agency representative sits on U.S. EPA Office of Pesticide Programs' stakeholder advisory committee, the Pesticide Program Dialogue Committee.
 - Participate in other information-sharing meetings. Such meetings include the California Antifouling Strategy Workgroup,¹³ DPR's Urban Pest Management Workgroup, scientific conferences, and Urban Pesticide Committee meetings.
 - Arrange formal meetings on specific topics.
 - Less formal communications with U.S. EPA and DPR staff (telephone calls and meetings) are important to explain further key points in comments letters for pesticide regulators (who are used to different scientific and regulatory frameworks) and to provide context for comments. Primarily because DPR is a sister agency to the Water Boards within Cal-EPA, California Water Board interaction with DPR includes substantial informal engagement.
 - Give presentations to audiences that include pesticide regulators.
- Receive information from U.S. EPA and DPR.
 - U.S. EPA and DPR respond to the information provided by California water quality agencies several ways: (1) by actions, such as regulatory decisions and modifications to risk assessments procedures, (2) in formal written responses prepared for some—but not all—actions, and (3) informally in meetings, telephone conversations, and e-mails.
 - Review and understand the scientific and regulatory basis for U.S. EPA and DPR responses. Written and verbal responses include information about pesticide regulatory processes that should be used to inform and improve future water quality agency engagement with pesticide regulators.
- Review and evaluate outcomes.

Given the time and complexity involved, California water quality agencies have found that they need scientific and regulatory support to complete the above tasks. In 2008, the UP3 Project conducted most of the above activities (with the exception of submitting letters to U.S. EPA and DPR about specific regulatory actions and sitting on agency

¹³ Formally the Copper Antifouling Paint Sub-Workgroup of the Marina and Recreational Boating Workgroup of the Interagency Coordinating Committee (IACC). The IACC is a working group composed of 28 State agencies involved in implementing California's Nonpoint Source Pollution Control Program.

advisory committees) and provided general scientific and regulatory support about pesticides to the California water quality agency community.

2.2 Other Agencies

When other regulatory agency activities may affect the ability to ensure water quality protection from potentially adverse effects of pesticide use, contacts may be made on a case-by-case basis. For example, in 2008, California water quality agencies participated in the regulatory processes of the California Structural Pest Control Board, which has been examining and modifying its regulations to facilitate implementation of integrated pest management (IPM) strategies by professional structural pest control operators. Use of well-designed IPM strategies for structural pest control could afford substantial water quality benefits.

2.3 Coordination Among Agencies—Urban Pesticides Committee

California water quality agency pesticide regulatory activities have been coordinated primarily through the Urban Pesticides Committee (UPC). Since the mid-1990s, the UPC has served as a center for information exchange, coordination, and collaboration among local, regional, and state agencies seeking to end pesticide-related surface water toxicity problems. Today, the UPC is a collaboration of more than 210 individuals representing water quality regulatory agencies, pesticide regulatory agencies (U.S. EPA and DPR), agricultural commissioners, pesticide users, pesticide manufacturers, pesticide/water quality technical experts, municipal wastewater treatment plants, environmental nonprofits, community organizations, and stormwater management agencies. UPC members are spread throughout California; meetings often include participants from elsewhere in the U.S. This network is currently being managed by the UP3 Project.

The Urban Pesticides Committee is the nation's only agency and stakeholder group working to address pesticide-related water quality problems associated with the use of pesticides in urban areas. Because no other U.S. state or region has established a similar program, the UPC has attracted national attention from U.S. EPA, other states, and a few national organizations.

The UP3 Project operates an announcement-only e-mail list for UPC members to keep them up to date on regulatory, scientific, and educational program developments.

The UP3 Project convenes bimonthly UPC meetings (which can be accessed by teleconference). These meetings typically include several dozen participants. While regulatory and scientific information exchange is usually the focus of UPC meetings, they also provide participants with information about public outreach and education programs, integrated pest management strategies, and other non-regulatory activities that serve to reduce use of pesticides of concern for urban surface water quality.

The UP3 Project also maintains a web site (www.up3project.org) that provides documents and other resources to assist agencies with implementing programs to prevent pesticide-related water quality problems. The broad array of publications on the web site draws heavy interest from UPC members and others engaged in urban surface water quality protection from pesticides, which is reflected in the site usage rate (more than 10,000 page views per month in 2008).

3.0 SUMMARY OF 2008 REGULATORY ENGAGEMENT SUPPORTED BY THE UP3 PROJECT

3.1 U.S. EPA

California water quality agencies have elected to comment on most chemicals that the UP3 Project has determined have the greatest potential to cause urban surface water impairment, municipal wastewater treatment plant operational problems, and NPDES permit compliance problems, which are only a small fraction (<10%) of the hundreds of pesticides that U.S. EPA is evaluating in its pesticide re-registration and registration review processes. Attention has focused primarily on insecticides that commonly occur in urban surface waters at levels that may cause adverse impacts to aquatic life.¹⁴ However, recognizing that the U.S. EPA pesticide reregistration and registration review processes offer unique opportunities to prevent future water quality problems, comments have also been provided about pesticides for which there are little or no environmental data, but for which urban uses have the potential to cause exceedances of water quality criteria, aquatic toxicity, or violations of NPDES permits.¹⁵

In 2008, with UP3 Project support, California water quality agencies researched, prepared, and formally submitted scientific information and management recommendations for the following U.S. EPA actions:

- Tetramethrin reregistration – Risk assessments and risk reduction options (information submitted by the San Francisco Bay Water Board, CASQA, and Tri-TAC)
- Sumithrin (d-Phenothrin) reregistration – Risk assessments and risk reduction options (information submitted by the San Francisco Bay Water Board, CASQA, and Tri-TAC)
- Triclosan reregistration – Risk assessments and risk reduction options (information submitted by Tri-TAC)
- Request to require registration of silver-emitting products or advise that new statutory is needed (request made by Tri-TAC)
- Pentachlorophenol reregistration - Revised risk assessments and risk reduction options (information submitted by the San Francisco Bay Water Board and San Francisco)
- Creosote reregistration – Revised risk assessments and risk reduction options (information submitted by the San Francisco Bay Water Board)

The UP3 Project informally provides scientific information to U.S. EPA. Examples of the information provided in 2008 include:

- Pyrethroid-related toxicity in water column samples – Provided copies of studies that are examples of aquatic toxicity test failures attributed to pyrethroids in water column samples from California urban creeks during storm events.

¹⁴ These were selected based on a review of the replacement products: TDC Environmental (2003). *Insecticide Market Trends and Water Quality Implications*, report prepared for the San Francisco Estuary Project and the San Francisco Bay RWQCB, April.

¹⁵ Such pesticides are identified on the basis of the UP3 Project's annual review of relevant research and monitoring data, pesticide use patterns, and information in U.S. EPA environmental risk assessments such as pesticide chemical properties and ecotoxicity.

- Fipronil – Provided a copy of a UP3 Project review of fipronil to support discussion of its possible urban water quality impacts, particularly if it becomes a substitute for pyrethroids.
- POTW operation interference – Provided a copy of a Stanford University study evaluating the potential for chemical root control products to affect municipal wastewater treatment processes.
- Chemical analysis methods – Provided information to assist with identification of preferred detection limits for pyrethroid surface water measurements.
- Pyrethroid sediment toxicity nationally – Provided a scientific reference documenting pyrethroid-related toxicity to sediment dwelling organisms in Texas urban watersheds.
- Education program effectiveness – Provided quantitative data from a Water Environment Federation study applicable to estimating the effectiveness of education programs for controlling pesticides in surface waters.
- Etofenprox registration – Shared information relevant to design of water quality-related portions of the etofenprox (new rice pesticide) registration risk assessments.
- Tributyltin cooling water additives – Provided information on POTW compliance problems associated with tributyltin use in cooling water systems and requested that DPR provide information in its possession from its 1996 rulemaking on tributyltin cooling water additives.
- Cooling water systems – Provided information about operation of (and biocide discharges from) recirculating cooling water systems and POTW compliance problems attributed to recirculating cooling water system biocide discharges.

California water quality agencies participated in the following formal meetings with U.S. EPA:

- Pesticide Program Dialogue Committee – A water quality agency representative sits on U.S. EPA Office of Pesticide Programs' stakeholder advisory committee, the Pesticide Program Dialogue Committee, which meets twice a year.
- Swimming pool discharges – Held a teleconference meeting with U.S. EPA Office of Pesticide Programs Antimicrobials Division staff to share information about discharges from swimming pools (April 2008).
- Pentachlorophenol – Held a teleconference meeting with U.S. EPA Office of Pesticide Programs Antimicrobials Division staff to share scientific information and questions about pentachlorophenol risk assessments and to discuss risk management options (August 2008).
- UPC meetings – U.S. EPA participates in all UPC meetings (bimonthly).

The UP3 Project set up the swimming pool and pentachlorophenol meetings and worked with U.S. EPA staff to help make all of these interagency meetings productive.

3.2 California Department of Pesticide Regulation

Most California water quality agency interaction with DPR has been informal and collaborative in nature. For example, DPR and the Water Boards have coordinated on development of implementation plans for several pesticide-related TMDLs. While Water Boards generally do not write formal letters to DPR (since they are sister agencies in

Cal-EPA), other California water quality agencies have sent letters to DPR regarding specific actions within its authority. Most correspondence in 2008 was related to pyrethroids, discussed separately below. Only one formal letter was sent to DPR unrelated to pyrethroids:

- Silver-emitting products. Tri-TAC requested that DPR require registration of silver-emitting products or advise that new statutory authority is needed.

California water quality agencies participated in the following formal meetings with DPR:

- Pest Management Advisory Committee – Representatives of wastewater and stormwater agencies participated in quarterly meetings of DPR's general external stakeholder advisory group, the Pest Management Advisory Committee. Water Board, wastewater, and stormwater agencies were also represented on the Urban Pest Management Work Group that DPR established under the auspices of the Pest Management Advisory Committee. The Work Group completed a set of recommendations and was disbanded in 2008.
- Pesticide Registration and Evaluation Committee – A State Water Board representative is part of DPR's interagency advisory group, the Pesticide Registration and Evaluation Committee, which meets bimonthly.
- Marine antifouling paint meetings – Water Board and UP3 Project representatives participated in statewide antifouling paint meetings organized by DPR (approximately quarterly). This effective communication forum has grown from a group focused on the water quality impacts of copper in marine antifouling paint to a broader forum for sharing scientific information regarding the known and potential water quality impacts of marine antifouling coatings.
- UPC meetings – DPR participates in all UPC meetings (bimonthly).

Over the course of the year, the UP3 Project informally provided scientific information to DPR on many occasions. Examples of the information provided in 2008 include:

- Water body impairment – Provided DPR with preliminary 303(d) list update information to encourage DPR to work with the Water Boards in evaluation of pesticide-related water quality data.
- POTW operation interference – Provided a copy of a Stanford University study evaluating the potential for chemical root control products to affect municipal wastewater treatment processes.
- Monitoring program design information – Provided examples of monitoring program designs and scientific background information to support development of a workplan for monitoring for pesticide in urban surface waters.
- Water quality benchmarks – Provided data to demonstrate the relationship between water quality criteria and U.S. EPA Office of Pesticide Programs aquatic life benchmarks. Recommended alternative approaches and alternative data sources for development of water quality benchmarks for DPR's use in evaluating surface water monitoring data.
- Marine antifouling paints – Shared scientific references relevant to copper and to marine antifouling paint water pollution problems.
- Pyrethroid sediment toxicity nationally – Provided a scientific reference documenting pyrethroid-related toxicity to sediment dwelling organisms in Texas urban watersheds.

3.2.1 Pyrethroids

Responding to widespread toxicity in California surface waters linked to pyrethroid insecticides, in August 2006 DPR initiated regulatory action (“reevaluation”) to identify mitigation measures to address the toxicity. DPR has offered California water quality agencies opportunities to provide information at various junctures in the pyrethroid reevaluation. Supporting water quality agency participation in DPR’s pyrethroid reevaluation was a major focus for the UP3 Project in 2008. Water quality agency engagement with DPR has included written comment letters in addition to informal dialogue with DPR, other agencies, and other stakeholders (such as pyrethroid manufacturers). The level of interagency information-sharing occurring in the pyrethroid reevaluation is unprecedented in the history of DPR reevaluations.

The pyrethroid reevaluation includes two urban-related elements: (1) addressing toxicity in urban creeks associated with pyrethroids in urban runoff and (2) examining the potential impacts of pyrethroid discharges to municipal wastewater treatment plants. Tables 3 through 6 on the following pages chronicle the activities that have occurred in relation to the urban elements of the pyrethroid reevaluation that are of greatest interest to water quality agencies (omitted from the tables are actions related to environmental fate data requirements, which DPR is handling internally).

Table 3. Pyrethroid Reevaluation Events – Urban Runoff

Date	Event
2006	
August	Reevaluation initiated. Urban runoff-specific requirements included: <ol style="list-style-type: none"> 1. Data identifying the processes by which pyrethroids are moving off the site of application to aquatic sediments. 2. Data demonstrating the reduction or elimination of pesticide residue movement from application sites to aquatic sediments.
2007	
April	DPR hosted a Pyrethroid Forum in Sacramento to facilitate exchange of information among stakeholders. ¹⁶
August	DPR provided California water quality agencies with the opportunity to review and comment on the PWG's proposed approach to mitigating the movement of pyrethroids to surface water sediments.
October	Water Boards and CASQA provided DPR with comments on PWG's proposed approach to mitigating the movement of pyrethroids to surface water sediments. Comments included a recommended approach for developing scientific information to support selection of mitigation strategies and a list of recommended early mitigation measures.
2008	
January	CASQA/UP3 Project held a meeting with PWG to discuss modeling of pesticides in urban runoff.
February	DPR provided California water quality agencies with the opportunity to review and comment on PWG's proposals to conduct a building material wash-off study and a grass wash-off study.
April	Water Boards and CASQA provided comments on PWG's proposals to conduct a building material wash-off study and a grass wash-off study.
May	DPR responded to CASQA's October 2007 comments regarding the approach to the resolution of the urban runoff problem.
May	DPR approved PWG's proposals to conduct a building material wash-off study and a grass wash-off study.
August	DPR provided California water quality agencies with the opportunity to review and comment on PWG's proposal to conduct a controlled use urban monitoring study.
October	Water Board and CASQA submitted comments to DPR on PWG's proposal to conduct a controlled use urban monitoring study.

¹⁶ DPR has made presentations from this forum available on the Internet:
<http://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/pyrethroids.htm>

Table 4. Pyrethroid Reevaluation Events – POTW Discharges

Date	Event
2006	
August	Reevaluation initiated. Requirements included a wastewater monitoring study to determine the scope of permethrin contamination in POTW effluent.
2007	
March	DPR provided California water quality agencies with the opportunity to review and comment on the Pyrethroid Working Group's (PWG's) proposed conceptual approach to developing a monitoring protocol for pyrethroids in POTW effluent.
April	Tri-TAC sent DPR detailed comments and made specific recommendations for the design of the POTW sampling program.
June	DPR approved PWG's proposal to work with Tri-TAC to develop protocols to investigate the fate of pyrethroids in POTWs.
August	Tri-TAC and PWG held a meeting in Los Angeles. POTW representatives and pyrethroid registrants shared information about POTW operations, water quality regulations, and the PWG's proposed approach to evaluating the fate of pyrethroids in POTWs. Water Board and DPR staff participated by telephone.
December	PWG sent Tri-TAC a preliminary concept for its approach to designing the required monitoring program, including a concept for laboratory treatability studies. The concept included a schedule for water analytical method development and a schedule for laboratory treatability studies.
2008	
January	Tri-TAC provided comments to PWG on the preliminary monitoring program design approach and schedules.
April	PWG responded to Tri-TAC's comments and provided DPR with a draft action plan and schedule.
September	PWG met with Tri-TAC by telephone to discuss monitoring protocol development, chemical analytical method development, and to share information. Water Board and DPR staff participated in the meeting. PWG informed Tri-TAC that previously supplied schedules had not been followed, but that chemical analytical method development had been initiated.
September	Tri-TAC provided PWG's laboratory with samples to use for chemical analytical method development and validation.
November	PWG sent DPR and Tri-TAC a conceptual proposal for POTW monitoring program design.

Table 5. Pyrethroid Reevaluation Events – Sediment Data

Date	Event
2006	
August	Reevaluation initiated. Sediment-related requirements included: 1. Aerobic and anaerobic aquatic sediment half-lives 2. Sediment acute and chronic toxicity data for <i>Chironomus tentans</i> and <i>Hyalella azteca</i> . 3. Sediment analytical method
2007	
June	DPR approved chemical analytical method for pyrethroids in sediment
October	DPR provided California water quality agencies with the opportunity to review and comment on the PWG's proposal to address the pyrethroid reevaluation sediment toxicity data requirement.
December	Water Board, CASQA, and Tri-TAC submitted comments to DPR on PWG's proposal to address the pyrethroid reevaluation sediment toxicity data requirement.
December	DPR approved the PWG protocol for measuring pyrethroid aquatic sediment half-lives
2008	
May	DPR responded to Water Board comments on PWG's proposal to address the pyrethroid reevaluation sediment toxicity data requirement.
September	DPR approved PWG's revised protocol for sediment toxicity testing.

Table 6. Pyrethroid Reevaluation Events – Mitigation

Date	Event
2006	
August	Reevaluation initiated. Mitigation-related requirements included: "Data demonstrating the reduction or elimination of pesticide residue movement from application sites to aquatic sediments."
2007	
October	Together with comments on a PWG document, Water Boards and CASQA provided DPR with a list of recommended early mitigation measures (for several of these, implementation is via changes to pesticide product labels).
2008	
October	DPR requested feedback on possible label language changes to implement several of the early mitigation measures requested by the Water Boards and DPR. U.S. EPA agreed to seek to implement the label changes through a voluntary program for all pyrethroids.
October	Water Boards and CASQA submitted comments to DPR supporting the label change proposal.

3.3 Structural Pest Control Board

In 2008, California water quality agencies participated in regulatory discussions by the Structural Pest Control Board (SPCB). The SPCB, which is part of the California Department of Consumer Affairs, regulates professional structural pest control operators (PCOs). In 2008, the SPCB considered several actions that would facilitate implementation of efforts to reduce the water quality impacts from structural pest control activities. All of these actions grew out of 2007 recommendations from advisory groups that included Water Board and CASQA participants. The 2008 actions are summarized below.

- Barriers to Advertising Integrated Pest Management (IPM)-Based Structural Pest Control Services. One of the SPCB's regulations (California Code of Regulations Section 1999.5 [CCR 1999.5]) prohibits PCOs from making claims of environmental benefits of their services, regardless of the veracity of such claims.¹⁷ California water quality agencies have been involved in the development of a structural pest control integrated pest management (IPM) certification program called "Ecowise Certified,"¹⁸ recognizing that PCOs providing IPM services could reduce the potential for water quality impacts associated with pest management activities. Because the CCR 1999.5 restrictions constituted a significant barrier to informing the public about the benefits of IPM, California water quality agencies and other partners in the Ecowise Certified program sought assistance from the SPCB to modify this regulation.
- Establish a definition of IPM. Neither the law nor regulations for structural pest control included a definition of IPM. Adopting a definition lays the groundwork for establishment of IPM certification and education requirements.

Both of the above actions were brought to the SPCB together. In early 2008, the SPCB considered regulatory changes to establish a definition of IPM and to amend CCR 1999.5 to permit verifiable claims of environmental benefits while maintaining protection against overly broad or unsubstantiated claims.¹⁹ CASQA testified in support of both proposed regulations. The SPCB approved the IPM definition in January and the advertising claims revisions in April.

- Continuing Education Requirements for IPM. In mid-2008, the SPCB approved adoption of adding IPM to continuing education requirement for structural pest control operators. Beginning in 2010 structural PCOs will need to have a minimum of 2 hours of IPM training every 3 years.
- Prevent problems associated with pre-construction termiticide treatments. In response to reported misuse of pesticides for pre-construction termiticide treatments (which involve soaking the ground with an insecticide before a

¹⁷ CCR 1999.5 (f) (6) currently prohibits "any statement or representation that a pest control service, product, pesticide, or device offers a general environmental protection or benefit, or that the pest control products, pesticides, or devices the licensee uses, the applications of such products, pesticides, or devices, or any of them, are 'among the least toxic chemicals known,' 'relatively non-toxic,' 'pollution approved,' 'environmentally aware,' 'environmentally sensitive,' 'environmentally preferable,' 'environmentally benign,' or 'contains all natural ingredients'".

¹⁸ Ecowise Certified certifies qualified professional structural pest control operators that employ integrated pest management-based structural pest control services, including measures to reduce the threat to urban surface water quality.

¹⁹ The proposed regulations are available on the SPCB internet site:

http://www.pestboard.ca.gov/pestlaw/proposed_regs/index.htm

foundation is poured), the SPCB reinvigorated a subcommittee called the “Pre-Treatment Committee.” A staff member of the Sacramento County Stormwater Quality Program (also representing CASQA) was appointed to this committee. In late 2008, the committee recommended that the SPCB implement an inspection program to prevent violations of label requirements for pre-construction termiticide treatments. The inspections would include enforcement of new measures to protect water quality after pre-construction termiticide treatments (these measures are currently in the process of being placed onto pyrethroid product labels by U.S. EPA). The SPCB will consider this recommendation in 2009.

In 2008, a professional pest control operator who has been working closely with water quality agencies for several years was appointed to the SPCB. Luis Agurto, Sr. of Pestec provided significant assistance with the development of the Ecowise Certified program. His appointment increases the awareness of water quality issues among SPCB membership.

3.4 Presentations and Events

Information is commonly shared among California water quality agencies and pesticide regulators during meetings, at presentations, or during events featuring sessions on the relationship of pesticide use and water quality in urban areas. The UP3 Project identifies information-sharing opportunities, participates in some events, and assists California water quality agencies with preparation other events. While a complete recording of all such events is beyond the scope of this report, examples of important events in 2008 are listed in Table 7.

Table 7. Examples of Presentations & Information Sharing Events – 2008*

Month	Presenting Organization(s)	Forum	Audience	Material Presented
February	Tri-TAC, CASQA, Water Boards	Presentation	DPR Pest Management Advisory Committee and DPR management	Recommendations of DPR Urban Pest Management Workgroup, including several water quality-based recommendations
April	Sacramento County Stormwater Quality Program/CASQA & UP3 Project	Presentations	National Structural IPM/Water Quality group	Data linking structural pest control pesticide applications with water quality problems and how water quality protection regulatory approaches complement IPM
April	UP3 Project, CASQA, Tri-TAC	Teleconference meeting	U.S. EPA Antimicrobials Division staff	Information about discharges of water in swimming pools
May	Sacramento County Stormwater Quality Program/CASQA	Presentation to CASQA general meeting	Municipality and Water Board staff	Pesticide regulation for water quality protection
May	Sacramento County Stormwater Quality Program/CASQA	Meeting	Staff of U.S. EPA Office of Pesticide Programs (OPP) Environmental Fate and Effects Division (EFED)	U.S. EPA's process for evaluating water quality impacts of pesticides
May	UP3 Project	Presentation	UPC	Overview of new scientific findings related to urban pesticide use and water quality
August	UP3 Project, San Francisco	Teleconference meeting	U.S. EPA pentachlorophenol reregistration team	Share information relevant to pentachlorophenol risk assessments and risk management
August	Sacramento County Stormwater Quality Program, Riverside County Flood Control and Water Conservation District/CASQA	Presentations at Western Region Ant Workshop	Ant IPM researchers and practitioners	(1) Overview of how urban pesticide applications link to water quality problems; (2) explanation of the challenges for municipalities posed by pyrethroids in urban runoff

Table 7. Examples of Presentations & Information Sharing Events – 2008* (Continued)

Month	Presenting Organization(s)	Forum	Audience	Material Presented
September	UP3 Project	Presentations at U.S. EPA Pesticide Regulatory Education Program	Nationwide training for senior state and U.S. EPA pesticide regulators	(1) Need for practical chemical analytical methods for most current-use pesticides and discussion of the implications of not having these methods; (2) Evaluating water quality issues associated with urban pesticide use.
September	CASQA	Pesticides session at CASQA annual conference	Municipalities, water quality regulators, and pesticide regulators.	Five scientific presentations that together provided an overview of the environmental measurements and problems associated with pyrethroids and other insecticides in urban runoff.
November	Sacramento County Stormwater Quality Program/ CASQA	Presentation	Staff of U.S. EPA Office of Pesticide Programs (OPP)	Urban pesticide water quality problems and issues that water quality agencies would like U.S. EPA to address during pesticide registration, reregistration, and registration review
December	Sacramento County Stormwater Quality Program	Presentation	Cal-EPA staff	Multiple environmental benefits of Sacramento regional river-friendly landscaping program

*This list is provided to show the range and nature of events; it is not comprehensive

4.0 EVALUATION OF THE UP3 PROJECT'S 2008 OUTCOMES

As described in Section 1.1, the goals of California water quality engagement in pesticide regulatory processes are:

1. To prevent surface water impairment.
2. To prevent violations of wastewater and stormwater NPDES permits.

To achieve these goals, California water quality agencies have three primary objectives for their participation in pesticide regulatory processes:

1. Improve design of pesticide water quality impact evaluations. Pesticide water quality impact evaluations conducted by U.S. EPA and DPR should be based on all available scientific information, assess the impacts of pesticides transported to surface water via all pathways (including urban runoff and discharges to municipal wastewater treatment plants), fully address all urban use patterns, and incorporate evaluation endpoints consistent with Clean Water Act regulatory endpoints.
2. Encourage pesticide regulators to address urban surface water quality in pesticide risk management decisions and to do so in a timely manner. Pesticide risk management decisions should address all significant surface water quality risks including those posed by urban pesticide use patterns, consider costs to water quality agencies, be implemented quickly when water quality problems occur, and prevent new environmental or health impacts from future pesticide market shifts.
3. Seek meaningful public participation opportunities for water quality agencies. To achieve the above objectives, pesticide regulatory decisions relevant to water quality need to include public participation processes that make all relevant information available for water quality agency review and provide opportunity for water quality agencies to share information to ensure that decisions are based on accurate scientific and management information and include practical and effective risk management strategies.

While these goals and objectives have not yet been fully achieved, the record shows that the engagement of California water quality agencies in California and Federal pesticide regulatory processes has significantly improved water quality protection since water quality agencies' initial involvement in the 1990s.

Two approaches to evaluating the outcomes of California water quality agency activities are employed in this section. First, the actual decisions of pesticide regulatory agencies are reviewed to evaluate how water quality agency input affected the outcomes. Second, informal feedback from pesticide regulatory program staff is summarized.

It is important to recognize that this evaluation is necessarily an interim evaluation. The types of processes that California water quality agencies have engaged in take years to complete—and the systemic changes desired will probably take many years to implement fully. Due to the complexity of pesticide regulatory processes, responses to comments may not be issued for more than one year after comments are submitted and outcomes often occur years after comments are made. In evaluating regulatory outcomes, it is important to recognize that water quality is but one of many economic, social, and environmental factors that U.S. EPA and DPR consider when making regulatory decisions.

4.1 Overview of Past Outcomes

Regular interagency dialogue about pesticide-related water quality problems started with the formation of the Urban Pesticides Committee (UPC) in the mid-1990s. By the late 1990s, California water quality agencies recognized that while the information-exchange forum provided by the UPC is valuable, informal dialogue with pesticide manufacturers and pesticide regulators was not a sufficient means to achieve the changes needed to ensure long-term water quality protections from the impacts of urban pesticide use.

In 1999, California water quality agencies started to engage in pesticide regulatory processes on an ongoing basis. In 2003, the scope of the effort was increased in recognition of the water quality threat posed by the market shift to pyrethroid insecticides in response to the phase out of most urban uses of diazinon and chlorpyrifos. Beginning in mid-2004, the effort was further strengthened due to State Water Board grant funding to the UP3 Project, which provided California water quality agencies with an ongoing base of scientific and regulatory support for their individual engagement with pesticide regulators.

Although the process was slow at first, by 2005 staff from both pesticide and water quality regulatory agencies had recognized the importance of pesticide-related water quality issues. By 2007, pesticide regulators had recognized and acknowledged that gaps in their regulatory processes—particularly gaps related to urban pesticide use—were connected to urban water quality problems from pesticides.

In 2006, pesticide regulatory agencies began to take specific steps to address pesticide-related urban surface water quality problems. At the Federal level, U.S. EPA changed allowable uses for several pesticides due to water quality problems (see Section 4.3). California DPR initiated the pyrethroid reevaluation in response to water quality problems and created the Urban Pest Management Workgroup to give it advice on development of management strategies specific to pesticide use in urban areas. These specific outcomes reflect meaningful progress toward achieving the goals listed above.

4.2 Pesticide Regulatory Agency Decisions

4.2.1 Changes in Allowable Urban Uses for Pesticides of Concern

U.S. EPA. An analysis of the 28 U.S. EPA completed pesticide reregistration decisions for pesticides of interest to urban surface water quality (those which California water quality agencies participated in) is in Table 8 (on the next four pages). Table 8 contains a summary of the most common urban uses of each pesticide, the urban use changes made in the reregistration process and the likely relevance of water quality agency comments in these changes. The assessment of the relationship of water quality agency comments to urban pesticide use changes was made on the basis of the explanation of U.S. EPA's regulatory rationale in its pesticide re-registration decisions and U.S. EPA's written responses to water quality agency comments. The analysis in Table 8 shows that incorporation of water quality protection into U.S. EPA decisions has improved between 1999 and present.

California DPR. Because DPR does not have a pesticide review process analogous to U.S. EPA's reregistration and registration review processes, it rarely makes changes to reduce the allowable uses of pesticides. No DPR changes in allowable urban uses for pesticides of concern were identified.

Table 8. Changes in Allowable Urban Uses for Pesticides of Concern Made by U.S. EPA, 1999-2008

Pesticide	Most Common Urban Uses	Urban Use Changes	Assessment of Relationship of Water Quality Agency Comments to Urban Use Changes
2001			
<i>Chlorpyrifos</i>	Lawn, garden, around buildings, manholes	Most urban uses terminated, but some potentially problematic uses remain. Applications in storm drain manholes were prohibited.	<i>Minor.</i> Water quality was probably not a factor in U.S. EPA's decision, except that applications in storm drain manholes were specifically prohibited in response to California water quality agencies' requests.
2002			
<i>Lindane</i>	Lice and scabies treatments	EPA asked FDA to enact measures to reduce use and modified national lindane water quality criteria. In 2006, EPA phased out all remaining pesticidal uses.	<i>High.</i> Data provided by water quality agencies were critical to the U.S. EPA decision. Water quality agency comments were likely a major factor in the decision to address pharmaceuticals that are not regulated by U.S. EPA and the decision to modify the lindane water quality criteria.
2003			
<i>Carbaryl</i>	Lawn, garden, pets	Pet applications terminated. Residential lawn applications temporarily limited, but may be reauthorized.	<i>Moderate.</i> Water quality likely a factor in pet care use termination, but does not seem to be a factor in the ongoing evaluation of lawn uses.
2004			
<i>Diazinon</i>	Lawn, garden, around buildings	All urban uses terminated; however, cut flower and nursery uses (which are still allowable) could occur in urban areas.	<i>Minor.</i> Water quality was probably a minor factor in U.S. EPA's decision. As requested, U.S. EPA added label language to clarify that diazinon trunk wraps should not be used in urban areas. Requested evaluations of nurseries and cut flowers uses were rejected.
<i>MCPA</i>	Lawns and rights of way	Application rates were reduced.	<i>None.</i> Comments were not directly related to this change.
2005			
<i>2,4-D</i>	Lawns	Application rates were reduced.	<i>None.</i> Comments were not directly related to this change.
<i>2,4-DB</i>	Open land	No changes that would affect water.	<i>None.</i>
2006			
<i>Arsenic-containing herbicides</i>	Turf	All urban uses cancelled.	<i>None</i> (comments were made only to indicate support for final decision). Decision included an assessment of alternatives for urban uses, which has been a regular request of water quality agencies.

Table 8. Changes in Allowable Urban Uses for Pesticides of Concern Made by U.S. EPA, 1999-2008 (Continued)

Pesticide	Most Common Urban Uses	Urban Use Changes	Assessment of Relationship of Water Quality Agency Comments to Urban Use Changes
2006 (continued)			
<i>Atrazine</i>	Lawn	Reduced application rate.	<i>None.</i> Comments were related to how U.S. EPA approaches its decisions, not to specific uses
<i>Copper (Group 1 of 2)</i>	Fungicides, water applications, root killer	Application rates and maximum frequencies were set (and in some cases reduced).	<i>Minor.</i> Water quality was a factor in U.S. EPA's decision; however, urban uses other than aquatic applications were not assessed or addressed directly in risk management.
<i>Cypermethrin</i>	Around buildings	New label language requires controls on pre-construction termiticide treatments to prevent runoff. Restricted applications to impervious surfaces to spot treatments, except for "foundation treatments" up the walls of buildings. New label language added to prevent outdoor applications when rain is imminent. Added other label instructions to reduce potential for releases to surface water.	<i>High.</i> Water quality was the basis for the listed changes, which appear to be direct responses to comments, particularly pre-construction termiticide label instructions to prevent cypermethrin wash-off.
<i>Dicamba</i>	Lawns, golf courses	Reduced application rate.	<i>None.</i> Comments were not directly related to this change.
<i>MGK-264</i>	Indoors, lawn, garden, around buildings	Label directions to reduce releases were added. Maximum allowable outdoor application rate was reduced.	<i>High.</i> Water quality agency comments were probably a meaningful factor in the decision to make label direction changes.
<i>Metaldehyde</i>	Garden	Greatly limited the types of plants that can be treated. Required graphic warning of child and pet hazard. Required barriers to prevent child or animal access to treated areas.	<i>High.</i> Changes were directly related to water quality agency comments. The changes reflected information provided by San Francisco Department of the Environment, which U.S. EPA contacted while developing its risk management strategy.
<i>PBO</i>	Indoors, lawn, garden, around buildings	Label directions to reduce releases were added.	<i>High.</i> Water quality agency comments were probably a meaningful factor in the decision to make label direction changes.
<i>PCNB</i>	Turf (particularly golf courses)	All urban uses cancelled.	<i>None</i> (comments were made only to indicate support for final decision). Decision included an assessment of alternatives for urban uses, which has been a regular request of water quality agencies.

Table 8. Changes in Allowable Urban Uses for Pesticides of Concern Made by U.S. EPA, 1999-2008 (Continued)

Pesticide	Most Common Urban Uses	Urban Use Changes	Assessment of Relationship of Water Quality Agency Comments to Urban Use Changes
2006 (continued)			
<i>Permethrin</i>	Indoors, lawn, garden, around buildings	Added label directions to reduce releases, such as directions to clean up granules that land on impervious surfaces, not to overwater after lawn and garden applications, and not to apply prior to heavy rainfall.	<i>High.</i> Water quality was the basis for the listed changes, which appear to be directly in response to comments; however, measures were relatively minor because U.S. EPA deferred cumulative pyrethroids review until 2010.
<i>Pyrethrins</i>	Indoors, lawn, garden, around buildings	Label directions to reduce releases were added.	<i>High.</i> Water quality agency comments were probably a meaningful factor in the decision to make label direction changes.
<i>Resmethrin</i>	Indoors, lawn, garden, around buildings	Added label directions to reduce releases, such as directions not to overwater after lawn and garden applications, not to apply to drains, and not to apply prior to heavy rainfall.	<i>High.</i> Water quality was the basis for the listed changes, which appear to be direct responses to comments; however, measures were relatively minor because U.S. EPA deferred cumulative pyrethroids review until 2010.
2007			
<i>Allethrin</i>	Indoors, lawn, garden, around buildings	Pets, boat hull, drainage system, paved area, and golf course turf treatments terminated. All other outdoor uses to spot treatments.	<i>Moderate.</i> Changes appear to respond to both human health and water quality factors. Market forces (i.e., limited sales for canceled use patterns) may have also played a role in the decision.
<i>Malathion</i>	Lawn, garden, around buildings	Canceled broadcast applications on residential lawns and golf course turf, as well as applications on human clothing, mattresses, cats, dogs and other animals; kennels, and sewage systems. Limited applications around buildings to 2-foot band.	<i>Moderate.</i> Water quality was probably not a major factor in U.S. EPA's decision, which was driven by human health; however, water quality may have been a factor in the use cancellations.
<i>Mecoprop-p (MCPP-p)</i>	Lawns and rights of way	Application rates were reduced.	<i>None.</i> Comments were not directly related to this change.
2008			
<i>Creosote</i>	Wood treatment	None. Required second vacuum treatment of creosote-treated wood designed for use in aquatic environments to reduce surface concentrations and thus in-water losses.	<i>Minor.</i> Significant risks to aquatic species were identified but not fully mitigated with risk management measures.
<i>Metam Sodium</i>	Sewer system root control	Required notification of downstream POTW prior to sewer line treatment, increased worker safety protection requirements.	<i>High.</i> POTW notification was implemented specifically in response to concerns about the potential for negative effects on treatment plant operations if daily discharges are too large.

Table 8. Changes in Allowable Urban Uses for Pesticides of Concern Made by U.S. EPA, 1999-2008 (Continued)

Pesticide	Most Common Urban Uses	Urban Use Changes	Assessment of Relationship of Water Quality Agency Comments to Urban Use Changes
2008 (continued)			
<i>Pentachlorophenol</i>	Utility poles	None. Required second vacuum treatment of penta-treated wood designed for use in aquatic environments to reduce surface concentrations and thus in-water losses.	<i>Minor.</i> Water quality risks associated with dioxins in penta were identified, but not fully mitigated with risk management measures. Registration review may be moved up to occur sooner than the default 15 years depending on the results of required future studies.
<i>Sumithrin</i>	Indoors, lawn, garden, around buildings, pets, carpets, mosquito control	None. However, U.S. EPA has separately indicated that it plans to request voluntary label changes to add directions to reduce releases, such as directions not to overwater after lawn and garden applications, not to apply to drains, and not to apply prior to heavy rainfall.	<i>Moderate.</i> Due to U.S. EPA finding of public health benefits of use of sumithrin for mosquito abatement, no changes in mosquito abatement use patterns were required. Water quality was the basis for the voluntary label changes, which are directly in response to comments about pyrethroids.
<i>Tetramethrin</i>	Indoors, lawn, garden, around buildings	Label directions to reduce releases were added.	<i>High.</i> Water quality was the basis for the listed changes, which appear to be direct responses to comments.
<i>Triclosan</i>	Biocidal soaps, impregnated in materials like fabric and plastics	Use in paints terminated. Use in pulp and paper processing water allowed only in closed industrial water systems.	<i>Moderate.</i> Water quality was not the basis for any use changes because U.S. EPA has declined to regulate triclosan use in products that are also regulated by the Food & Drug Administration (FDA). FDA-regulated products (like biocidal soaps) are the primary sources of triclosan in the environment. Due to water quality concerns, U.S. EPA required several follow-up studies and accelerated the next review of triclosan by 10 years, planning to start in 2013 instead of 2023.

Source: TDC Environmental evaluation of U.S. EPA Re-registration Eligibility Decisions and related documents.

4.2.2 New Pesticides

Water quality protection involves not only implementing measures to ensure that pesticides that are already on the market do not cause water quality problems—it also is necessary to avoid registration of new pesticides for uses that will cause water quality or compliance problems. Very few new pesticides (new “active ingredients”) are registered each year. Every new pesticide is reviewed by both U.S. EPA and DPR (which share information) in a process that includes both environmental and human health risk assessments and risk management decisions. This process has many similarities to the U.S. EPA process for reviewing existing pesticides. One major difference is that public information about the review of new pesticides is limited, preventing evaluation of the extent to which processes that have increased water quality protections have been integrated into review of new pesticides.

Because current pesticide review methods do not fully evaluate and fully mitigate water quality risks from urban pesticide use, newly registered pesticides could be associated with future surface water quality or compliance problems. Due to the lack of chemical analysis methods and the lack of surface water monitoring for newly registered pesticides, no surface water monitoring data are available to evaluate whether any new pesticide is now—or may in the future be—associated with water quality problems. No recently registered pesticides are known to be associated with urban surface water quality problems; however, unexplained incidents of surface water, stormwater runoff or POTW effluent toxicity could in the future be linked to a recently registered pesticide.

4.2.3 Other Regulatory Actions

U.S. EPA Antimicrobials Data Rule. In late 2008, U.S. EPA issued a proposed rule that frames out data requirements for antimicrobial pesticides that would provide U.S. EPA with improved capacity to review water quality impacts from urban pesticide use. “Antimicrobial” pesticides are biocides, wood preservatives, antifoulants, and other products designed to control microorganisms. Most use of antimicrobials is in urban environments. Common use patterns of interest for urban surface water quality include:

- Cleaning products and fabric treatments, which are often washed into municipal wastewater systems
- Swimming pool and spa biocides, which may flow to either sewer systems or storm drains when pools are emptied
- Cooling water system biocides, which may be discharged to either sewer systems or storm drains
- Marine antifouling coatings, which continuously leach biocides, can be rubbed off during hull cleaning, and when repainted, can create debris that can be washed into waters if improperly managed
- Wood preservatives, which can leach into water from in-water applications like docks and piles or be washed into water from treated utility poles, railroad ties, fences, and decking

The proposed “Antimicrobials Data Rule” clarifies U.S. EPA’s intent to require the data needed for water quality evaluations of marine antifouling coatings and wood preservatives. It defines antimicrobial pesticide use patterns in a manner that allows U.S. EPA to require additional data, particularly for swimming pool discharges. It also includes a new set of data requirements with the intent of providing information needed for U.S. EPA to review the impacts of POTW discharge of antimicrobials used indoors.

The use pattern changes for swimming pools and the new data requirements related to indoor use of antimicrobials were proposed in response to information provided by California water quality agencies.

The Antimicrobials Data Rule was made available for public review in fall 2008; it is uncertain when it will be finalized.

California DPR Pyrethroid Reevaluation. As described in Section 3.2.1, DPR initiated reevaluation of pyrethroids to address water quality problems in both urban and agricultural surface waters. As of November 2008, the reevaluation process had not generated any significant new scientific information. Although several proposals for studies to address pyrethroids in urban runoff have been submitted and reviewed by California water quality agencies, none have proposed scientifically credible studies to provide meaningful information to support development of measures to address problems with pyrethroids in urban runoff. While discussions with Tri-TAC have been underway for more than a year, POTW effluent monitoring has not been initiated. A protocol that would provide a suitable basis for conducting the required monitoring still needs to be developed.

No mitigation measures had been enacted as of November 2008. The first proposed mitigation action is to modify all pyrethroid labels to include water quality protection requirements adopted by U.S. EPA for cypermethrin. The implementation of this proposed action is under discussion as a voluntary measure that is generally supported by pyrethroid manufacturers. As of November 2008, no specific implementation date had been proposed.

Although California water quality agencies have actively responded to all opportunities afforded by DPR to participate in the pyrethroid reevaluation, as of November 2008, this engagement had been more successful in identifying the problems with information provided by the pyrethroid manufacturers than it has been in assisting DPR with moving the reevaluation process forward to a timely and successful conclusion.

California DPR Marine Antifouling Paint Reevaluation. Although DPR announced its intent to begin the formal process of addressing water pollution problems associated with marine antifouling paints in a memo to the State Water Board in December 2007, as of November 2008, it had not initiated a marine antifouling paint reevaluation.

California DPR Registration of Silver Ion-Generating Devices. In response to a letter from Tri-TAC, in spring 2008, California DPR determined that silver ion-generating products designed to control bacteria require registration as pesticides. The registration process is intended to consider potential impacts of silver wastewater discharges from products like silver ion-generating clothes washing machines.

California Structural Pest Control Board (SPCB) Actions to Facilitate Implementation of Integrated Pest Management (IPM). As summarized in Section 3.3, the SPCB adopted several regulations to facilitate implementation of IPM by professional structural pest control applicators. The regulations grew out of advisory committees that the SPCB formed in response to contacts by water quality agencies. The new regulations are initial steps toward facilitating structural pest control servicing with methods that reduce the potential for structural pest control activities to contribute to water pollution.

4.2.4 Barriers to Increasing Water Quality Protection

Review of the applicable U.S. EPA and DPR documents suggests the following are the most common reasons that regulatory processes do not fully protect water quality:

- U.S. EPA does not have approved methodologies for evaluating the water quality impacts associated with most urban pesticide use patterns. The most important problem is that U.S. EPA does not have an accepted method to evaluate pesticide runoff from outdoor urban pesticide use. Methodologies have been developed for discharges to municipal wastewater treatment plants—these need some adjustment to improve their accuracy and comprehensiveness, and need to be implemented for all pesticides discharged to sewer systems. Similarly, methods exist for other point discharges, like cooling water systems and swimming pools, and for applications directly to surface waters. Available methods for addressing wood preservatives and marine antifouling paints have been or are being adapted to fit into pesticide review processes.
- U.S. EPA does not have a robust set of aquatic toxicity data for most pesticides. When a relatively complete set of aquatic toxicity data are available, pesticide regulatory evaluation endpoints are usually relatively close to water quality regulatory endpoints (i.e., water quality criteria or toxicity that would be measured with typical water quality agency toxicity testing methods). For most pesticides, however, relatively few aquatic toxicity data are available. If available aquatic toxicity data do not represent the most sensitive species, pesticide regulatory decisions tend to be less protective than necessary to avoid impairing water quality.
- U.S. EPA and DPR do not have the information needed to consider costs to water quality agencies when making risk management decisions. Both U.S. EPA and DPR need detailed information about costs, specific compliance challenges, the infeasibility of treatment controls, and timelines to show how costs to water quality agencies increase when pesticide-related water quality and compliance problems are not quickly solved.
- U.S. EPA's and DPR's pesticide regulatory processes are structured to review pesticides individually or in small groups, rather than by use pattern. It is difficult for U.S. EPA and DPR to prevent human health or environmental problems stemming from market shifts resulting from their regulatory decisions (sometimes one problematic product has been discontinued, only to be replaced with a different problematic product). U.S. EPA has sought to address this through the timing of its reviews (e.g., most pyrethroids are planned for review in parallel starting in 2010), but its groupings are based on chemical characteristics rather than use patterns. DPR proposed to bring all marine antifouling coatings into reevaluation together in an effort to prevent market shifts to new, problematic substances.
- Resources to address pesticide-related urban surface water quality problems are limited. Neither pesticide regulatory agencies nor water quality agencies currently have sufficient resources available to obtain all the scientific information and to develop all the management tools that they would like to have for reviewing and addressing the water quality impacts of urban pesticide use.

4.3 Improving Effectiveness of Water Quality Agency Regulatory Engagement

During various informal interactions with UP3 Project staff in 2008, pesticide regulators provided productive feedback on ways that California water quality agencies could improve their effectiveness as they engage with pesticide regulators about urban water quality issues. This feedback is briefly summarized below.

In general, the engagement of California water quality agencies in both California and Federal regulatory processes has changed the way that DPR and U.S. EPA regulate pesticides. Pesticide regulators appreciate what they have learned and are generally pleased to obtain information from water quality agencies.

Agency Culture

- Appreciate that open public participation processes have not previously been the norm for pesticide regulatory decision-making.
- Respect the needs of pesticide regulators for scientific information. Because both California and Federal pesticide regulatory decisions have previously been the subject of litigation, pesticide regulators take action only on the basis of substantial published scientific data based on methodologies that have been peer reviewed by scientific advisory panels.

Information Needs

- Provide specific, detailed written comments based on scientific information, because these types of comments have proven the most effective in achieving water quality agency goals. Communications that provide well-documented scientific information are most useful to pesticide regulators. Copies of all scientific references should be provided—pesticide regulators may not be familiar with them, may not have access to them, and often do not have time to obtain them directly from the original source.
- Send U.S. EPA and DPR all water quality monitoring reports that include monitoring for pesticides that are currently used.²⁰ Data generated by any source—including municipalities, water boards, research institutes, or universities—should be shared with pesticide regulators.
- Recognize that U.S. EPA and DPR have not yet developed adequate water quality modeling tools to address urban pesticide use. Environmental risk assessors desire scientific information to support development of models or other approaches to evaluate the environmental risks urban pesticide use patterns.

Best Ways to Engage

- Engage consistently through written comments, teleconference meetings, and other interactions. Consistent engagement is critical to creating the systematic changes in pesticide regulatory processes that water quality agencies seek.
- Communicate public policy positions in meetings with top management and political appointees. Meetings are the most effective way to share policy messages.
- Provide information sooner—don't wait until the public review process. (This requires a high level of engagement to implement because it is often difficult to know what the agency may be interested in).

²⁰ DPR: Send to Keith Starner, DPR, P.O. Box 4015, Sacramento, CA 95812 (916-324-4167, kstarner@cdpr.ca.gov). The UP3 Project recommends calling Keith before submitting data to discuss submittal formats (any format is acceptable, but electronic submittals are preferred). For more information see: <http://www.cdpr.ca.gov/docs/emon/surfwtr/surfdata.htm>
U.S. EPA: Please contact Patti TenBrook at U.S. EPA Region 9 (415-947-4223, TenBrook.Patti@epa.gov) for assistance with identifying where to send the data you have collected.

Annual Summary of Pesticide Regulatory Activities to Protect Water Quality

- Understand that legal limitations on distribution of some important pesticide-related information can constrain information sharing.
- Meet in-person with pesticide regulators when feasible. Although the cost of travel can be a barrier, agency staff members are willing to arrange in-person meetings when California water quality agency representatives are in Washington, D.C. or Sacramento.
- Participate in the meetings that pesticide regulators attend (i.e., Society of Environmental Toxicology and Chemistry [SETAC] and American Chemical Society [ACS] conferences). Pesticide regulators do not routinely attend the same conferences that water quality agency staff attend (i.e., Water Environment Federation, California Water Environment Association, CASQA, StormCon).
- Develop a nationwide team of water quality agencies interested in water quality problems associated with urban pesticide use. National actions need to be based on nationwide needs.
- Learn more about pesticide regulatory structures, to appreciate the challenges facing pesticide regulators.
- Be patient. Pesticide regulatory processes take a long time.

5.0 PRIORITY REGULATORY ACTIVITIES ANTICIPATED IN 2009

5.1 U.S. EPA

Federal law requires U.S. EPA to evaluate pesticide registrations periodically based on current scientific information and the latest environmental and human health risk assessment methods. In 2008, U.S. EPA came close to completing a special process of evaluating the registrations of all pesticides registered prior to November 1984 (“reregistration”). Only a few pesticides of interest for urban surface water quality (each of which requires special scientific examination) have not completed the final steps of this process:

- Tributyltin (a biocide)
- Antimicrobial copper uses (including use in marine antifouling paint)
- Zinc pyrithione (a marine antifouling paint biocide)

In late 2006, U.S. EPA initiated a new cycle of pesticide registration evaluations that will include all registered pesticides. This evaluation cycle, which is expected to entail reviews of every pesticide active ingredient about once every 15 years, is called “registration review.” It is designed to include public participation opportunities at the initiation of the review for each pesticide (when a draft workplan is released and data are requested), when risk assessments are completed (if risk assessments are conducted), and when the review is completed. In 2009, U.S. EPA is expected to issue registration review workplans for the following pesticides of interest for urban surface water quality:

- Silver compounds
- Malathion
- Imidacloprid
- Chlorpyrifos

No registration review risk assessments or decisions on pesticides of interest are anticipated. A group of pyrethroids (many, but not all pyrethroids of interest for water quality) is planned to be considered in registration review starting in about 2010.

On the basis of past experience, it is likely that several other unanticipated items of significant regulatory interest will arise. These cannot be planned for, but can be identified through daily review of pesticide-related *Federal Register* notices and regular UP3 Project communication with pesticide regulators.

Semi-annual meetings of the U.S. EPA Pesticide Program Dialogue Committee are anticipated to continue. No special meetings with U.S. EPA are scheduled.

5.2 California Department of Pesticide Regulation

California water quality agencies’ primary engagement with DPR in 2009 is anticipated to involve two DPR reevaluations: the ongoing pyrethroid reevaluation and the anticipated new reevaluation of marine antifouling coatings.

For pyrethroids, DPR communications with water quality agencies have been more extensive than they have for any previous reevaluation. DPR is offering water quality agencies the opportunity to review and comment on most study protocols and reports submitted by pyrethroid manufacturers under the pyrethroid reevaluation. There is no workplan for the reevaluation—no schedule is available for these reviews. Based on

DPR protocol approval letters and information provided by DPR at UPC meetings, the items listed in Table 9 are anticipated to be received by DPR in the next few years. Additional items are likely to be generated and made available for review; however, what these items will be and when they will be released is not known.

Table 9. Anticipated Pyrethroid Reevaluation Documents

Event	Date
<i>Sediment Toxicity Test Data</i>	
Semiannual updates on sediment toxicity test progress and preliminary results	Quarterly, starting first quarter 2009
Final results for short-term toxicity testing and cold temperature studies	Second quarter 2010
Final results for chronic toxicity testing	2.5 years after U.S. EPA finalizes the testing protocol*
<i>Sediment Environmental Fate Data</i>	
Aerobic and anaerobic aquatic sediment half-lives	December 2009
<i>Urban Runoff Mitigation</i>	
Building material wash-off study report	December 2008
Grass runoff study report	December 2008
Impervious surface sweeping study concept	December 2008
Additional study protocols	?
<i>POTW Monitoring</i>	
POTW monitoring – list of planned activities and milestones	December 2008
POTW monitoring protocol	?

As of November 2008, U.S. EPA had not released the draft of this protocol.

The stakeholder involvement process for the marine antifouling paint reevaluation has not been determined. Items are likely to be made available to stakeholders for review, however, what these items will be and when they will be released is not known.

DPR has announced that it is considering the possibility of addressing two issues raised by California water quality agencies in future rulemakings. These are:

- Chemical analysis methods. DPR is considering whether to develop regulations that would require pesticide manufacturers to provide chemical analysis methods for pesticides in water and sediment when pesticides are registered for use in California. DPR currently has the authority to require manufacturers to provide a chemical analysis method for a pesticide when a need for that chemical analysis method is established. For example, under the pyrethroids reevaluation, DPR required pyrethroids manufacturers to provide a chemical analysis method for pyrethroids in sediments. The regulatory change would clarify conditions under which DPR would require pesticide registrants to submit an analytical method for water and/or sediment.
- Surface water protection regulations. DPR is considering development of regulations to improve protection of surface waters when professional pesticide applications occur. These regulations will likely address both agricultural and urban pesticide use.

Neither of these potential regulations is a firm proposal; however, both are under consideration for inclusion in a future DPR annual rulemaking calendar.

DPR's routine activities include two types of public participation opportunities that are monitored by California water quality agencies:

- Annual renewal of all pesticide product registrations (usually in November or December). Each year, DPR renews the registration of the more than 11,000 pesticide products registered for use in the state. The process is essentially a formality—public documents include only a short summary of the legal requirements for renewing registrations. Requests for pesticide reevaluation are commonly made at this time, although such requests can be submitted at any time.
- Weekly announcements of pesticide products entering evaluation for registration. These notices list individual pesticide products (usually more than a dozen products each week) for which DPR has received an application to register or to modify the registration. When items of interest for urban surface water quality can be identified (a challenge due to the limited information in the weekly notices), California water quality agencies have responded to these routine DPR announcements, primarily by requesting additional information or a specific analysis of possible water quality impacts of the pesticide being evaluated for registration. On a practical basis, monitoring the California registration process is difficult because public documents do not contain DPR's assessment of the potential water quality impacts from each product.

Quarterly meetings of the DPR Pest Management Advisory Committee and bimonthly meetings of the DPR Pesticide Registration and Evaluation Committee are expected to continue. Information sharing meetings of the Antifouling Strategy Workgroup are anticipated to be held on a quarterly basis. No special meetings with DPR are scheduled.

Other DPR-related meetings could occur at any time. For example, under a Management Agency Agreement (MAA) between DPR and the State Water Board, DPR and the State Water Board indicated their intent to hold public meetings to discuss pesticide water quality regulatory issues, including urban issues. No such meetings have been held to date.

5.3 Structural Pest Control Board

Once the SPCB's newly adopted definition of Integrated Pest Management (IPM) is in print (see Section 3.3), the SPCB intends to follow up on recommendations from its IPM Task Force and its Water Quality Committee to develop an IPM certification program for structural pest control licensees. This process, which if well designed could afford substantial water quality benefits, will likely be initiated in 2009.

6.0 CONCLUSIONS

Conclusion 1: While the goals of California water quality agency engagement in pesticide regulatory processes have not yet been fully achieved, the record shows that the engagement of California water quality agencies has significantly improved water quality protection since water quality agencies' initial involvement in the 1990s. This report identifies topic areas that can be targeted and strategies that can be implemented toward achieving additional water quality protection from pesticide regulatory processes (see Section 4).

Conclusion 2: Strong participation by water quality agencies is necessary to resolve problems with pyrethroids, to prevent new problems, and to achieve compliance with the Clean Water Act.

While pesticide regulators are improving the way they address water quality, barriers to water quality protection are inherent in the design and implementation of both California and Federal pesticide regulatory program. Sharing scientific and management information with pesticide regulators is helping them to appreciate the challenges water quality agencies face and is giving them the information needed to start changing their pesticide review and management processes.

Modifying pesticide regulatory processes to ensure water quality protection is a challenge for pesticide regulators. It will be necessary to earn the support of both scientific staff and management if agencies are to be convinced to take on the major changes that water quality agencies desire.

Acronyms

ACS – American Chemical Society

Cal-EPA – California Environmental Protection Agency

CASQA – California Stormwater Quality Association

CCR – California Code of Regulations

DPR – California Department of Pesticide Regulation

EFED – U.S. EPA Office of Pesticide Programs Environmental Fate and Effects Division

FIFRA – Federal Insecticide, Fungicide, and Rodenticide Act

IACC – Interagency Coordinating Committee (a working group composed of 28 State agencies involved in implementing California's Nonpoint Source Pollution Control Program)

LACSD – Sanitation Districts of Los Angeles County

MAA – Management Agency Agreement

NACWA – National Association of Clean Water Agencies

NPDES permit – National Pollutant Discharge Elimination System permit (permit for discharge of wastewater or urban runoff to surface waters)

OPP – U.S. EPA Office of Pesticide Programs

OW – U.S. EPA Office of Water

PAHs – Polyaromatic Hydrocarbons

PCO – Pest Control Operator (professional pesticide applicator)

POTW – Publicly-Owned Treatment Works (municipal wastewater treatment plant)

PWG – Pyrethroid Working Group (organization of pyrethroid insecticide manufacturers)

SETAC – Society of Environmental Toxicology and Chemistry

SFEP – San Francisco Estuary Partnership

SF Environment – San Francisco Department of the Environment

SPCB – Structural Pest Control Board

Tri-TAC – Not an acronym (Technical advisory committee representing three California associations regarding municipal wastewater treatment plant issues: the League of California Cities, the California Association of Sanitation Agencies, and the California Water Environment Association)

TMDL – Total Maximum Daily Load (regulatory plan for solving a water pollution problem)

UP3 Project – Urban Pesticides Pollution Prevention Project

UPC – Urban Pesticides Committee

U.S. EPA – United States Environmental Protection Agency