

Annual Reporting for FY 2022-2023

Supplement for Tracking and Participating in Pesticide Regulatory Efforts

Bay Area Municipal Stormwater Collaborative Phase II Subcommittee



September 2023

Supplement for Tracking and Participating in Pesticide Regulatory Efforts Annual Reporting for FY 2022-2023

INTRODUCTION

This report provides information on regionally implemented activities complying with portions of the Small Municipal Separate Storm Sewer System (MS4) Phase II Permit issued by the State Water Resources Control Board (Water Board). The Phase II Permit covers stormwater discharges from 24 municipalities and special districts (Permittees) in the North San Francisco Bay Area. This report covers pesticide toxicity regulatory modernization activities implemented through the California Stormwater Quality Association (CASQA) related to the following Phase II Permit provisions:

- E.7.a.(ii)(i) – Develop and convey messages specific to proper application of pesticides, herbicides, and fertilizers
- E.11.h. – Permittee Operations and Maintenance Activities (O&M)
- E.11.j. – Landscape Design and Maintenance
- E.15.a. / Attachment G – Implement Pesticide-Related Toxicity Control Program

Effecting regulatory modernization occurs at the State and Federal level. Recognizing that fact, the Permittees have taken an approach to modernizing pesticide regulations that involves cooperating through the California Stormwater Quality Association (CASQA), and/or the Urban Pesticide Pollution Prevention Project (UP3 Project). All of these entities have determined this cooperative approach is not only the most likely approach but is likely the only approach for local agencies to effect meaningful change in the State and Federal regulatory environments.

Activities and Accomplishments during FY 2022-2023

The actual work of tracking and participating in the ongoing regulatory efforts related to pesticides was accomplished through CASQA. CASQA conducted its activities on behalf of members and coordinated funding contributions and activities through its True Source Control Subcommittee (encompassing the former Pesticide Subcommittee, a group of stormwater quality agencies affected by pesticides or pesticides-related toxicity listings, TMDLs, or permit requirements, as well as others knowledgeable about pesticide-related stormwater issues). The CASQA 2023 Pesticide Annual Report and Effectiveness Assessment (Attachment 1) provides a comprehensive and detailed accounting of efforts to track and participate in relevant regulatory processes as well as accomplishments related to pesticides and stormwater quality.

Attachments

Attachment 1

**2023 Pesticide Annual Report and Effectiveness Assessment
California Stormwater Quality Association
Final Report
August 2023**

2023 Pesticide Annual Report and Effectiveness Assessment

California Stormwater Quality Association

August 2023



Preface

The California Stormwater Quality Association (CASQA) is a nonprofit corporation that advances sustainable stormwater management protective of California water resources. With approximately 2,000 members, our membership is comprised of a diverse range of stormwater quality management organizations and individuals, including cities, counties, special districts, federal agencies, state agencies, ports, universities and school districts, wastewater agencies, water suppliers, industries, and consulting firms throughout the state. Collectively, CASQA represents over 36 million people in California.

This report provides CASQA's members with focused information on its efforts to prevent pesticide pollution in urban waterways. It is a component of CASQA's True Source Control Initiative, which seeks to address stormwater and urban runoff pollutants at their sources. This report was funded by CASQA, Alameda Countywide Clean Water Program, Contra Costa Clean Water Program, Fairfield-Suisun Urban Runoff Management Program, Marin County Stormwater Pollution Prevention Program, Napa Countywide Stormwater Pollution Prevention Program, Sacramento Stormwater Quality Partnership, San Mateo Countywide Water Pollution Prevention Program, Santa Clara Valley Urban Runoff Pollution Prevention Program, Sonoma County Water Agency, and Vallejo Flood & Wastewater District.

This report was prepared by Stephanie Hughes under the direction of the CASQA True Source Control Subcommittee (co-chairs Victoria Kalkirtz and Sara Toyoda), with input from Tammy Qualls of Qualls Environmental Consulting and Ashli Desai of Larry Walker Associates.

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Abbreviations Used in this Report

ALB – Aquatic Life Benchmark

BACWA – Bay Area Clean Water Agencies

BE – Biological Evaluation

CASQA – California Stormwater Quality Association

CWA – Clean Water Act

DPR – California Department of Pesticide Regulation

EAD – Exposure Assessment Document (DPR)

ECC – Estimated environmental concentration

EPA – United States Environmental Protection Agency

ERA – Ecological Risk Assessment

ESA – Endangered Species Act

IPM – Integrated Pest Management

MAA – Management Agency Agreement between DPR and the Water Boards

MS4 – Municipal Separate Storm Sewer System

NPDES – National Pollutant Discharge Elimination System

OPP – U.S. EPA Office of Pesticide Programs

OW – U.S. EPA Office of Water

PAH – Polycyclic aromatic hydrocarbon

PEAIP – Program Effectiveness Assessment and Improvement Plan

PID – Proposed Interim Decision

PMAC – Pest Management Advisory Committee (DPR)

PPDC – EPA's Pesticide Program Dialogue Committee

PUR – Pesticide Use Reporting

RCD – Risk Characterization Document (DPR)

RMD – Risk Management Directive (DPR)

SFBRWQCB – San Francisco Bay Regional Water Quality Control Board

SPM – Sustainable Pest Management Work Group (DPR)

STORMS – Strategy to Optimize Resource Management of Storm Water (a program of the State Water Board)

SWAMP – California Water Boards Surface Water Ambient Monitoring Program

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

TSC – CASQA True Source Control Subcommittee

UP3 – Urban Pesticides Pollution Prevention Partnership

UPP – Urban Pesticide Provisions

USGS – U.S. Geological Survey

Water Boards – California State Water Resources Control Board together with the California Regional Water Quality Control Boards

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Executive Summary

This report by the California Stormwater Quality Association (CASQA) describes CASQA's activities related to the goal of preventing pesticide pollution in urban waterways for the period of July 2022 through June 2023.

To address the problems caused by pesticides in California's urban waterways, CASQA collaborates with the California State Water Resources Control Board and the California Regional Water Quality Control Boards (Water Boards). By working with the Water Boards and other water quality organizations, we address the impacts of pesticides efficiently and proactively through the statutory authority of the California Department of Pesticide Regulation (DPR) and EPA's Office of Pesticide Programs (OPP). The collaboration, initiated more than 19 years ago, has resulted in significant changes in pesticide regulation. A summary of CASQA's activities to address key management questions are described below, with more details and outcomes provided in Section 2.

Near term / Current problems – Are actions being taken by State and Federal pesticides regulators and stakeholders that are expected to end pesticide-caused toxicity or exceedances of pesticide water quality objectives in surface waters receiving urban runoff?

- CASQA shared its urban runoff expertise with pesticide regulators by preparing comment letters to EPA regarding etofenprox, carbendazim, and carbaryl. (See Table 3 and Appendix.)
- In response to CASQA requests to mitigate impacts of etofenprox use on urban impervious surfaces, EPA incorporated label language that restricts specific use including using CASQA's suggested pictogram and proposed labeling. (See Table 3 and Appendix.)
- In response to CASQA requests to mitigate environmental risks in urban environments, EPA initiated significant mitigation measures for urban uses of carbaryl including use deletions, spray drift management measures, general environmental protection measures (including water protection statements), and updated environmental hazard statements. (See Table 3 and Appendix.)
- CASQA updated the Pesticide Watch List following the publication of a U.S. Geological Survey (USGS) surface water quality monitoring dataset for Central California. The Watch List will be shared with pesticides regulators and with government agency and university scientists to stimulate generation of surface water monitoring and aquatic toxicity data for the highest priority pesticides. (See Table 2.)

Long term / Prevent future problems – Do pesticides regulators have an effective system in place to exercise their regulatory authorities to prevent pesticide toxicity in urban water bodies?

- DPR continues to demonstrate its commitment to addressing pesticide impacts on receiving waters through the creation of a Sustainable Pest Management (SPM) Roadmap that seeks to transition the state away from high-risk pesticides¹ to sustainable pest control practices.
- The State Water Board continued to work toward development of the Urban Pesticide Provisions (UPP). The desired outcome for these provisions is to institutionalize the State's strategy of utilizing pesticide regulations as the primary mechanism for addressing pesticide water quality problems associated with urban runoff.
- The State Water Board continues to work toward developing the UPP which are anticipated to be incorporated into the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries, and the Water Quality Control Plan for Ocean Waters of California. CASQA remains dedicated to supporting State Water Board staff.

¹ The SPM Roadmap defines high-risk pesticides as "active ingredients that are highly hazardous and/or formulations or uses that pose a likelihood of, or are known to cause, significant or widespread human and/or ecological impacts from their use." https://www.cdpr.ca.gov/docs/sustainable_pest_management_roadmap/spm_roadmap.pdf

2023 Pesticide Annual Report and Effectiveness Assessment

- In 2022, EPA published a workplan to address the incorporation of their Endangered Species Act (ESA) obligation with pesticide registrations and re-registrations. Twice this fiscal year, the plan was updated to include additional guidance; however urban pesticide uses were not included in both documents. CASQA coordinated with the Bay Area Clean Water Agencies (BACWA) to communicate with EPA headquarters about this omission. This led to an online meeting with five EPA OPP lead staff on July 6, 2023 where CASQA and BACWA representatives directly communicated urban pesticides use concerns. While EPA indicated that their near-term focus will continue to be identification of agricultural impacts to endangered species, they indicated an openness to further communication regarding urban mitigations, with a focus on labels (such as pictograms) and user education. (See Section 2.2.1.)
- Although many improvements have been made by EPA OPP since the early 2000s, improvement in scientific evaluations supporting EPA OPP's regulatory efforts and better understanding of urban runoff management systems are still necessary to adequately protect urban surface waters from pesticide impairments.
- Victoria Kalkirtz, co-chair of CASQA's TSC Subcommittee, joined the DPR's Pest Management Advisory Committee (PMAC).

In the coming year, CASQA plans to continue to address near-term pesticide concerns and seek long-term regulatory change. Near-term and long-term tasks are identified in Section 3, Tables 5 and 6. Key topics include:

- Continued engagement with EPA regarding incorporating their ESA obligation in registrations and re-registrations, including recommending the use of pictograms in labels, and seeking opportunities in California for EPA's regional and vulnerable species pilot programs;
- Continued engagement with DPR regarding the SPM Roadmap specific to urban implementation programs and opportunities;
- Continued support of the UPPs by the State Water Board;
- Continued development of a coordinated monitoring program in partnership with the Water Boards, DPR, and EPA Region 9;
- Registration review-related activities at EPA for pyrethroids and fipronil;
- Initiating discussion of urban water quality concerns at the EPA Pesticide Program Dialogue Committee's (PPDC) future meetings;
- DPR registration applications and proposed decisions for new products.

Section 1. Introduction

1.1 IMPORTANCE OF CASQA'S EFFORTS TO IMPROVE PESTICIDE REGULATION

For decades, the uses of certain pesticides in urban areas – even when applied in compliance with pesticide regulations – have adversely impacted urban water bodies. Currently used pesticides are the primary cause of toxicity in California surface waters, including urban water bodies.² Under the Clean Water Act (CWA), municipalities are held responsible for the quality of urban runoff discharges conveyed to receiving waters through municipal storm drainage systems. When pesticide-related water pollution occurs, local agencies may be held responsible for exceedances in receiving waters, as well as costly monitoring and mitigation efforts. To date, some California municipalities³ have incurred substantial costs to comply with pesticides-related Total Maximum Daily Loads (TMDLs) and additional permit requirements. In some cases (e.g., diazinon, chlorpyrifos), municipal compliance costs have continued more than a decade after termination of virtually all urban use. Throughout California, more municipalities are expected to be subject to similar requirements, as additional TMDLs and Basin Plan Amendments are adopted (Table 1). Meanwhile, local agencies have no authority to further control urban pesticide uses⁴ in order to proactively prevent pesticide pollution and avoid these costs and liabilities.

Under federal and state statutes, EPA and DPR have the authority and responsibility to regulate pesticides and protect water bodies from adverse effects (including impacts from pesticides in urban runoff). For many years, neither agency recognized the need, nor possessed the institutional capacity, to exercise their authority to protect urban water quality. As a result, past registration actions allowed a number of pesticides (such as pyrethroids and fipronil) to be used legally in ways that resulted in widespread pollution in urban water bodies. This situation is depicted in Figure 1.

To change this situation, CASQA actively engages with state and federal regulators in an effort to develop an effective pesticide regulatory system, based primarily on existing statutes, that includes timely identification and mitigation of urban water quality impacts, and proactively prevents additional problems through the registration and registration review processes (Figure 2).

² See reports from the California Surface Water Ambient Monitoring Program Sediment Pollution Trends Program including Anderson, B.S., Hunt, J.W., Markewicz, D., Larsen, K., 2011. Toxicity in California Waters, Surface Water Ambient Monitoring Program. California Water Resources Control Board. Sacramento, CA.

³ For example, Sacramento-area municipalities spent more than \$75,000 in the 2008-2013 permit term on pyrethroid pesticide monitoring alone; Riverside-area municipalities spent \$617,000 from 2007 to 2013 on pyrethroid pesticide chemical and toxicity monitoring.

⁴ Local agencies in California have authority over their own use of pesticides but are pre-empted by state law from regulating pesticide use by consumers and businesses.

Table 1. California TMDLs, Statewide Water Quality Control Plans, and Basin Plan Amendments Addressing Currently Registered Pesticides and/or Toxicity in Urban Watersheds^{5, 6, 7}

Water Board Region	Water Body	Pesticide	Status
Statewide	All MS4s/All Urban Waterways: Statewide Water Quality Control Plan amendments for urban pesticides reduction ["Urban Pesticides Amendments"] (Inland Surface Waters, Enclosed Bays & Estuaries, and Ocean)	All Pesticides/All pesticide-related toxicity	In preparation
	Sediment Quality Objectives (Enclosed Bays & Estuaries)	Sediment Toxicity ⁸	Approved
	Toxicity Provisions (Inland Surface Waters and Enclosed Bays & Estuaries)	Toxicity ⁷	Approved May 2023 ⁹
San Francisco Bay (2)	All Bay Area Urban Creeks	All Pesticide-Related Toxicity	Approved
Central Coast (3)	Santa Maria River Watershed Lower Salinas River Watershed	Pyrethroids, Toxicity Pyrethroids, Toxicity Malathion, Chlorpyrifos, Diazinon ⁹	Approved Approved Adopted by Central Coast Water Board, June 2022 ¹¹
	San Lorenzo River Watershed (Santa Cruz)	Chlorpyrifos ¹⁰	Approved
Los Angeles (4)	Marina del Rey Harbor	Copper (Marine antifouling paint) ¹²	Approved
	Oxnard Drain 3 (Ventura County)	Bifenthrin, Toxicity	EPA-Adopted Technical TMDL
	Calleguas Creek, its Tributaries and Mugu Lagoon	Water & Sediment Toxicity ⁷ Diazinon & Chlorpyrifos ⁹	Approved
	McGrath Lake (Ventura County)	Sediment Toxicity ⁷	Approved
	Colorado Lagoon (Long Beach)	Sediment Toxicity ⁷	Approved
	Dominguez Channel; Greater Los Angeles & Long Beach Harbor Ballona Creek Estuary	Sediment Toxicity ⁷ Sediment Toxicity ⁷	Approved Approved

⁵ Excludes pesticides that are not currently registered in California, such as organochlorine pesticides.

⁶ https://www.waterboards.ca.gov/water_issues/programs/tmdl/

⁷ https://www.waterboards.ca.gov/water_issues/programs/tmdl/2020_2022state_ir_reports_final/apx_d_adopted_tmdls_list.pdf

⁸ These TMDLs/Plan provisions can trigger toxicity testing stressor source identification studies, and additional follow up, even when toxicity is linked to current pesticides.

⁹ https://www.waterboards.ca.gov/water_issues/programs/state_implementation_policy/tx_ass_cntrl.html

¹⁰ Use prohibited in urban areas (diazinon) or no meaningful use due to use limitations (chlorpyrifos).

¹¹ https://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl/docs/salinas/oppesticides/

¹² Primarily addresses pesticides that are directly discharged and should not ordinarily appear in stormwater (marine antifouling paint).

Water Board Region	Water Body	Pesticide	Status
Central Valley (5)	Sacramento River and San Joaquin River Basins	Pyrethroids	Approved
	Sacramento-San Joaquin River Delta Waterways	Diazinon & Chlorpyrifos ⁹	Approved
	Sacramento & Feather Rivers	Diazinon & Chlorpyrifos ⁹	Approved
	Sacramento County Urban Creeks	Diazinon & Chlorpyrifos ⁹	Approved
	Lower San Joaquin River	Diazinon & Chlorpyrifos ⁹	Approved
Lahontan (6)	Pesticide Discharge Prohibition	All Pesticides	Approved
Santa Ana (8)	Newport Bay	Copper (Marine antifouling paint) ¹¹	Adopted by Santa Ana Water Board ¹³
	San Diego Creek, and Upper and Lower Newport Bay	Toxicity (Diazinon & Chlorpyrifos) ⁹	EPA-Adopted Technical TMDL
San Diego (9)	Shelter Island Yacht Basin (San Diego Bay)	Copper (Marine antifouling paint) ¹¹	Approved
	Chollas Creek	Diazinon ⁹	Approved

¹³ https://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/tmdl_metals.html

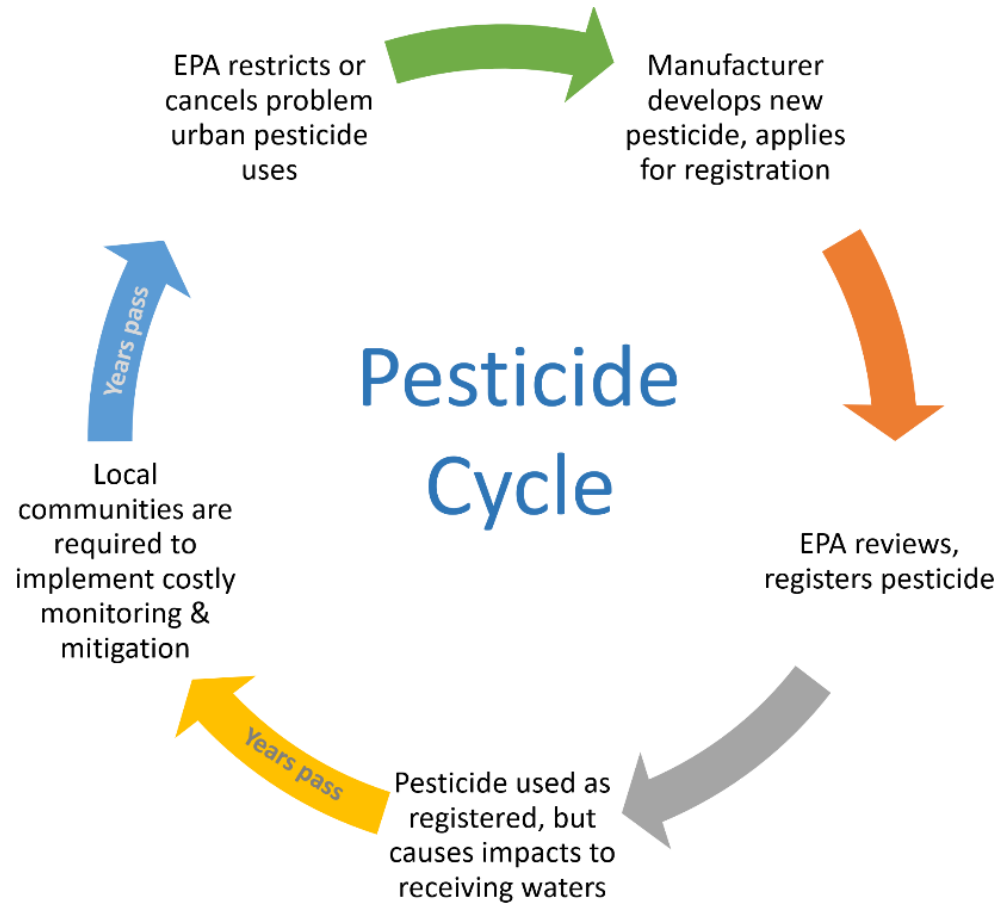


Figure 1. The Pesticide Regulatory System Can Lead to Harmful Outcomes to Surface Waters.

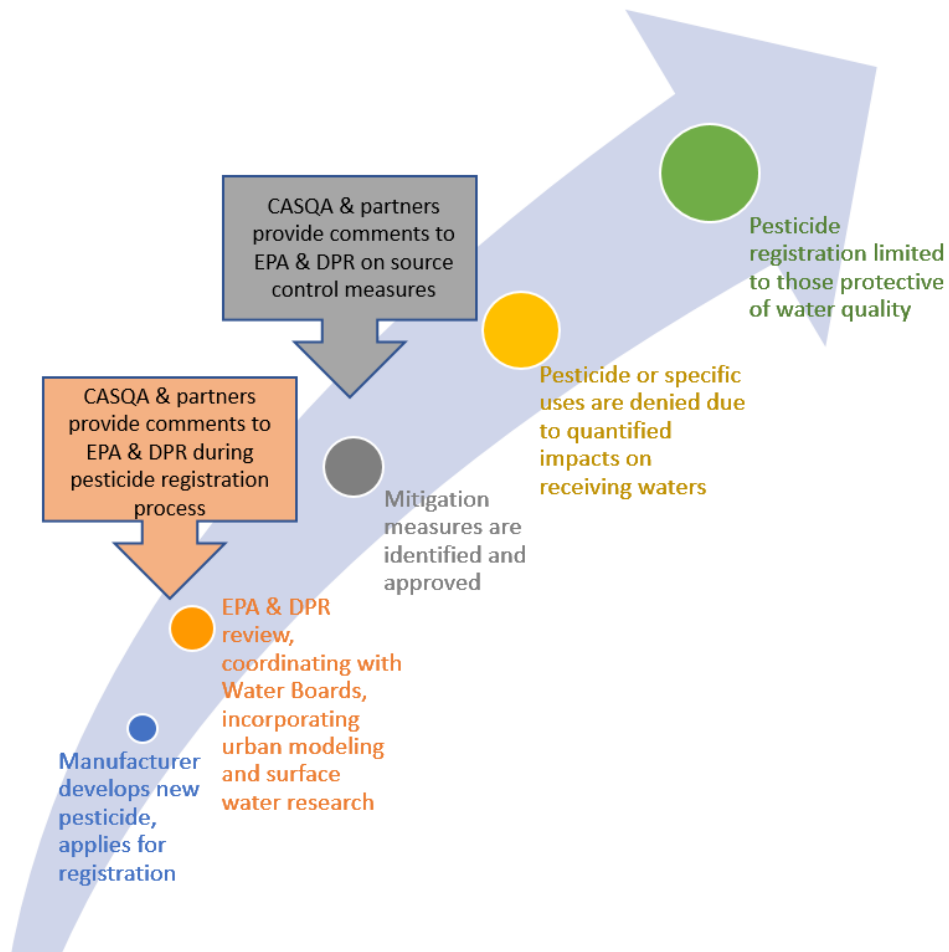


Figure 2. Via Proactive Use of the Pesticide Regulatory Structure, CASQA and Partners Seek to Restrict Pesticide Uses that have the Potential to Cause Urban Water Quality Problems.

1.2 CASQA'S GOALS AND APPLICATION TO PROGRAM EFFECTIVENESS ASSESSMENT

CASQA's *Vision for Stormwater*, first approved by the Board of Directors in 2015, is periodically updated to reflect developments in stormwater management. In October 2020, CASQA released the updated *Vision for Sustainable Stormwater Management*.¹⁴ Within CASQA's Vision, Action 1.2 is to "Minimize Pollution Through True Source Control." Among the objectives described within Action 1.2, Objective 2 has the following scope:

Objective 2: Implement an Urban Pesticide Program

For decades now, the uses of certain pesticides in urban areas – even when applied in compliance with pesticide regulations – have adversely impacted urban water bodies. Currently used pesticides are the primary cause of toxicity in California surface waters, including urban water bodies. CASQA is actively engaged with state and federal regulators in an effort to develop an effective pesticide regulatory system, based primarily on existing statutes, that includes timely identification and mitigation of urban water quality impacts, and proactively prevents additional problems through the registration and registration review processes.

Potential Collaborators: State Water Board, DTSC, EPA, DPR

The effectiveness of CASQA's efforts toward this scope can be expressed in relation to management questions established as part of Municipal Separate Storm Sewer Systems' (MS4s') program effectiveness assessments that are required in some MS4 permits. With respect to addressing urban pesticide impacts on water quality, the following two management questions are suggested for inclusion in MS4s' program effectiveness assessment:

Question 1: (Near term / Current problems) – Are actions being taken by State and Federal pesticides regulators and stakeholders that are expected to end recently observed pesticide-caused toxicity or exceedances of pesticide water quality objectives in surface waters receiving urban runoff?

Question 2: (Long term / Prevent future problems) – Do pesticides regulators have an effective system in place to exercise their regulatory authorities to prevent pesticide toxicity in urban water bodies?

This report is organized to answer these management questions and is intended to support annual permit compliance requirements for both Phase I and Phase II MS4s. It describes the year's status and progress, provides detail on stakeholder actions (by CASQA and others); and provides a roadmap / timeline showing the context of prior actions as well as anticipated end goal of these activities. This report may also be used as an element of future effectiveness assessment annual reporting.

¹⁴ <https://www.casqa.org/wp-content/uploads/2022/10/final-vision-for-sustainable-stormwater-management-10-07-2020.pdf>

Section 2. Latest Results of CASQA Efforts

At any given time, there are dozens of pesticides with current or pending actions from the EPA or DPR. Addressing near term regulatory concerns is important because some pesticides may pose immediate threat to water quality that can lead to compliance liability for MS4s, and because some of the regulatory decisions made by EPA and DPR will last many years. For example, pesticide registration decisions are intended to be revisited on a fifteen-year cycle. To inform its engagement on near-term regulatory concerns, CASQA uses the Pesticide Watch List in the prioritization of near-term efforts (Section 2.1).

Meanwhile, CASQA and BACWA continue to work on parallel efforts to effect long-term systemic changes in the regulatory process itself (see inset). By identifying inadequacies and inefficiencies in the pesticide regulatory process, and persistently working with EPA and DPR to improve the overall system of regulating pesticides, CASQA and BACWA are gradually achieving results (Section 2.2).

2.1 NEAR-TERM REGULATORY CONCERNS

CASQA seeks to ensure that the Water Boards and EPA's Office of Water (OW) work with DPR and EPA's OPP to manage problem pesticides that are creating near-term water quality impairments. These efforts address CASQA Vision Action 1.2 as well as Phase II MS4 Program Effectiveness Assessment and Improvement Plan (PEAIP) Management Question 1 regarding observed pesticide-caused toxicity or exceedances of pesticide water quality objectives in surface waters receiving urban runoff.

Assessment Question 1: (Near term / Current problems) – Are actions being taken by State and Federal pesticides regulators and stakeholders that are expected to end recently observed pesticide-caused toxicity or exceedances of pesticide water quality objectives in surface waters receiving urban runoff?

Answer: As detailed below, at the State level, significant progress has been made by DPR in addressing near-term and current problems with pesticides in surface waters receiving urban runoff. DPR continues to implement improved registration processes and responses to observed water quality problems. DPR also continues to implement and evaluate mitigation measures for observed problems with pyrethroids and fipronil.

At the Federal level, less progress has been made at addressing near term problems. Some early actions were taken to address pyrethroid and fipronil problems at the urging of CASQA and DPR. However, EPA analyses do not show a clear understanding of key urban uses, and it is still unclear if upcoming risk management decisions for pyrethroids, fipronil, and imidacloprid and other neonicotinoids will provide any additional protection of urban water bodies.

CASQA and BACWA Continue to Coordinate the Monitoring of EPA and DPR Pesticide Regulatory Actions



There has been a long history of collaboration between CASQA, the Bay Area Clean Water Agencies (BACWA), and the State Water Board, as all entities seek to track and respond to pesticide regulatory actions, with the goal of avoiding pesticide-related toxicity.

CASQA and BACWA regularly track pesticide regulatory activities by EPA, DPR and other agencies. In 2021, CASQA and BACWA combined resources to track stormwater and wastewater priorities into a single Action Plan, updated monthly.

Together, CASQA and BACWA accomplish tasks that are impractical for individual member agencies. Both CASQA and BACWA are committed to continued collaborations to streamline our proactive regulatory approach. In 2023, CASQA and BACWA jointly worked with staff at EPA Region 9 to develop a communication strategy to speak with EPA headquarters regarding the impact of urban pesticide use on endangered species. (See Section 2.2.1.)

2.1.1 Updated Pesticide Watch List

A key tool for identifying near-term regulatory concerns is CASQA's Pesticide Watch List. CASQA reviews scientific literature, government reports, and monitoring studies as they are published. This information is used to prioritize pesticides based on the most up-to-date understanding of urban uses, pesticide characteristics, monitoring, and surface water quality toxicity (for pesticides and their degradates). CASQA uses these insights to update the list each year (Table 2), which serves as a management tool to help focus efforts on the most important pesticides from the perspective of MS4 agencies.¹⁵

This year, a prime motivator for review involved the publication of a USGS surface water quality monitoring dataset for Central California (Sandstrom et al., 2022).¹⁶ CASQA sought to compare urban surface water detections with aquatic toxicity indicators and urban use data. The following data were compiled (where available) and assessed in order to identify pesticides that may be of concern to CASQA:

- USGS California surface water quality monitoring data (Sandstrom, et al. 2022)
- DPR NorCal and SoCal urban surface water quality monitoring study summary results (% detected only; based on the most recent available online reports)
- Aquatic life benchmarks (ALBs) based on latest US EPA Ecological Risk Assessments (ERAs)
- Water quality objectives (WQOs) developed by the State and approved by EPA (where available)
- Estimated environmental concentrations (EECs) from EPA ERAs (as warranted by other findings)
- Annual urban usage per the DPR's Pesticide Use Reporting (PUR) database (years 2018 and 2020—latest available at the time of review)

Based on the review, the following Watch List updates were implemented:

- **Categories:** Updated a category from “New Urban Pesticides” to “Keep Watching” for those urban pesticides that may threaten water quality depending on approved urban use patterns.
- **Neonicotinoids (other than Imidacloprid):** Previously the following neonics were all considered Priority 2: acetamiprid, clothianidin, dinotefuran, thiamethoxam (degrades into clothianidin). The list was updated to include only clothianidin and thiamethoxam, both of which were detected in the USGS and DPR urban surface water monitoring studies. The other two neonics, acetamiprid and dinotefuran, were moved down to the new category “Keep Watching” due to lack of urban detection at this time.
- **Methoxyfenozide:** Based on relatively high rates of detection by DPR and USGS at urban sites, with the detections approaching the lowest ALB, methoxyfenozide was added to the Watch List, Priority 4.
- **Pesticides with no apparent outdoor urban uses:** The following three pesticides had previously been on the “New Urban Pesticides” list but based on the latest review, there are no apparent outdoor urban uses and therefore appropriate to delete from the Watch List: cyclaniliprole (insecticide), nitenpyram (neonic.), nithiazine (neonic.).

In addition, the following pesticides were reviewed, concluding that addition to the Watch List was not warranted, based on very low ALBs and/or very low urban usage: boscalid (fungicide), diflubenzuron (insecticide), linuron (herbicide), myclobutanil (fungicide), prometon (herbicide), tebuthiuron (herbicide). There are a number of antimicrobial pesticides under review by EPA for uses in outdoor paints and coatings (including isothiazolinones (DCOIT, BBIT, BIT, MIT, OIT)), the leaching of which can lead to water quality impacts; CASQA anticipates adding such pesticides to the Watch List in the future.

¹⁵ The first Watch List was published by the UP3 in 2005.

¹⁶ Sandstrom, M., Nowell, L., Mahler, B., Van Metre, P., New-generation pesticides are prevalent in California's Central Coast streams, *Science of the Total Environment* 806 (2022).

Table 2. Current Pesticide Watch List (Updated May 2023)

Priority	Basis for Priority Assignment	Pesticides		
1	Monitoring data exceeding benchmarks; linked to toxicity in surface waters; urban 303(d) listings	Pyrethroids (20 chemicals) ¹⁷⁾	Fipronil	Imidacloprid Malathion
2	Monitoring data approaching benchmarks; modeling predicts benchmark exceedances; very high toxicity and broadcast application on impervious surfaces; urban 303(d) listing for pesticide, degradate, or contaminant that also has non-pesticide sources	Carbendazim (Thiophanate methyl) ¹⁸⁾ Chlorantraniliprole Clothianidin (Neonic) Copper pesticides +	Creosote (PAHs) Indoxacarb Pendimethalin Pesticides with dioxins impurity ¹⁹⁾	PHMB + Thiamethoxam (Neonic, degrades into Clothianidin) Zinc pesticides (including Ziram) +
3	Pesticide contains a Clean Water Act Priority Pollutant; 303(d) listing for pesticide, degradate, or contaminant in watershed that is not exclusively urban	Arsenic pesticides Bensulide Chromium pesticides Dichlorvos (DDVP)	Diuron Naled Naphthenates	Simazine Silver pesticides + Trifluralin
4	High or unknown toxicity (parent or degradate) and urban use pattern associated with water pollution; synergist for higher tier pesticide; on DPR priority list	Abamectin ADBAC pesticides ²⁰⁾ + Antimicrobials in paints/coatings Azoxystrobin Bacillus sphaericus + Bacillus thuringiensis + Bromacil N-Bromosulfamates Busan-77 + Carbaryl Chlorinated isocyanurates+ Chlorine + Chlorine dioxide + Chlorfenapyr Chlorsulfuron DCOIT + DDAC +	Dichlobenil Dithiopyr Halohydantoin + Hydramethylnon Hypochlorites + Imazapyr Isoxaben Mancozeb Methomyl Methoprene + Methoxyfenozide Methyl anthranilate + Mineral bases, weak + Mineral oil (aliphatic) + MGK-264 Novaluron Oryzalin Oxadiazon Oxyfluorfen	PCNB Peroxyacetic acid + Phenoxy herbicides ²¹⁾ Piperonyl butoxide (PBO) Prodiamine Propiconazole Pyrethrins Pyriproxyfen + Sodium bromide + Sodium chlorite + Sodium percarbonate + Sodium tetraborate + Spinosad + / Spinetoram Sulfometuron-methyl Tebuconazole Terbutylazine + Triclopyr Triclosan Trimethoxysilyl quats

¹⁷⁾ Allethrin, Bifenthrin, Cyfluthrin, Cyhalothrin, Cypermethrin, Cyphenothrin, Deltamethrin, Esfenvalerate, Etofenprox, Flumethrin, Imiprothrin, Metofluthrin, Momfluothrin, Permethrin, Prallethrin, Resmethrin, Sumethrin [d-Phenothrin], Tau-Fluvalinate, Tetramethrin, Tralomethrin.

¹⁸⁾ Carbendazim is a registered pesticide, and also a degradate of thiophanate-methyl

¹⁹⁾ 2,4,-D, Chlorothalonil, Dacthal, Pentachlorophenol

²⁰⁾ Alkyl Dimethyl Benzyl Ammonium Chlorides (ADBAC) includes a family of 21 different quaternary ammonium pesticides.

²¹⁾ MCPA and salts, 2,4-D, 2,4-DP, MCP, dicamba

+ Used in pools, spas, and/or fountains

Priority	Basis for Priority Assignment	Pesticides		
5	Frequent questions from partners ²²	Glyphosate	Metaldehyde	
Keep Watching	Urban pesticides that may threaten water quality depending on approved urban use patterns.	Acetamiprid (Neonic) Cyantraniliprole	Dinotefuran (Neonic) Flupyradifurone (Neonic-like)	Sulfoxaflor (Neonic-like)
None	Based on review of available data, no approved urban use or no tracking trigger as yet identified.	Most of the >1,000 existing pesticides		
Unknown	Lack of information. No systematic screening has been completed for the complete suite of urban pesticides.	Unknown		

2.1.2 Description of Near-Term Regulatory Processes

Immediate pesticide concerns may arise from regulatory processes undertaken at DPR or EPA’s OPP. For example, when EPA receives an application to register a new pesticide, there may be two opportunities for public comment that are noticed in the Federal Register, as depicted in green in Figure 3. EPA’s process usually takes less than a year while DPR typically evaluates new pesticides or major new uses of active ingredients within 120 days.

Figure 3. EPA’s Registration Process for New Pesticides



Another regulatory process, “Registration Review,” depicted in Figure 4, is meant to evaluate currently registered pesticides about every 15 years, to account for new data available since initial registration. In general, it takes EPA five to eight years to complete the entire process. In addition to this process, pesticides are evaluated with respect to ESA criteria. EPA regularly updates its schedule for approximately 50 pesticides that will begin the review process in a given year.²³

Figure 4. EPA’s Registration Review – Process to Review Registered Pesticides at a Minimum of Every 15 Years.



DPR also has an ongoing, but informal review process (called continuous evaluation) that can address pesticides water pollution. If it needs to obtain data from manufacturers, DPR can initiate a formal action, called “Reevaluation.” These evaluations, mitigation measure development, and mitigation effectiveness evaluation have involved ongoing communication with CASQA and partners.

²² Chlorpyrifos and Diazinon, while often asked about, have near zero or no urban uses, respectively.

²³ See <https://www.epa.gov/pesticide-reevaluation/registration-review-schedules> for schedule information.

While EPA must consider water quality in all of its pesticide registration decisions, at DPR this step is not yet fully established as standard (most outdoor urban pesticide registration applications are routinely routed by DPR for surface water review, but a few – notably antimicrobial products used in storm drains – do not automatically receive this review). CASQA monitors registration applications, to identify those relevant to urban runoff, based on the Pesticide Watch List in Table 2 and use pattern/toxicity analysis for pesticides that have not previously been reviewed.

2.1.3 Key Near-Term Regulatory Activities and Progress

Table 3 presents a summary of recent CASQA and partner activities to address near-term regulatory concerns and the latest results; for additional insight regarding on-going pesticide registrations, see Appendix. CASQA monitors the Federal Register and DPR’s website for notices of regulatory actions related to new pesticide registrations and registration reviews. This includes monitoring EPA’s dockets via the website [Regulations.Gov](https://www.regulations.gov). Since the Pesticide Watch List is not based on a comprehensive review of all pesticides, CASQA watches for additional pesticides that appear to have any of the following characteristics: proposed urban, outdoor uses with direct pathways for discharge to storm drains, high aquatic toxicity, or containing a priority pollutant. Participating in these regulatory processes can take many years to complete.

In addition, EPA’s OPP strives to update their Aquatic Life Benchmarks table on an annual basis.²⁴ In September 2022, EPA’s Office of Pesticide Programs, Environmental Fate and Effects Division updated its pesticides Aquatic Life Benchmarks table.¹⁸ These updates included benchmarks for 9 newly registered pesticides (and their degradates) and 57 previously registered pesticides (and their degradates) undergoing registration review.

At the state level, DPR’s Human Health Assessment Branch published the Fipronil Risk Characterization Document (March 2023).²⁵ While this analysis is specific to human health, not ecotoxicity, it identified significant occupational exposures from use of liquid fipronil concentrate on structures. The mitigation plans are unknown at this time, and while they could include personal protective equipment or other actions that would not reduce ecological exposure, CASQA will continue to monitor DPR’s mitigation efforts.

Table 3. Latest Results of Efforts Communicating Near-Term Regulatory Concerns to EPA²⁶

Regulatory Action or Concern	CASQA Efforts			Partner Support (Letters)	Outcomes and notes
	Letter(s)	Call(s) or emails	Mtg(s)		
Endangered Species Act (ESA) obligations: <ul style="list-style-type: none"> EPA ESA Workplan Update (November 2022) ESA Draft Guidance for 	✓✓	✓	✓	BACWA SFBRWQCB	Pending. Both ESA documents neglect to consider urban pesticide uses. CASQA and BACWA continue to educate the EPA on the nexus between urban pesticide uses and impacts to endangered species, seeking mitigation (source control) that would reduce such impacts. (See discussion in Section 2.2.1)

²⁴ <https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk>

²⁵ https://www.cdpr.ca.gov/docs/whs/active_ingredient/fipronil.htm

²⁶ Color coding in this table is meant to reflect the Pesticide Watch List prioritization color coding in Table 2.

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Regulatory Action or Concern	CASQA Efforts			Partner Support (Letters)	Outcomes and notes
	Letter(s)	Call(s) or emails	Mtg(s)		
Pesticide Application Submissions that Require ESA Reviews (June 2023)					
Etofenprox Proposed Interim Decision (PID)	✓			BACWA	Success! Currently registered etofenprox outdoor products allow application on impervious surfaces up to a height of 2 to 3 feet and 2 to 3 feet out. Under the proposed label language, etofenprox would only be allowed to be sprayed on impervious surfaces in limited circumstances (See Appendix). Further, EPA used CASQA's suggested pictogram, used CASQA's proposed minimum sizing for graphic, and included Spanish translation. EPA also included improved rain restriction language, water protection statements, explicit mention of outdoor/indoor use, and specifically defined the spot treatment size.
Carbendazim (Thiophanate methyl) PID	✓			County of Sacramento	Pending. In 2020, the County of Sacramento responded to the ecological risk assessment noting that concentrations of carbendazim in urban runoff and in surface waters influenced by urban runoff are approaching EPA aquatic benchmarks for freshwater fish. Further, the county recommended revisions in the modeling scenarios and that the modeling be adapted separately for residential (re: paints and stains) versus commercial/industrial (e.g. roof membranes). In the March 2021 response to comments, EPA acknowledged the need for improvements in modeling environmental exposures from antimicrobials. In CASQA's response to the 2023 PID, CASQA reiterated Sacramento's recommendation, noting the importance of prioritizing this specific model improvement, because the result applies broadly to all antimicrobials used in building preservation.
Carbaryl PID	✓				Success! The EPA documented a high degree of threat in the urban environment, leading to (1) the prohibition of residential dust formulations and residential granule formations for use on turf (because these are often applied incorrectly and end up on impervious surfaces such as sidewalks) and (2) significant mitigation measures for outdoor urban uses in residential and commercial settings (i.e., structural, turf, ornamental, nursery) to reduce the amount of carbaryl in the urban environment that enters outdoor drainage systems and waterbodies. In addition, CASQA sought clarification of application rates on pervious surfaces, due to inconsistencies in the EPA PID and the Biological Evaluation (BE). EPA subsequently updated the application rates to the lower values indicated in the BE. (See Appendix.)

2.2 LONG-TERM CHANGE IN THE PESTICIDES REGULATORY STRUCTURE

Since the mid-1990s, CASQA (and its predecessor organization the Storm Water Quality Task Force) has worked toward a future in which the pesticide regulatory structure at the state and federal level proactively restricts pesticide uses that have the potential to cause urban water quality problems. These efforts directly relate to Phase II MS4 PEAIIP Management Question 2.

Assessment Question 2. (Long term / Prevent future problems) – Do pesticides regulators have an effective system in place to exercise their regulatory authorities to prevent pesticide toxicity in urban water bodies?

Answer: Improvements in processes at EPA and especially at DPR have moved closer to that future. Many of these improvements are linked to the persistent work of CASQA and partners to educate regulators on how previous process deficiencies did not adequately address urban pesticide problems.

Overall, DPR has a system in place that is reasonably effective at addressing pesticide toxicity in urban water bodies, although improvement is needed to better coordinate this process with the requirements of the Clean Water Act and NPDES MS4 permits. DPR and the Water Board, along with CASQA and other stakeholders, are working diligently to strengthen this system and to institutionalize it. The goal is to embody this process in the State's UPPs and the Management Agency Agreement (MAA) between DPR and the State Water Board. In addition, DPR published an SPM Roadmap (See Section 2.2.2) which is expected to be implemented in coming years, incorporating urban pesticide uses.

At the Federal level, OPP has implemented some improvements in how it evaluates and responds to water quality problems associated with pesticides, but it does not yet do this reliably and does not have a system in place to ensure that this will happen consistently and adequately. Meanwhile, scientific studies are being conducted by USGS and EPA's Office of Research and Development to better understand the complexities of pollution in urban stormwater. In addition, another EPA branch, the Office of Chemical Safety and Pollution Prevention (OCSPP), tasked their Pesticide Programs staff with improving the integration of the EPA and the Services²⁷ implementation of the ESA.

2.2.1 Focus on EPA's Federal Endangered Species Act

The EPA OCSPP tasked their Pesticide Programs staff with improving the integration of the ESA in pesticide registrations and re-registrations. In April 2022, EPA published their "first-ever comprehensive workplan to address the decades-old challenge of protecting endangered species from pesticides."²⁸ The workplan presents a vision and four strategies to approach this challenging effort to protect endangered species while protecting public health. In 2023, this workplan was updated to describe specific mitigation measures to reduce pesticide impacts to endangered species. Unfortunately, the types of mitigation measures presented are ones only applicable to licensed users (such as detailed label changes) and/or agricultural uses (such as online maps detailing locations of endangered species habitat relative to agricultural crops).

CASQA has previously communicated directly with OCSPP's Deputy Assistant Administrator for Pesticide Programs to advance the importance of urban stormwater uses and the need for mitigations to clearly tie to risk analysis findings, targeting specific uses and products. This communication continued in 2022-2023, with CASQA and BACWA collaborating to seek input from EPA Region 9 on how best to present urban pesticide concerns to EPA headquarters. This led to brief memos that detailed concerns with the reregistration process and with the implementation of ESA. EPA invited CASQA and BACWA to a meeting with OCSPP leadership on July 6, 2023. CASQA's raised questions and received feedback in the following four key areas:

²⁷ The U.S. Fish and Wildlife Service and the U.S. National Marine Fisheries Service (collectively referred to as the Services) are jointly responsible for administering the ESA. The National Marine Fisheries Service has jurisdiction for marine endangered species, while U.S. Fish and Wildlife Service has jurisdiction for freshwater and all other species.

²⁸ <https://www.epa.gov/newsreleases/epa-announces-plan-protect-endangered-species-and-support-sustainable-agriculture>

1. Compliance with the Clean Water Act

It is essential that EPA's OPP assess and prevent urban water pollution as defined by the Clean Water Act. BACWA and CASQA have asked that registration reviews by EPA OPP address relevant requirements of the CWA. For example, when an ESA Biological Evaluation uses an effects threshold above EPA water quality criterion, it could create a regulatory gap for agencies with CWA permits.

Question: What steps is EPA taking for intra-agency congruence, necessary for local government compliance with the CWA?

EPA Feedback: There are times when ESA effects thresholds will have different values than the water quality criterion from EPA Office of Water. Meanwhile, the agencies are in active communication to discuss how to better harmonize these values.

2. Incorporating Urban Use into EPA's new Programmatic Approach

The November 2022 ESA Workplan Update describes a new programmatic approach (by use type, region, or vulnerable species) rather than by individual pesticide in order to improve program efficiency.

Questions: How and when does EPA OPP plan to incorporate urban uses in the new programmatic approach? Further, how can urban stakeholders engage with EPA so we can have input as to programmatic approaches that might be feasible in the urban context?

EPA Feedback: Due to staffing constraints, EPA is currently prioritizing agricultural use as that is expected to have the greatest impact to endangered species. EPA hopes to learn from the agricultural re-registration process and use that to inform non-agricultural sources. At that time, the focus will be on mitigation (source control). Therefore, any technical information submitted to EPA should focus on specific mitigation (source control) measures.

3. Current ESA mitigations focus on label updates and "Bulletins Live Two" buffer zones

Scientific evidence shows that unlicensed/untrained pesticide users typically don't read product labels and users that do read labels, usually do not read application instructions. Further, Bulletins Live Two (a map-based website) is not meant for urban users.

Question: How does EPA plan to develop and implement mitigation measures appropriate to the urban context?

EPA Feedback: EPA developed Bulletins Live Two as a way to indicate when the mitigations are needed in relatively small geographic locations to protect an endangered species. They recognize that this is challenging information to communicate. They welcome support as they seek alternative messaging to educate pesticide users. For instance, the Antimicrobials Division has made a lot of progress with pictograms, and has developed outreach materials to help people understand labels.

4. Public agencies are left out of mitigation discussions

There are publicly disclosed meetings with EPA and registrants to discuss Biological Evaluations.²⁹

Question: How might urban stakeholders (with the burden of CWA and ESA compliance) be engaged proactively in discussions and analysis of urban mitigations?

²⁹ For example, a meeting was held on April 4, 2023 with dinoterfuran registrants as well as EPA staff (Pesticides Re-Evaluation Division, Environmental Fate and Effects Division, Biological and Economic Analysis Division) to discuss the dinoterfuran Biological Evaluation.

EPA Feedback: Pesticide registrants have specific rights for such meetings under the ESA. There are public comment periods throughout the review process. If a situation arises in which new scientific information is available, but not timed with public comment periods, EPA recommended communication with the lead chemical review manager and branch chief.

Overall, while EPA indicated that their near-term focus would continue to be identification of agricultural impacts to endangered species, they indicated an openness to further communication regarding urban mitigations, with a focus on labels (such as pictograms) and user education. CASQA and BACWA will seek to keep this communication open and coordinate with our national sister agencies to clarify that these issues are national in scope, not specific to California.

2.2.2 Focus on DPR's Sustainable Pest Management (SPM) Roadmap

In 2021, DPR formed a Sustainable Pest Management Work Group, the goal of which was “to develop a recommended roadmap with ambitious, measurable goals to practically achieve the state’s vision to accelerate a system-wide transition to safer, more sustainable pest management.”³⁰ A nine-member urban subgroup was formed to ensure that urban pesticides uses were effectively incorporated. The work group defined SPM as a “holistic, whole-system approach applicable in agricultural and other managed ecosystems and urban and rural communities that builds on the concept of integrated pest management (IPM) to include the wider context of environmental protection, economic vitality, and human health and social equity.”

In Fall 2022, a draft roadmap was presented to stakeholders. CASQA reviewed the document and provided extensive feedback. The final roadmap was released in January 2023. To achieve urban SPM, DPR has identified 4 leverage points in the system. CASQA will seek opportunities to support DPR's SPM within each of these points:³¹

1. Enhance data and information collection for urban pesticide use
2. Advance research and outreach on urban pest management issues
3. Make SPM the preferred choice for both licensed and unlicensed users
4. Refocus urban design, building codes, and regulations to enhance pest prevention

The SPM Roadmap describes priority pesticides and makes mention of the need for “science-based prioritizations.” CASQA shared the Watch List with DPR staff and has asked that one such prioritization parallel CASQA's Watch List, with the intention of a prioritizing pesticides that have direct links between urban use and toxicity in surface waters.

In addition, among the SPM stated priorities is a public awareness campaign. Based on CASQA's administration of the in-store retail program, *Our Water, Our World (OWOW)*, CASQA will continue to recommend messages at the point-of-purchase, particularly when store staff are well trained. Similarly, online campaigns are much more effective at engaging the public if they address a specific consumer problem or nuisance (e.g, termites) that garners “click-throughs” that lead them to science-based information when they are seeking to purchase pesticides (parallel to the brick-and-mortar point of purchase campaigns).

³⁰ https://www.cdpr.ca.gov/docs/sustainable_pest_management_roadmap/

³¹ https://www.cdpr.ca.gov/docs/sustainable_pest_management_roadmap/spm_executive_summary.pdf

To reliably fund DPR's new focus, the State conducted a feasibility analysis to consider incremental increases of the mill assessment from the current \$0.021 up to \$0.0339 per dollar of pesticide sales. DPR's mill assessment is paid by a pesticide retailer or manufacturer when a pesticide is first sold into California and provides approximately 80 percent of the department's current funding. The mill assessment has not been increased since it was originally codified into state law in 2004. At present, DPR plans to phase-in the increase and continue the mill assessment's flat rate structure to start, while considering a tiered mill assessment in the future, with more problematic pesticides in the higher tiered rates. CASQA will track the development of such a tiered structure to ensure that urban surface water priorities are incorporated.

2.2.3 Focus on California's Urban Pesticides Provisions (UPP)

In 2014 the State Water Board made a strategically important decision to institutionalize its commitment to work closely with DPR and EPA to utilize pesticide regulatory authority as the primary mechanism for preventing and responding to impairments of receiving waters linked to current use pesticides in urban runoff. To accomplish this goal, the State Water Board established an urban pesticides reduction project (now titled the Statewide Urban Pesticides Provisions or UPP) as a top priority project under the comprehensive stormwater strategy it adopted in December 2015, known as "Strategy to Optimize Resource Management of Storm Water" or STORMS.³² CASQA representatives have been participating actively in the development of the Urban Pesticide Provisions since their inception.

The State Water Board continues to work towards developing the UPP which are anticipated to be incorporated into the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries, and the Water Quality Control Plan for Ocean Waters of California. In mid-2019, DPR and the State Water Board signed a major update to their formal MAA that memorializes their existing systems and growing cooperation and lays out the steps they are taking toward a "unified and cooperative program to protect water quality related to the use of pesticides." The State Water Board STORMS staff indicate that communication with DPR staff regarding the UPP has been enhanced by the MAA and that the two agencies meet regularly.

CASQA continues to work closely with STORMS staff on the UPP as an effective path to solving urban toxicity and to support urban stormwater capture and use. In 2022, STORMS staff held several meetings with stakeholders, including CASQA representatives. CASQA provided the STORMS staff with input regarding potential options for evaluating the effectiveness of the UPP in addressing MS4 pesticide discharges to support identification of compliance pathway options for municipal stormwater permits. STORMS staff presented at the October 2021 CASQA conference, and a STORMS staff member typically attends each TSC meeting, providing updates and accepting feedback.



CASQA Dedicated to Continuous Improvement of Our Water, Our World (OWOW)

OWOW is a collaboration of municipalities and integrated pest management (IPM) experts to develop and distribute IPM information directly to consumers at point-of-purchase at garden centers and hardware stores, thereby reducing the purchases of harmful products. OWOW started as a pilot project in 1998, in just a handful of stores, initiated by the Central Contra Costa County Sanitation District, the City of Palo Alto Regional Water Quality Control Plant, and the Marin Countywide Stormwater Pollution Prevention Program. The program quickly grew and was administered by the former Bay Area Stormwater Management Agencies Association from 1999 – 2021. In January 2022, the program was transferred to CASQA, with the goal of providing statewide access to this important and successful outreach program. While several stormwater programs currently rely upon OWOW to meet existing permit requirements, statewide implementation is expected to grow, driven by the UPPs. It is expected that OWOW materials could also be crucial in supporting DPR's SPM urban educational outreach campaigns.

³² (http://www.waterboards.ca.gov/water_issues/programs/stormwater/storms/)

2.2.4 CASQA Participation in Federal and State Advisory Groups

As presented in Table 4, CASQA remains actively involved with various agencies and advisory groups that affect urban pesticide use and pest management.

Table 4. Participation in Federal and State Efforts to Support CASQA's Goals

Agency or Conference	Latest Outcomes
EPA's Pesticide Program Dialogue Committee (PPDC)	<p>The 40-person committee, chaired by the Director of OPP, includes representatives from growers, industry, environmental, public health, farmworkers, as well as state/local/tribal government. Dave Tamayo represents CASQA on the PPDC, with the goal of incorporating urban stormwater in the Federal dialogue. The PPDC holds biannual public meetings. At the May 2023 meeting, key CASQA topics included:</p> <ul style="list-style-type: none"> • A discussion of label reform, including digitization and standardization; • An update on the Endangered Species Act Workplan by the Deputy Assistant Administrator for Pesticide Programs for Office of Chemical Safety and Pollution Prevention.
DPR's Pest Management Advisory Committee (PMAC)	Victoria Kalkirtz (co-chair of the TSC Subcommittee) represents CASQA on PMAC. Participation on the PMAC has resulted in expanded focus by DPR on urban pest management and water quality issues and generated funding for urban IPM research and implementation programs.
DPR's SPM Work Group	Two CASQA members served as invited members of the Urban Subgroup of the SPM.

Section 3. CASQA's Approach Looking Ahead

At any given time, EPA and DPR may be in the process of evaluating and registering various pesticides for urban use. CASQA will continue to track and engage in EPA and DPR activities, with a focus on top priority active ingredients (as identified in the annual Pesticide Watch List) and sharing relevant urban runoff information and CASQA's water-quality specific expertise with pesticides regulators. Key documents to be reviewed will include risk assessments and risk management proposals with an eye toward ensuring that pesticide regulators have and consider accurate information on relevant factors in urban areas such as pesticide use patterns, urban pollutant transport mechanisms, and receiving water conditions. CASQA strives to ensure that pesticide regulators have access to relevant information such as monitoring data, water quality regulatory requirements, and urban runoff agency compliance liabilities and cost information. As necessary, CASQA will continue to recommend changes in an individual pesticide's allowable uses or use instructions, request consideration of impacts on water bodies receiving urban runoff, and/or ask that regulators fill critical data gaps by obtaining more data from manufacturers. As resources allow and circumstances warrant, CASQA will continue to collaborate with wastewater organizations (such as BACWA), other water quality stakeholders, and the Water Boards in commenting on EPA and DPR actions.

In the coming year, CASQA will continue to address near-term pesticide concerns and seek long-term regulatory change. Although changes at the federal level are important for fully achieving CASQA's goal of protecting water quality through the effective use of pesticide regulations, until there is a more favorable situation at that level, we will continue to focus our efforts on solidifying progress at the state level. In the coming year, CASQA will continue engagement on specific

regulatory actions for priority pesticides at the federal level, while continuing the strategic focus on supporting State adoption of the UPPs. CASQA’s current priority activities are as follows:

- (1) Continue collaboration with DPR to address near-term regulatory concerns, while seeking OPP and OW actions to reduce inconsistencies:
 - Ensure DPR action on fipronil water pollution is completed, including effective professional user education about restrictions on its outdoor urban use.
 - Ensure DPR enforces mitigation measures for pyrethroids and fipronil, and adopts additional measures as necessary.
 - Ensure the state continues to conduct surveillance monitoring to evaluate pyrethroids and fipronil mitigation effectiveness and to evaluate occurrence of new threats like imidacloprid and other neonicotinoid insecticides.
 - Continue to encourage EPA to complete scientific groundwork and to identify and implement pyrethroids, fipronil, malathion, and imidacloprid mitigation measures, recognizing that it is likely that necessary mitigation cannot readily be implemented entirely by DPR.

- (2) Seek long-term changes in the pesticide regulatory structure:
 - Continued engagement with EPA regarding incorporating their ESA obligation in registrations and re-registrations, including recommending the use of pictograms in labels, and seeking opportunities in California for EPA’s future regional and vulnerable species pilot programs.
 - Continued engagement with DPR regarding the SPM Roadmap specific to urban implementation programs and opportunities.
 - Leverage success at the state level and continue to be a key stakeholder in the STORMS project to adopt the statewide UPP. Through this process, CASQA will work with other stakeholders to implement the planned restructuring of California’s urban surface water pesticides monitoring to increase its effectiveness and improve coordination.
 - Encourage and assist the Water Board to continue to implement its MAA with DPR and increase its leadership role in preventing and mitigating pesticide impairments through more effective pesticide regulation.
 - Seek procedure changes such that DPR continues to refine its registration procedures to address remaining gaps in water quality protection.
 - Seek increased transparency of DPR regulatory activities, including timely access to scientific evaluation reports that are the basis of registration decisions.

CASQA will continue to seek opportunities to coordinate on high priority regulatory actions, with the Water Boards and other water quality stakeholders such as POTWs and non-profits, to take advantage of efficiencies, increase effectiveness, and ensure that the water quality community has a consistent message. Table 5 presents CASQA’s activities anticipated for the coming year; CASQA will conduct these activities as priorities indicate and resources allow. Table 6 summarizes upcoming regulatory action items that are likely to proceed and may require CASQA attention in the coming year.

Table 5. CASQA Pesticide Activities

Activity	Purpose	
Regulatory Tracking	Track Federal Register notices	Identify regulatory actions for high priority active ingredients that may require review.
	Track DPR notices of registration applications and decisions	Identify pesticides meriting surface water review that are not within DPR’s automatic routing procedures, identify gaps or potential urban runoff-related problems with current DPR evaluation or registration plans other regulations, procedures, and policies.
	Track activities at the Water Boards	Identify opportunities for improvements in TMDLs, Basin Plan Amendments, and permits.
	Review regulatory actions, guidance documents, and work plans	Identify potential urban runoff-related problems with current EPA evaluation or registration plans, other regulations, procedures, and policies.

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Activity		Purpose
Regulatory Communications	Briefing phone calls, informal in-person meetings, teleconference meetings, and emails with EPA and DPR	Information sharing about immediate issues or ongoing efforts; educate EPA and DPR about issues confronting water quality community. Provide early communication on upcoming proceedings that help reduce the need for time-intensive letters.
	Convene formal meetings, write letters, and track responses to letters	Ensure current pesticide evaluation or registration process accurately addresses urban runoff and urban pesticide use and management contexts. Take advantage of opportunities to formally provide information and suggest more robust approaches that could be used in future regulatory processes. Request and maintain communication on mitigation actions addressing highest priority pesticides.
Advisory	Serve on EPA, DPR, and Water Board policy and scientific advisory committees	Provide information and identify data needs and collaboration opportunities toward development of constructive approaches for managing pesticides.
Educational	Presentations to and informal discussions with EPA, DPR, Water Board, CASQA members,	Educate EPA, DPR, Water Board, and CASQA members about the urban runoff-related shortcomings of existing pesticide regulatory process, educational efforts to support process improvements, and report on achievements. Encourage research and monitoring programs to address urban runoff data needs and priorities. Stimulate academic, government, or private development of analytical and toxicity identification methods to address anticipated urban runoff monitoring needs. Inform development of new pesticides by manufacturers and selection of pesticides by professional users.
	Develop and deliver public testimony	Educate Water Board members about the problems with existing pesticide regulatory process, encourage change, and report on achievements.
Monitoring and Science	Update Pesticide Watch List based on new scientific and regulatory information	The Pesticide Watch List (Table 2) serves as a management tool to prioritize and track pesticides used outdoors in urban areas.
	Data analysis of DPR/SWAMP/USGS/MS4 monitoring, pesticide use data, and information from scientific literature	Summarize data to educate CASQA members and water quality community, Water Boards, DPR, and EPA.
Reporting	Prepare Monthly Action Plans	Coordinate CASQA's regulatory actions with partners
	Prepare Annual Report to describe the year's status and progress, provide detail on stakeholder actions, and the context of prior actions as well as anticipated end goal of these activities.	Provide CASQA's members with focused information on its efforts to prevent pesticide pollution in urban waterways. The document serves annual compliance submittal for both Phase I and Phase II MS4s. It may also be used as an element of PEAIPs and future effectiveness assessment annual reporting.

Table 6. Anticipated Upcoming Opportunities for Pesticides Regulatory Engagement

EPA Pesticide Registration Review (15-year cycle) (organized chronologically by anticipated next regulatory step) ³³			
Priority	Topic	Item	Urban Runoff Concern
varied	Herbicides	Programmatic ESA Consultation	Varied. This is one of several new pilot exercises by EPA to group ESA reviews by type of use instead of by individual pesticide.
unknown	New Antimicrobials	various	Varied; many of these pesticides are showing up for the first time at the PID level; review is needed to screen these for water quality issues
1	Fipronil	PID	Monitoring data; Anticipated 303(d) listings
5	Glyphosate	Re-release of PID (Court Order)	Frequent questions from partners
2	Dacthal (DCPA)	RA	303(d) listings (dacthal, dioxins); Contains CWA Priority Pollutants (dioxins)
3	Sodium pyrethrin	PID	Paint additive
4	Dicamba	RA	Phenoxy herbicide
4	Chlorothalonil	PID	Central Valley Water Board high relative risk; 303(d) listings (dioxins); Contains CWA Priority Pollutant (Dioxins); DPR monitoring priority
1	Imidacloprid	Re-release of PID (ESA process)	High toxicity, monitoring data, 303(d) listings
2	Clothianidin (neonic)	Re-release of PID (ESA process)	High toxicity, monitoring data, 303(d) listings
2	Thiamethoxam (neonic)	Re-release of PID (ESA process)	High toxicity, monitoring data, 303(d) listings
4	Peroxy Compounds (peroxyacetic acid)	PID (re-release)	Fountain chemical

³³ RA = Risk Assessment; PID = Proposed Interim Decision

4	Isothiazolinones (includes DCOIT, BBIT, BIT, MIT, OIT)	RA	Antimicrobials. Uses include paints.
4	Mancozeb	PID	Central Valley Water Board high relative risk
4	PCNB	PID	Dioxin impurity
4	Oxyfluorfen	PID	Re-release of PID after litigation. 303(d) listing
<i>Keep Watching</i>	Dinotefuran (neonic)	PID	Toxicity, mobility

Other EPA-related Items

- Quarterly updates to the ESA Workplan website:
 - <https://www.epa.gov/endangered-species/epas-workplan-and-progress-toward-better-protections-endangered-species>
- U.S. EPA “[Increasing Consistency and Transparency in Considering Costs and Benefits in the Rulemaking Process](#)” affects how the U.S. EPA uses cost and benefit analysis in setting pollution standards. Rule proposal was expected in 5/19.
- Proposed rule to eliminate some OPP Federal Register Notices (was anticipated September 2018 according to U.S. EPA semi-annual regulatory agenda)
- U.S. EPA [Update to Guidelines for Deriving Aquatic Life Water Quality Criteria](#). Draft scoping document external peer review is next step. Seeking OPP engagement.

DPR New Pesticide Product Registration Decisions

New Product Applications (Active ingredient – product name)	Why tracking	Current Status
1R-Phenothrin - by MGK	Outdoor uses	Noted on EPA docket. Not yet in DPR Notice.
Tetraniliprole	Outdoor uses	Noted on EPA docket. Not yet in DPR Notice.
Momfluorothrin (and Phenothrin) - S-1563	New urban pyrethroid	2014: DPR confirmed that Surface Water would review.
Momfluorothrin (and Cypermethrin) - MGK Products	New urban pyrethroid	2014: DPR confirmed that Surface Water would review.
Alpha-cypermethrin - Fendona CS	New urban pyrethroid	2018: DPR confirmed that Surface Water would review.
Transfluthrin - Bayer Product	New urban pyrethroid. Indoor and outdoor uses	Noted on EPA docket. Not yet in DPR Notice.
Fipronil and Bifenthrin - Taurus Trio G	Landscaping product	2017: DPR confirmed that Surface Water would review.
Fipronil - Termidor HP II	Termite product	2018: DPR confirmed that Surface Water would review.
Fipronil - MGK Formula 3115	Outdoor yellow jacket product	2019: DPR confirmed that Surface Water would review. 7/9/21: Notice of Final Decision posted. Product limited to bait stations.

Bifenthrin, Novaluron, and pyriproxyfen - Duraflex CS	Use on non-residential sites	2019: DPR confirmed that Surface Water would review.
Indoxacarb - Doxem Precise	New aerated indoxacarb powder	2019: DPR confirmed that Surface Water would review.
Zinc, Thiabendazole and 2-pyridinethiol-1-oxide – Ultra-Fresh DW-30	Potential use in vehicle tires	DPR is asking the registrant of that product that should not have been approved for use in rubber to change the product label to again say “not for use in California” with regard to the use in rubber.
Fipronil – Imidacloprid: Fuse Foam by Control Solutions, Inc.	Indoor/outdoor fipronil-imidacloprid foam	BACWA/CASQA have been tracking this product since 2017. 7/2/2021: DPR issues notice to deny, noting several problems with the label. 5/27/2022: DPR confirmed that the label that they are reviewing is the same as the label available on the EPA website.
Bifenthrin / Acetamiprid F9228-2 RTU insecticide / miticide by FMC	Outdoor and indoor uses. Label allows liberal spraying.	1/5/2022: DPR confirmed that the Surface Water Group would review.

Other DPR-related Items

- Registration Application Surface Water Reviews – continue to follow up on communications requesting review of all storm drain products and outdoor antimicrobials

Water Boards

- **State Water Board [Urban Pesticides Provisions](#).**
- Pesticides 303(d) listings
- Pesticide TMDL implementation requirements for permittees

Other Statewide Items

- **[DPR’s Sustainable Pest Management Roadmap](#)**
- **[CA DPR Fipronil Human Health Risk Assessment and Mitigation](#).** DPR finalized the fipronil Risk Characterization Documents (RCD) in May 2023. The final exposure assessment document (EAD), response to comments from US EPA, Office of Environmental Health Hazard Assessment, and other documents are posted at the link above. DPR is evaluating exposure scenarios of concern identified in the RCD, as well as comments specific to the risk mitigation process, and will issue a risk management directive (RMD) if DPR determines that mitigation is required.
- **[California Department of Food & Agriculture Program EIR on invasive species](#)** control covering potential broadcast pesticide applications urban areas of multiple priority pesticides. **October 2021 update:** California’s Court of Appeal has ruled that a statewide pesticide-spraying program violates the law by failing to study and minimize the threats from pesticides and to properly inform the public about the risks of spraying. The ruling noted that the department did not analyze or disclose the health and environmental harms of the more than 75 pesticides. The court decision also noted a lack of public notice. Furthermore, they did not evaluate local impacts or allow opportunity for affected communities to opt out. **June 2022 Update:** New ruling by Sacramento County Superior Court orders the state to halt spraying.

Appendix

Regulatory Participation Outcomes and Effectiveness Assessment Summary Tables

Pesticide: Carbaryl – EPA-HQ-OPP-2023-0144.
Use: Insecticide
Why we care: Toxicity; use pattern; monitoring data
Actions taken: CASQA commented on the Workplan (Nov. 2010) and the Proposed Interim Decision/ Draft Evaluation Supporting Proposed Mitigations Predicted to Avoid Jeopardy and Adverse Modification of Designated Critical Habitat and Reduce Take for Four Federally Listed Endangered and Threatened Species (Feb 2023).
Status: EPA released the US Fish and Wildlife Service Draft Biological Opinion in March 2023. Comments were due May 15, 2023. CASQA did not prepare a comment letter since EPA is moving forward with the label mitigations for turf, golf courses, and ornamentals that CASQA supported in its Feb 2023 letter.

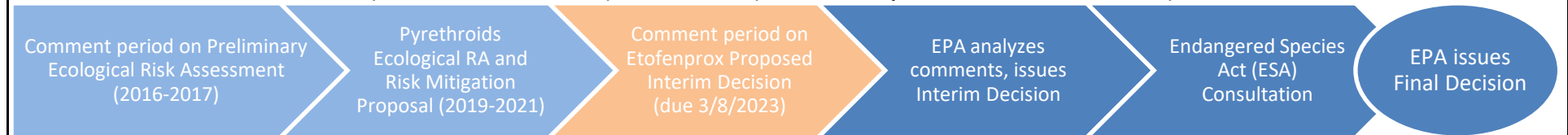


Next steps: RPA and Final Biological Opinion.

CASQA Comments to EPA (Feb 2023)	EPA Response	Did EPA incorporate CASQA's comment?
CASQA supports EPA's proposed label language mitigations for carbaryl. These mitigations include use deletions, spray drift management measures, general environmental protection measures (including water protection statements), and updated environmental hazard statements.	EPA included the Proposed Interim Decision (PID) agreements in the draft BiOp. (Draft BiOp, p.37-39)	Yes.
<p>CASQA suggests label mitigation measures for consistency. These suggestions included clarification of application statement on pervious surfaces. CASQA also asked that EPA correct the application rates in the PID mitigations to be consistent with the mitigations stated in the November 2022 Biological Evaluation Memorandum titled, Draft Evaluation Supporting Proposed Mitigations Predicted to Avoid Jeopardy and Adverse Modification of Designated Critical Habitat and Reduce Take for Four Federally Listed Endangered and Threatened Species.</p> <ul style="list-style-type: none"> The PID notes [p.41] that: "Reducing the maximum annual application rate for turf to 16 lbs ai / acre (currently labeled maximum annual application rate for residential turf and golf courses is 36 lbs ai / acre and 32 lbs ai / acre for sod)" However, the BE Memo documents the pesticide registrants' recommendations [Appendix C. Summary of Mitigations from Carbaryl Registrants for Listed Species, p. 85]: 	EPA included the reduced rates of application for turf, golf courses, and ornamental plants/trees in the draft BiOp. (Draft BiOp, p.41)	Yes.

<ul style="list-style-type: none">○ Ornamental Trees and Plants<ul style="list-style-type: none">i. Maximum Annual Amount: 4 lbs. ai / acre (currently 6 lbs. ai / acre)ii. Maximum Annual Number of Applications: 4 (currently 6 lbs. ai / acre)○ Turfgrass (Golf Turf, Sports Fields, Sod Farms, Domestic and Commercial Lawns, Cemeteries, Parks, Campsites, Recreational Areas)<ul style="list-style-type: none">i. Maximum Annual Amount: 10 lbs. ai / acre (currently 16 lbs. ai / acre)ii. Maximum Application Rate: 5 lbs. ai / acre (currently 8 lbs. ai / acre)		
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Pesticide: Etofenprox (EPA-HQ-OPP-2007-0804)
Use: Insecticide
Why we care: Priority pesticide due to toxicity, use, and monitoring data. 303(d) listings as well as adopted and pending TMDLs.
Actions taken: CASQA submitted a comment letter on the Preliminary Ecological Risk Assessment (July 2017), the Ecological Risk Mitigation (February 2020), and the Proposed Risk Mitigation (January 2021).
Status: EPA released a Proposed Interim Decision specific to etofenprox in January 2023. CASQA drafted a response letter in March 2023.



Next steps: ESA Consultation with public comment period.

CASQA 2/12/2020 Comments to EPA relevant to etofenprox	EPA Response	Did EPA incorporate CASQA's comment?
<p>PERIMETER SPRAYS: Restrictions on perimeter sprays of pyrethroids to impervious surfaces around buildings will have negligible effect on the ability to achieve the societal benefits of controlling most of the target pests listed in the benefits section. According to industry standard references, this is because perimeter sprays are neither an effective means nor a common industry practice for controlling the following pests: structure-attacking pests (including termites, carpenter ants, and carpenter bees); stinging and biting pests including paper wasps, yellowjackets, biting flies, and black widow spiders); and public health pests (including bedbugs, house flies and other filth flies, mosquitoes, ticks, fleas, and fire ants). Rather than utilizing perimeter applications of pyrethroids, control strategies for these pests typically rely on more targeted applications (of pyrethroids or other insecticides) to nests, infestations, and harborage sites, in combination with non-pesticidal techniques such as exclusion and sanitation. The utility and common occurrence of targeted applications in structural applications by pest management professionals is acknowledged and well</p>	<p>Currently registered etofenprox outdoor products allow application on impervious surfaces up to a height of 2 to 3 feet and 2 to 3 feet out. Under the proposed label language, etofenprox would only be allowed to be sprayed on impervious surfaces in these cases:</p> <ul style="list-style-type: none"> • Applications to underside of eaves, soffits, doors, or windows permanently protected from rainfall by a covering, overhang, awning, or other structure • Applications around potential exterior pest entry points into man-made structures such as doorways and windows, when limited to a band not to exceed one inch • Applications to vertical surfaces (such as the side of a man-made structure) directly above impervious surfaces (e.g., driveways, sidewalks, etc.), up to 2 feet above ground level <p>(EPA Etofenprox PID, Appendix B: Proposed Labeling Changes for Etofenprox Products)</p>	<p>Yes!</p>

<p>summarized in the following statement from the National Pest Management Association: “Structural pest management applications are often made as spot treatments or crack and crevice applications. This targeted approach, focused on pest source locations and invasion points on the exterior of buildings, and highly focused applications indoors to specific harborage areas highlight the ways that structural pest control use patterns differ from many other application methods”</p> <p>In California, Argentine ant control is the primary driver for the use of perimeter sprays of pyrethroids. Incidental control of other nuisance pests that occasionally enter structures may be a minor co-benefit of perimeter sprays. However, according to Argentine ant control experts, better targeted and more limited areas of applications of pyrethroids and other insecticides, especially in combination with insecticidal baits and non-pesticide techniques that reduce conducive conditions can achieve the benefits of Argentine ant control in ways that pose less of a threat to water quality than sole reliance on perimeter sprays.</p>		
<p>CASQA SUPPORTS EPA-PROPOSED LABEL CHANGES, WITH MODIFICATIONS CASQA supports the concept of a graphic on product packages showing an image of an “X” – or better the “do not” symbol– over an outdoor drain. We have extensive experience with regard to graphically communicating “do not allow to enter gutters and storm drains” to various audiences and have found this approach to be very effective, if the graphic is properly designed. We appreciate EPA’s example from pyrethroids manufacturer outreach (shown to the right), but cannot support the use of this graphic due to lack of clarity, particularly when the image is reduced in size to fit on smaller packaging.</p> <p>We request that EPA please select a clear, schematic graphic that is very obvious as to what is prohibited. We would be pleased to work with EPA, our national association, the National</p>	<p>EPA used CASQA’s suggested pictogram, used CASQA’s proposed minimum sizing for graphic, and included Spanish translation. EPA also included improved rain restriction language, water protection statements, explicit mention of outdoor/indoor use, and specifically defined the spot treatment size. (EPA Etofenprox PID, Appendix B: Proposed Labeling Changes for Etofenprox Products)</p>	<p>Yes. (Note: since the release of this PID, EPA has released a study of the impact of refraining from pesticide use if rain is expected within 24 or 48 hours. In its comment letter on this PID, CASQA cited that EPA study as a source to ask for even stricter rain language for etofenprox.)</p>

<p>Municipal Stormwater Alliance (NMSA), and registrants toward selecting an appropriate graphic.</p> <p>CASQA supports these other proposed label changes:</p> <ul style="list-style-type: none"> • Prohibition on applications during rain • Advisory statement to avoid applications if rain is forecast within 24 hours (We would prefer an enforceable statement) • Addition of water protection statements • Definition of spot treatment (2 sq. ft.) • Requirement that product labels explicitly state whether particular products are allowed to be used indoors only, outdoors only, or both indoors and outdoors • Reduction in height above ground level of building treatments from 3 feet to 2 feet <p>To ensure that these label elements completely and effectively address products that may be dumped or washed into gutters and storm drains, we request that EPA modify the “label table” in Appendix B to:</p> <ol style="list-style-type: none"> 1. Identify a specific outdoor drain graphic and require the same graphic be used on all products. 2. Establish minimum size for the outdoor graphic, to ensure that it is legible, i.e., no smaller than 1.5 square centimeters unless this size is greater than 10% of the size of the label. 3. Modify the list of products that must include the graphic, stewardship language, and Spanish translations. 		
<p>EPA SHOULD PROVIDE CALIFORNIA-SPECIFIC LABELS FOR OUTDOOR STRUCTURAL PEST CONTROL PRODUCTS THAT ARE CONSISTENT WITH CALIFORNIA REGULATIONS EPA’s urban runoff risk mitigation proposal is less protective than existing California regulations. It differs from California regulations in numerous, arcane manners. We anticipate that these differences will be very confusing for applicators. It is likely that many applicators will violate California requirements by following the label on the product (just as they have been trained to do – “Read the Label”)</p>	<p>EPA did not provide California-specific labels.</p>	<p>No.</p>

<p>instead of the California requirements. In addition to allowing water pollution, this could subject professional applicators to enforcement. To address this, we request that EPA provide California-specific labels for outdoor structural pest pyrethroids products that are completely consistent with California Surface Water Protection Regulations.</p>		
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