



# B A S M A A

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

San Mateo Countywide  
Water Pollution  
Prevention Program

Santa Clara Valley  
Urban Runoff Pollution  
Prevention Program

Sonoma County  
Water Agency

Vallejo Flood &  
Wastewater District

Bay Area

Stormwater Management

Agencies Association

P.O. Box 2385

Menlo Park, CA 94026

650.365.8678

info@basmaa.org

September 30, 2019

Michael Montgomery, Executive Officer  
California Regional Water Quality Control Board, San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, CA 94612

Subject: FY 2018-19 Annual Report: MRP Provision C.9.f - Track and Participate  
in Relevant Regulatory Processes

Dear Mr. Montgomery:

This letter and attachments are submitted on behalf of all 76 municipalities subject to the requirements of the Municipal Regional Stormwater NPDES Permit (MRP).

The essential requirements of provision C.9.f (text attached) are to track U.S. Environmental Protection Agency (USEPA) and California Department of Pesticide Regulation (DPR) actions related to urban-uses of pesticides and actively participate in the shaping of regulatory efforts currently underway. This provision allows for cooperation among Permittees through the California Stormwater Quality Association (CASQA), BASMAA, and/or the Urban Pesticide Pollution Prevention Project (UP3 Project) – an approach the Permittees have engaged in for a number of years. Recognizing this approach is the most likely to result in meaningful changes in the regulatory environment, Permittees elected to continue on this course in FY 2018-19 to achieve compliance with this provision. Oversight of this provision is the purview of the BASMAA Board of Directors.

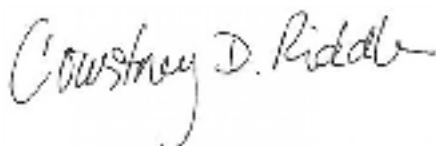
The actual work of tracking and participating in the ongoing regulatory efforts related to pesticides was accomplished through CASQA. CASQA conducted its activities on behalf of members and coordinated funding contributions and activities through its Pesticides Subcommittee, a group of stormwater quality agencies affected by pesticides or pesticides-related toxicity listings, TMDLs, or permit requirements, as well as others knowledgeable about pesticide-related stormwater issues. FY 2018-19 was another productive year for the Subcommittee. The CASQA Pesticides Subcommittee's annual report for FY 2018-19 (attached) 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.

We certify under penalty of law that this document was prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

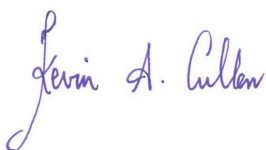
FY 2018-19 Annual Report: MRP Provision C.9.f - Track and Participate in Relevant Regulatory Processes



Jim Scanlin, Alameda Countywide Clean Water Program



Courtney Riddle, Contra Costa Clean Water Program



Kevin Cullen, Fairfield-Suisun Urban Runoff Management Program



Matthew Fabry, San Mateo Countywide Water Pollution Prevention Program



Adam Olivieri, Santa Clara Valley Urban Runoff Pollution Prevention Program



Jennifer Harrington, Vallejo Flood & Wastewater District

Attachments

MRP Provision C.9.f

*Pesticides Subcommittee Annual Report and Effectiveness Assessment 2018-2019; California Stormwater Quality Association; August 2019*

MRP Provision C.9.f states:

**C.9.f. Track and Participate in Relevant Regulatory Processes**

**i. Task Description** – The Permittees shall conduct the following activities, which may be done at a county, regional, or statewide level:

- (1) The Permittees shall track U.S. EPA pesticide evaluation and registration activities as they relate to surface water quality and, when necessary, encourage U.S. EPA to coordinate implementation of the Federal Insecticide, Fungicide, and Rodenticide Act and the CWA and to accommodate water quality concerns within its pesticide registration process;
- (2) The Permittees shall track DPR pesticide evaluation activities as they relate to surface water quality and, when necessary, encourage DPR to coordinate implementation of the California Food and Agriculture Code with the California Water Code and to accommodate water quality concerns within its pesticide evaluation process;
- (3) The Permittees shall assemble and submit information (such as monitoring data) as needed to assist DPR and county agricultural commissioners in ensuring that pesticide applications comply with WQS; and
- (4) As appropriate, the Permittees shall submit comment letters on U.S. EPA and DPR re-registration, re-evaluation, and other actions relating to pesticides of concern for water quality.

**ii. Reporting** – In their Annual Reports, the Permittees shall summarize participation efforts, information submitted, and how regulatory actions were affected. Permittees who contribute to a county, regional, or statewide effort shall submit one report at the county or regional level. Duplicate reporting is discouraged.

# Pesticides Subcommittee Annual Report and Effectiveness Assessment 2018-2019

California Stormwater Quality Association



Final Report  
August 2019

## Preface

The California Stormwater Quality Association (CASQA) is comprised of stormwater quality management organizations and individuals, including cities, counties, special districts, industries, and consulting firms throughout California. CASQA's membership provides stormwater quality management services to more than 22 million people in California. This report was funded by CASQA to provide CASQA's members with focused information on its efforts to prevent pesticide pollution in urban waterways. It is a component of CASQA's Source Control Initiative, which seeks to address stormwater and urban runoff pollutants at their sources.

This report was prepared by Stephanie Hughes under the direction of the CASQA Pesticides Subcommittee Co-Chair Dave Tamayo; with substantial assistance from Dr. Kelly Moran of TDC Environmental who provided data, documents, guidance, and review; and Tammy Qualls of Qualls Environmental Consulting who assessed the effectiveness of regulatory engagement and prepared the regulatory engagement schedule (Table 6).

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## Abbreviations Used in this Report

**BACWA** – Bay Area Clean Water Agencies

**BiOp** – Biological Opinion

**CASQA** – California Stormwater Quality Association

**CEQA** – California Environmental Quality Act

**CCRWQCB** – Central Coast Regional Water Quality Control Board

**CVRWQCB** – Central Valley Regional Water Quality Control Board

**CWA** – Clean Water Act

**DPR** – California Department of Pesticide Regulation

**EPA** – United States Environmental Protection Agency

**ESA** – Endangered Species Act

**FY** – Fiscal Year (July 1 through June 30)

**IPM** – Integrated Pest Management

**MAA** – Management Agency Agreement between DPR and the Water Boards

**MS4** – Municipal Separate Storm Sewer System

**NACWA** – National Association of Clean Water Agencies

**NPDES** – National Pollutant Discharge Elimination System

**NMFS** – National Marine Fisheries Service

**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

**PMAC** – Pest Management Advisory Committee

**PPI** – Pests, Pesticides, and Integrated Pest Management DPR initiative

**PMP** – Pesticides-specific Management Practice

**PSC** – CASQA Pesticides Subcommittee

**SPCB** – Structural Pest Control Board

**SFBRWQCB** – San Francisco Bay Regional Water Quality Control Board

**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

**SWRCB** – State Water Resources Control Board or State Water Board

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

**UCIPM** – University of California Statewide IPM

**UP3** – Urban Pesticides Pollution Prevention Partnership

**UPCMP** – Urban Pesticides Coordinated Monitoring Program

**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 Pesticides Subcommittee (PSC) of the California Stormwater Quality Association (CASQA) describes CASQA's activities related to the goal of preventing pesticide pollution in urban waterways from July 2018 through June 2019.

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) in a coordinated statewide effort, referred to as the Urban Pesticides Pollution Prevention (UP3) Partnership. 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). More than 16 years of collaboration with UP3 Partners, as well as EPA and DPR staff, has resulted in significant changes in pesticide regulation. CASQA's activities and outcomes are described in Section 2. This year's highlights include continued progress on the State Water Board's Urban Pesticides Amendments project as well the pesticide regulator actions described below.

**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?

- 💧 In direct response to continued communication from CASQA and UP3 regarding pyrethroid and fipronil water pollution in urban areas, DPR has implemented mitigation measures and is currently monitoring their effectiveness. If successful, DPR's mitigation actions could avoid establishment of fipronil TMDLs for those water bodies.
- 💧 In response to a partner request based on information provided by CASQA, DPR routed a deltamethrin (a pyrethroid) registration application to its Surface Water Protection Program for review; the results did not support registration, leading to the applicant removing all urban uses from the product label.
- 💧 CASQA shared its urban runoff expertise with pesticide regulators by preparing comment letters to EPA for two pesticide reviews, providing the Water Boards and other partners with information that triggered additional letters on two more pesticide reviews, and participating in numerous meetings and conference calls focused on priority pesticides and long-term regulatory structure improvements. (See Tables 3, 4 and 5 and the Appendix.)
- 💧 CASQA/UP3 reviewed scientific literature in order to update and prioritize the Pesticide Watch List, which it 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?

- 💧 The State Water Board continues to work toward adoption of the Urban Pesticide Amendments. These amendments would institutionalize the State's strategy of utilizing pesticide regulations as the primary mechanism for addressing pesticide water quality problems associated with urban runoff, serving as a TMDL alternative. Implementation will be supported by a new statewide urban runoff pesticides monitoring program intended to coordinate with existing Water Board and DPR urban pesticides and toxicity monitoring programs.
- 💧 DPR continues to demonstrate its commitment to addressing pesticide impacts on receiving waters through timely mitigation and implementation of improved evaluation procedures.



- 💧 In concert with the development of the Urban Pesticide Amendments, the State Water Board and DPR completed an update of their Management Agency Agreement, to clarify their respective roles and achieve better coordination on addressing water quality impacts, particularly in urban areas.
- 💧 Although many improvements by OPP have been made since the early 2000s, improvement in scientific evaluations supporting OPP's regulatory efforts and better understanding of urban runoff management systems are still necessary to adequately protect urban surface waters from pesticide impairments. Recently the regulatory climate has changed, limiting support of progress by OPP in addressing these concerns.

In FY 2019-2020, CASQA plans to continue to address near-term pesticide concerns and seek long-term regulatory change. Future near-term and long-term tasks are identified in Section 3, Tables 5 and 6. Key topics include:

- 💧 Completion and adoption of the Urban Pesticide Amendments by the State Water Board
- 💧 Establishment of the new urban pesticides coordinated monitoring program in partnership with the Water Boards, DPR, and EPA Region 9
- 💧 Registration review-related activities at EPA for pyrethroids, fipronil, and imidacloprid (the only such opportunity for the next 15 years)
- 💧 DPR evaluation and potential additional action regarding pyrethroid and fipronil mitigation measures
- 💧 EPA risk mitigation for malathion and carbaryl in urban runoff in tandem with Endangered Species Act evaluations
- 💧 EPA Framework for Pesticides Risk Assessments Incorporating Endangered Species Act Biological Evaluations (and eventually all pesticides risk evaluations for conventional pesticides)
- 💧 DPR registration applications and proposed decisions for new products
- 💧 DPR proposed carbaryl regulations that would restrict carbaryl use and end sale of carbaryl consumer products

## Section 1. Introduction

### 1.1 IMPORTANCE OF CASQA'S EFFORTS TO IMPROVE PESTICIDE REGULATION

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.<sup>1</sup> Under the Clean Water Act (CWA), when pesticides impact water bodies, local agencies may be held responsible for costly monitoring and mitigation efforts. To date, some California municipalities<sup>2</sup> 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. In the future, more municipalities throughout the state could be subject to similar requirements, as additional TMDLs and Basin Plan amendments are adopted (Table 1). Meanwhile local agencies have no authority to restrict or regulate when or how pesticides are used<sup>3</sup> in order to proactively prevent pesticide pollution and avoid these costs.

Under federal and state statutes, EPA and DPR have the authority to regulate pesticides, including substantial authority and responsibility to protect water bodies from adverse effects (including impacts from pesticides in urban runoff). Unfortunately, until the relatively recent past these agencies did not recognize the need, nor did they possess the institutional capacity to exercise their authority to protect urban water quality. As a result, past registration actions have allowed a number of pesticides (such as pyrethroids and fipronil) to be used legally in ways that have resulted in widespread pollution in urban water bodies. This situation is depicted in Figure 1.

To change this situation 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 (Figure 2).

**Table 1. California TMDLs, Statewide Water Quality Control Plans, and Basin Plan Amendments Addressing Currently Registered Pesticides and/or Toxicity in Urban Watersheds<sup>4</sup>**

| Water Board Region | Water Body                                                                                                                                                                                                    | Pesticide                                     | Status         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------|
| Statewide          | All MS4s/All Urban Waterways:<br>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<br>(Enclosed Bays & Estuaries)                                                                                                                                                    | Sediment Toxicity <sup>5</sup>                | Approved       |

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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.

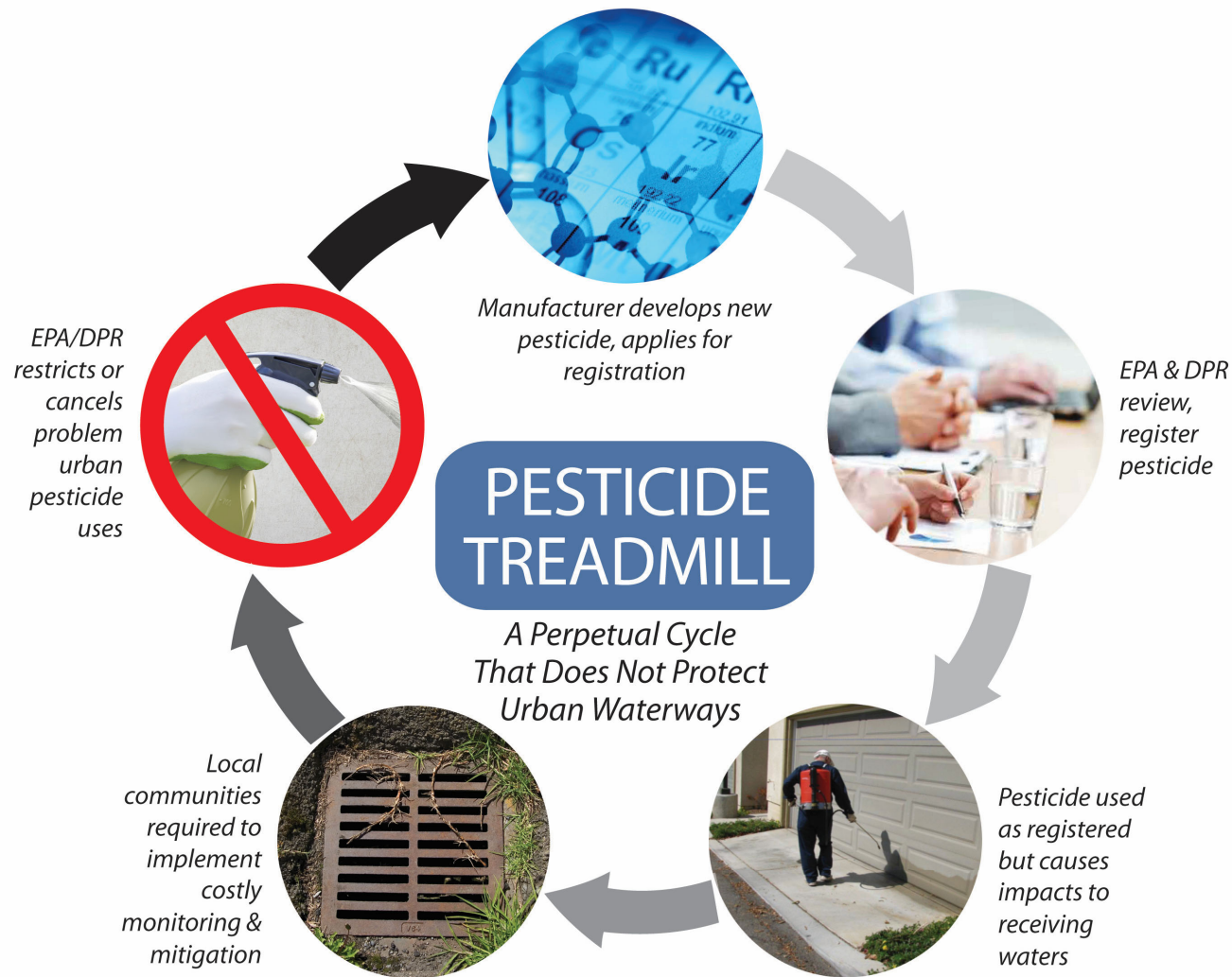
<sup>4</sup> Excludes pesticides that are not currently registered in California, such as organochlorine pesticides.

<sup>5</sup> These TMDLs/Plan provisions can trigger toxicity testing stressor source identification studies, and additional follow up, even when toxicity is linked to current pesticides.

|                              | Toxicity Provisions (Inland Surface Waters and Enclosed Bays & Estuaries) | Toxicity <sup>5</sup>                           | In preparation                 |
|------------------------------|---------------------------------------------------------------------------|-------------------------------------------------|--------------------------------|
| <b>Water Board Region</b>    | <b>Water Body</b>                                                         | <b>Pesticide</b>                                | <b>Status</b>                  |
| <b>San Francisco Bay (2)</b> | All Bay Area Urban Creeks                                                 | All Pesticide-Related Toxicity                  | Approved                       |
| <b>Central Coast (3)</b>     | Santa Maria River Watershed                                               | Pyrethroids, Toxicity                           | Approved                       |
|                              | Lower Salinas River Watershed                                             | Pyrethroids, Toxicity                           | Approved                       |
|                              | San Lorenzo River Watershed (Santa Cruz)                                  | Chlorpyrifos <sup>6</sup>                       | Approved                       |
| <b>Los Angeles (4)</b>       | Marina del Rey Harbor                                                     | Copper (Marine antifouling paint) <sup>7</sup>  | Approved                       |
|                              | Oxnard Drain 3 (Ventura County)                                           | Bifenthrin, Toxicity                            | EPA-Adopted Technical          |
|                              | Calleguas Creek, its Tributaries and Mugu Lagoon                          | Water & Sediment Toxicity <sup>5</sup>          | TMDL                           |
|                              | McGrath Lake (Ventura County)                                             | (Diazinon & Chlorpyrifos) <sup>6</sup>          | Approved                       |
|                              | Colorado Lagoon (Long Beach)                                              | Sediment Toxicity <sup>5</sup>                  | Approved; reconsideration 2019 |
|                              | Dominguez Channel and Greater Los Angeles and Long Beach Harbors Waters   | Sediment Toxicity <sup>5</sup>                  | Approved                       |
| <b>Central Valley (5)</b>    | Ballona Creek Estuary                                                     | Sediment Toxicity <sup>5</sup>                  | Approved                       |
|                              | Sacramento River and San Joaquin River Basins                             | Pyrethroids                                     | Approved                       |
|                              | Sacramento-San Joaquin River Delta Waterways                              | Diazinon & Chlorpyrifos <sup>6</sup>            | Approved                       |
|                              | Sacramento & Feather Rivers                                               | Diazinon & Chlorpyrifos <sup>6</sup>            | Approved                       |
|                              | Sacramento County Urban Creeks                                            | Diazinon & Chlorpyrifos <sup>6</sup>            | Approved                       |
|                              | Lower San Joaquin River                                                   | Diazinon & Chlorpyrifos <sup>6</sup>            | Approved                       |
| <b>Lahontan (6)</b>          | Pesticide Discharge Prohibition                                           | All Pesticides                                  | Approved                       |
| <b>Santa Ana (8)</b>         | Newport Bay                                                               | Copper (Marine antifouling paint) <sup>7</sup>  | In preparation                 |
|                              | San Diego Creek, and Upper and Lower Newport Bay                          | Toxicity (Diazinon & Chlorpyrifos) <sup>6</sup> | EPA-Adopted Technical TMDL     |
| <b>San Diego (9)</b>         | Shelter Island Yacht Basin (San Diego Bay)                                | Copper (Marine antifouling paint) <sup>7</sup>  | Approved                       |
|                              | Chollas Creek                                                             | Diazinon <sup>6</sup>                           | Approved                       |

<sup>6</sup> Use prohibited in urban areas (diazinon) or no meaningful use due to use limitations (chlorpyrifos).

<sup>7</sup> Primarily addresses pesticides that are directly discharged and should not ordinarily appear in stormwater (marine antifouling paint).



**Figure 1. Current Pesticide Regulatory System.<sup>8</sup>**

<sup>8</sup> Photos in Figures 1 and 2 of spraying pesticide along a garage was taken by Les Greenberg, UC Riverside



**Figure 2. Proactive Use of the Pesticide Regulatory Structure 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

The stated goal of CASQA's Vision, Action 1.4, is to "Develop a regulatory system implemented by EPA Office of Pesticide Programs (OPP), and California Department of Pesticides Regulation (DPR) to identify whether urban uses of a pesticide pose a threat to water quality, and then restrict or disallow those uses proactively so that water quality impacts are avoided". To accomplish this goal, primarily through the work of its Pesticides Subcommittee, in engaging in pesticide-related regulatory activities is to protect water quality by eliminating problems stemming from urban pesticide use. In support of Action 1.4, the Vision identifies Proposed Effort Steps 1-4 below.



**Step 1.** Work with EPA and DPR to develop a registration/reregistration process that clearly evaluates risks and potential water quality impacts of pesticides. The process for registration and registration review must include effective evaluations for the potential of all pesticide active ingredients and formulated products to impact urban waterways. The process must include consideration of all urban use patterns, and data required of manufacturers must support proactive evaluations. Cumulative risk assessments must be conducted, especially for pesticides with similar modes of action.



**Step 2.** Work with the Water Boards, DPR, EPA's Office of Water (OW) and OPP to develop a consistent definition of what comprises a water quality problem. CASQA will work with EPA's OW and OPP to develop consistent methodologies and approaches to allow evaluation of the potential impacts of pesticides on aquatic life.



**Step 3.** Develop recommendations for coordinating statewide pesticide monitoring efforts [that consider] monitoring requirements from DPR and the Water Boards and [that are] designed identify emerging pesticide problems in urban waterways before they become widespread and severe, and minimize duplication between the programs.



**Step 4.** For pesticides that are identified as a problem, identify mechanisms to use pesticide regulations and statutes, rather than total maximum daily loads (TMDLs) and permit requirements, to mitigate the problems. When needed, urban-specific, use-specific mitigation measures will be used to address water quality problems.

The effectiveness of CASQA's efforts toward these goals 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, derived from the proposed efforts for CASQA Vision Action 1.4, 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? **Related to Action 1.4, Step 4.**

**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? **Related to Action 1.4, Steps 1, 2, and 3.**

This report is organized to answer these management questions and is intended to serve as an annual compliance submittal 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.



## Section 2. Results of CASQA 2018-2019 Efforts

To prevent urban water quality impacts from registered pesticide uses, CASQA's Vision Action 1.4 address both near-term regulatory concerns (Step 4) and seeks long term changes in the pesticide regulatory structure (Steps 1, 2, and 3).

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" created by the PSC and the UP3 Partnership. The Watch List aids CASQA and the UP3 Partnership in their prioritization of near-term efforts (Section 2.1).

Meanwhile, CASQA and the UP3 Partnership are also working on a parallel effort to effect long-term systemic changes in the regulatory process itself. 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 the UP3 are gradually achieving results (Section 2.2).

### 2.1 NEAR-TERM REGULATORY CONCERNS

CASQA seeks to ensure that the Water Boards and EPA's OW work with DPR and the EPA's OPP to manage problem pesticides that are creating near-term water quality impairments. These efforts address CASQA Vision Action 1.4, Step 4 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 does not show a clear understanding of key urban uses in its analyses, and it is still unclear if its upcoming risk management decisions for pyrethroids, fipronil, and imidacloprid and other neonicotinoids will provide any additional protection of urban water bodies.

#### 2.1.1 Updated Pesticide Watch List

A key tool for identifying near-term regulatory concerns is our pesticide "Watch List." CASQA, working through the UP3 Partnership, 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). The PSC uses these insights to update the Watch List each year (Table 2), which serves as a management tool to help us focus our efforts on the most important pesticides from the perspective of MS4 agencies.<sup>9</sup>

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<sup>9</sup> The first Watch List was published by the UP3 in 2005.

**Table 2. Current Pesticide Watch List (July 2019)**

| Priority | Basis for Priority Assignment                                                                                                                                                                                                                           | Pesticides                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Monitoring data exceeding benchmarks; linked to toxicity in surface waters; urban 303(d) listings                                                                                                                                                       | Pyrethroids (20 chemicals <sup>10</sup> )                                                                                                                                                                                                                                          | Fipronil                                                                                                                                                                                                                                                                   | Imidacloprid (neonic)<br>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) <sup>11</sup><br>Chlorantraniliprole<br>Copper pesticides                                                                                                                                                                                         | Creosote (PAHs)<br>Indoxacarb<br>Neonics (other than Imidacloprid) <sup>12</sup>                                                                                                                                                                                           | Pendimethalin<br>Pesticides with dioxins impurity <sup>13</sup><br>Polyhexamethylenebiguanide<br>Zinc pesticides                                                                                                                                                                                                                               |
| 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<br>Chromium pesticides                                                                                                                                                                                                                                          | Diuron<br>Naphthenates                                                                                                                                                                                                                                                     | Simazine<br>Silver pesticides<br>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<br>ADBAC pesticides <sup>14</sup><br>Azoxystrobin<br>Bacillus sphaericus<br>Bacillus thuringiensis (Bti)<br>Bromacil<br>N-Bromosulfamates<br>Busan-77<br>Carbaryl<br>Chlorinated isocyanurates<br>Chlorine<br>Chlorine dioxide<br>Chlorfenapyr<br>Chlorsulfuron<br>DCOIT | Dichlobenil<br>Dichlorvos (DDVP)<br>Dithiopyr Halohydantoin<br>Hydramethylnon<br>Hypochlorites<br>Imazapyr<br>Isoxaben<br>Mancozeb<br>Methoprene<br>Methyl anthranilate<br>Mineral oil (aliphatic)<br>MGK-264<br>Novaluron<br>Oryzalin<br>Oxadiazon<br>Oxyfluorfen<br>PCNB | Peroxyacetic acid<br>Phenoxy herbicides <sup>15</sup><br>Piperonyl butoxide<br>Prodiamine<br>Propiconazole<br>Pyrethrins<br>Sodium bromide<br>Sodium chlorite<br>Sodium percarbonate<br>Sodium tetraborate<br>Spinosad/ Spinetoram<br>Sulfometuron-methyl<br>Tebuconazole<br>Terbuthylazine<br>Triclopyr<br>Triclosan<br>Trimethoxysilyl quats |

<sup>10</sup> Allethrin, Bifenthrin, Cyfluthrin, Cyhalothrin, Cypermethrin, Cyphenothrin, Deltamethrin, Esfenvalerate, Etofenprox, Flumethrin, Imiprothrin, Metofluthrin, Momfluothrin, Permethrin, Prallethrin, Resmethrin, Sumethrin [d-Phenothrin], Tau-Fluvalinate, Tetramethrin, Tralomethrin.

<sup>11</sup> Carbendazim is a registered pesticide, and also a degradate of thiophanate-methyl

<sup>12</sup> Acetamiprid, Clothianidin, Dinotefuran, Thiamethoxam (degrades into Clothianidin)

<sup>13</sup> 2,4-D, Chlorothalonil, Dacthal, Pentachlorophenol

<sup>14</sup> Alkyl Dimethyl Benzyl Ammonium Chlorides (ADBAC) includes a family of 21 different quaternary ammonium pesticides.

<sup>15</sup> MCPA and salts, 2,4-D, 2,4-DP, MCPP, dicamba



| Priority | Basis for Priority Assignment                                                                                                | Pesticides                               |                                                       |                                                                    |
|----------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------|
|          |                                                                                                                              | DDAC                                     |                                                       |                                                                    |
| 5        | Frequent questions from UP3 Partners                                                                                         | Chlorpyrifos (near zero urban use)       | Diazinon (no urban use)<br>Glyphosate                 | Metoldehyde                                                        |
| New      | Priority determined on the basis of proposed urban use, aquatic toxicity, and other information in registration application. | Not known but may include the following: | Cyantraniliprole<br>Cyclaniliprole<br>Flupyradifurone | Nitenpyram (Neonic)<br>Nithiazine (Neonic)<br>Sulfoxaflor (Neonic) |
| 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 by UP3 for the complete suite of urban pesticides.           | Unknown                                  |                                                       |                                                                    |

Comparing the current Watch List to the version published in the 2017/18 PSC Annual Report, we see that the insecticides fipronil, imidacloprid, malathion, and pyrethroids remain as the Priority 1. With respect to other priorities, the list was updated in order to:

- (1) add all registered pool, hot tub, and fountain pesticides meeting the criteria specified in the “basis for priority assignment” column;<sup>16</sup>
- (2) add pesticides identified through DPR’s urban monitoring prioritization model as priorities for its urban monitoring studies;
- (3) revise priority levels based on the latest monitoring data from the U.S. Geological Survey (USGS), DPR, and others (all changes were in levels 3-5); and
- (4) clarify listings for neonicotinoids to reflect current registration status.

### 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. Now that DPR implements relatively robust surface water quality review procedures for new pesticide registrations, there is reduced need for CASQA to provide input to EPA on new pesticides.

**Figure 3. EPA’s Registration Process for New Pesticides**



<sup>16</sup> Pesticide-containing water from pools, hot tubs, and fountains can be inappropriately discharged into gutters and storm drains (which can violate water quality standard and has caused fish kills). On that basis, these pesticides were identified from California registration data and added to the Watch List to assist agencies seeking improved label instructions to prevent inappropriate discharges of these 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. EPA regularly updates its schedule for approximately 50 pesticides that will begin the review process in a given year.<sup>17</sup>

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



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 in 2018-19**

In 2018-19, CASQA identified a product registration application containing deltamethrin (a top priority pyrethroid pesticide). A CASQA Partner (Sacramento County) successfully requested this product be routed by DPR for surface water review. The subsequent evaluation did not support registration. DPR subsequently issued a Notice of Proposed Decision to Deny the product. The applicant subsequently resubmitted the product removing all urban uses from the product label. DPR staff recommend that CASQA continue monitoring all registration applications while DPR considers changing its standard procedures in response to CASQA’s 2015 request that all storm drain pesticides be automatically routed for surface water review.

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.” DPR evaluations of pyrethroids and fipronil in urban runoff occurred in response to CASQA and Water Board requests. These evaluations, mitigation measure development, and mitigation effectiveness evaluation have involved ongoing communication with CASQA and the UP3 Partnership.

#### **2.1.3.1 Progress on Near-Term Regulatory Concerns**

Table 3 presents a summary of recent UP3 activities to address near-term regulatory concerns and their 2018-2019 results; for additional insight regarding ongoing pesticide registrations, see the Appendix. This year CASQA concentrated efforts to affect near-term regulatory concerns on Priority 1 pesticides. CASQA has had considerable success in working with DPR and the Water Board. The positive outcomes in Table 3 reflect the success of CASQA’s teamwork in the UP3 Partnership. Some of this work occurs during formal public comment periods. To accomplish this, CASQA monitors the Federal Register and DPR’s website for notices of regulatory actions related to new pesticide registrations and registration reviews. Since the 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.

<sup>17</sup> See <https://www.epa.gov/pesticide-reevaluation/registration-review-schedules> for schedule information.

**Table 3. Latest Results of Efforts Communicating Near-Term Regulatory Concerns<sup>18</sup>**

| Regulatory Action or Concern                         | CASQA Efforts |                   |        | Partner Support   | Outcomes and notes                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------|---------------|-------------------|--------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                      | Letter(s)     | Call(s) or emails | Mtg(s) |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| DPR                                                  |               |                   |        |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Bifenthrin product registration application          |               |                   |        | Sacramento County | Requested review of label, which appears to be inconsistent with DPR-Bifenthrin manufacturer memorandum of agreement establishing specific label language to implement bifenthrin-specific mitigation measures for urban runoff. Registration decision is pending.                                                                                                                                                                                          |
| Copper building paint registration proposed decision |               |                   |        | Sacramento County | Requested that DPR revise surface water evaluation to address multiple topics not addressed in original evaluation, which used a marine antifouling paint evaluation methodology that does not appear appropriate for outdoor building paint. Registration decision is pending.                                                                                                                                                                             |
| Deltamethrin window screen registration application  |               |                   |        | Sacramento County | <b>Success!</b> Requested that DPR perform an evaluation of this product. The subsequent DPR evaluation (including modeling) did not support registration. DPR subsequently issued a Notice of Proposed Decision to deny registration. The applicant subsequently resubmitted the product removing all urban uses from the product label.                                                                                                                   |
| Indoxacarb product label modification question       |               |                   |        | UP3               | <b>Success!</b> CASQA identified that an important part of the label (stipulating outdoor clean-up practices) was omitted from the proposed revised label. DPR pulled the product from the registration process.                                                                                                                                                                                                                                            |
| EPA                                                  |               |                   |        |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Pyrethroids Registration Review Risk Assessments     |               |                   | ✓      |                   | Following significant efforts by CASQA and Partners in 2017-18, during this FY, CASQA's Pesticides Subcommittee Chair met with EPA pyrethroid chemical managers (all new staff) and the OPP Director to share California data and maps of 303(d) predictions. Discussed CASQA's interest in bifenthrin - either cancelling uses in California or a substantial reduction of use through labeling or other mitigation. Registration Review decision pending. |
| Malathion Biological Opinion                         | ✓             |                   |        |                   | Requested retail restrictions to minimize use by non-professional users in urban settings. (See summary following this table). Decision pending.                                                                                                                                                                                                                                                                                                            |

<sup>18</sup> Color coding in this table is meant to reflect the "Watch List" prioritization color coding in Table 2.

| Regulatory Action or Concern                                            | CASQA Efforts |                   |        | Partner Support                                 | Outcomes and notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------|---------------|-------------------|--------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                         | Letter(s)     | Call(s) or emails | Mtg(s) |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Indoxacarb Registration<br>Review Final Registration<br>Review Decision | ✓             |                   |        | SFBRWQCB<br>BACWA<br>Tri-TAC                    | <b>Success!</b> CASQA and its partners sought to prohibit application of granular products to any impervious surface or in locations where product may contact surface water, storm drain, or gutter. EPA fully incorporated this comment.<br><b>Partial success.</b> CASQA and its partners sought requirements that no outdoor application be made when rainfall is forecast within 48 hours. Future labels will contain voluntary wording specifying a 24-hour window. CASQA requested efficacy data to reduce the area receiving treatments (building “perimeter band”) to the minimum required for effective pest control. While it is not clear whether efficacy data were applied, the perimeter band was changed from a maximum of 10 feet to 7 feet. Lastly, CASQA requested a requirement of immediate sweep back from accidental application to impervious surfaces; future labels will include this as a guidance rather than a requirement. |
| Zinc registration review<br>preliminary risk assessments                |               |                   |        | SFBRWQCB<br>BACWA<br>NACWA<br>Sacramento County | Pending.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Copper Registration Review -<br>Final Interim Decision                  | ✓             |                   |        | SFBRWQCB<br>NSMA                                | <b>Success!</b> Language requested by CASQA and its UP3 Partners to address pool, spa, and fountain emptying will be required to be placed on all such product labels.<br><b>Partial success.</b> CASQA requested that all storm drain applications of copper be prohibited. EPA will be prohibiting applications of copper compounds directly into MS4 and other storm drain systems with NPDES permits; the revised language allows for private entities (even those with storm drains that flow into public storm drain systems) to continue to apply copper root control chemicals.                                                                                                                                                                                                                                                                                                                                                                  |
| Nanosilver Final Work Plan                                              | ✓             |                   |        | BACWA<br>NACWA<br>SFBRWQCB<br>Tri-TAC           | In response to EPA's Draft Work Plan, in 2012 CASQA and Partners shared scientific studies and requested that EPA consider bioavailability, aquatic toxicity, biomagnification, particularly as related to nanoparticle size as well as specific product uses. CASQA further expressed concern that the nanosilver registration review docket was not as robust most environmental risk assessment work plans. While the October 2018 Final Work Plan responded positively to almost all of these comments, the level of incorporation of these scientific areas into                                                                                                                                                                                                                                                                                                                                                                                    |

| Regulatory Action or Concern                                    | CASQA Efforts |                   |        | Partner Support            | Outcomes and notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------|---------------|-------------------|--------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                 | Letter(s)     | Call(s) or emails | Mtg(s) |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                 |               |                   |        |                            | EPA's review will not be known until release of the Draft Risk Assessment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Dichlobenil Proposed Interim Registration Review Decision       | ✓             |                   |        | SFBRWQCB<br>BACWA<br>NACWA | <b>Success!</b> In response to request by CASQA and its UP3 Partners, the EPA noted that it would be adding the following label language to all labels: <i>"Do not use in storm, field, or other drains unless effluent is treated in a sanitary sewer system."</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Chlorine gas/swimming pools Registration Review risk assessment |               |                   |        | SFBRWQCB<br>BACWA<br>NACWA | <b>Partial success.</b> The risk assessment correctly identified potential impacts associated with emptying treated pools into storm drains and acknowledged that a requirement to contact local governments for direction prior to discharge would mitigate this risk (this reflects success of prior CASQA educational efforts related to other pool chemicals). Based on information from CASQA, UP3 Partners formally requested that language to address pool, spa, and fountain emptying be required to be placed on all such product labels. The EPA decision on this request is pending.                                                                                                                                                                         |
| 2,4-DP Draft Risk Assessment                                    |               |                   |        | CVRWQCB<br>SFBRWQCB        | In their 2014 comments on the EPA Work Plan, based on information from CASQA, UP3 Partners supported EPA's request for aquatic toxicity data from the registrants. However, registrants did not provide aquatic toxicity data for many species, including estuarine/marine invertebrates; EPA did not enforce this data requirement.<br>Two requests were denied:<br>(1) a request for data on the fate and aquatic toxicity for the degradate 2,4-DCP. Despite noting evidence of toxicity, and acknowledging the lack of information, EPA concluded that there are no risk concerns.<br>(2) a request that EPA fully consider the potential ecological risks in urban settings as well as the cumulative risk of additive toxicities, both between 2,4-DB and 2,4-DP. |
| Hydramethylnon Proposed Interim Decision                        | ✓             |                   |        | SFBRWQCB                   | <b>Partial success.</b> Prior to EPA's risk assessment, CASQA and the Water Board asked EPA to address transport via urban runoff to surface waters, particularly from impervious surfaces. In response, EPA evaluated these risks in its risk assessment and found them to be significant. In its proposed decision, EPA proposed to add new label language about environmental hazards, a rain advisory, and avoidance of broadcast applications on impervious surfaces.                                                                                                                                                                                                                                                                                              |

| Regulatory Action or Concern                   | CASQA Efforts |                   |        | Partner Support            | Outcomes and notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------|---------------|-------------------|--------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                | Letter(s)     | Call(s) or emails | Mtg(s) |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                |               |                   |        |                            | However, CASQA and the Water Board had also requested that the risk assessment address the toxicity of hydramethylnon to sediment and benthic macroinvertebrates, degradates, and cumulative effects of degradates. Although EPA initially stated in its responses to CASQA comments that it would model sediment and consider degradates, neither was actually done in the risk assessment.                                                                                                                                                                                                                                                                                                                                                     |
| Spinosad and Spinetoram Final Interim Decision | ✓             |                   |        | SFBRWQCB<br>BACWA<br>NACWA | <b>Partial success.</b> CASQA and its UP3 Partners requested that EPA address urban uses in addition to agricultural runoff. In response, EPA used its “turf” scenario to model urban use, which is not a good match for how the product is used. EPA did not model the other non-agricultural uses, including use inside storm drains and pet flea control. CASQA also sought additional study to quantify the environmental effects of these pesticides on benthic invertebrates. Benthic invertebrates were included in the analysis. CASQA also sought scientific assessment of risks of direct applications to storm drains for mosquito control as well as cumulative impacts of pesticide mixtures, but neither request was incorporated. |

### 2.1.3.2 Federal Malathion Evaluation Does Not Reflect Use of Concentrates by Unlicensed Applicators

Malathion is of interest to CASQA because it has been found in California in many urban watersheds at concentrations above EPA’s malathion water quality criterion, resulting in multiple listings in the most recent EPA- approved California Clean Water Act 303(d) list of impaired water bodies. The National Marine Fisheries Service (NMFS) issued a Biological Opinion (BiOp) for malathion as part of a pilot project to integrate endangered species consultation into EPA’s pesticide registration review. While the BiOp identifies significant water quality impacts from urban malathion use, based on incorrect information about malathion use and a scientific analysis that does not account for impervious surfaces and storm drain systems, it incorrectly attributes these water quality impacts to malathion applications for mosquito abatement (which are very rare in California urban areas).

CASQA analyzed DPR statewide sales data and pesticide use reporting (PUR) data to provide EPA and NMFS with information on sources of malathion in urban watersheds. The data strongly suggest that urban non-professional (“non-reported”) malathion use far outweighs urban use by licensed professionals (“reported use”). In addition, CASQA reviewed the labels of all malathion products registered in California and confirmed that eleven products are labeled in a way that allows for application (exclusive of area wide mosquito control), by professionals or residents to sites outside the home including use for both landscaping and structural pest control. Nine of these eleven products allow application to impermeable surfaces such as foundations or painted and non-painted surfaces. Surveys of use patterns by professionals and homeowners indicate that in California, the most common applications of insecticides on the outside of homes are for control of ants, and most of these applications are made to impervious surfaces around the perimeters of homes. Notably, all products available for homeowners are concentrates, ranging from 50% to 81.8% active ingredient, with labels describing specific levels of dilution (requiring measurement) prior to application. However, survey results indicate that only 43% to 62% of residential users claim to actually measure the amount of pesticide that they use.

CASQA concluded that the major source of malathion in urban runoff may be unreported uses of malathion concentrate products by unlicensed applicators in residential settings. Mitigation measures proposed in the BiOp would not address these uses. CASQA proposed that EPA and NMFS adopt a new mitigation measure to protect urban waterways (and address the 303(d) listings), specifically requesting that the agencies only allow licensed, trained professional applicators to use malathion and prevent malathion products being sold to or used by unlicensed persons for urban use.

## **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), have 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 PEAIP 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 us closer to that future. Many of these improvements are linked to the persistent work of CASQA and the UP3 Partnership to educate regulators on how previous process deficiencies did not adequately address urban pesticide problems.

As detailed below, at the State level, significant progress has been made by DPR and the Water Boards in establishing a comprehensive statewide approach to utilizing pesticide regulatory authorities to prevent pesticide toxicity in urban water bodies. 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 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. This is primarily embodied in the State's effort to establish the Urban Pesticide Amendments and the recently completed update the Management Agency Agreement (MAA) between DPR and the State Water Board.

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 do this reliably and does not have a system in place to ensure that this will happen consistently and adequately. Although more effective regulation of pesticides by EPA is still an important goal for CASQA,<sup>19</sup> due to the current regulatory climate at federal agencies, CASQA does not expect OPP to be very responsive to requests for additional improvements. Specific examples include the current administration's orders for a blanket reduction in regulations, chronic under-staffing at OPP, and lack of accessibility to OPP staff to share scientific information and stormwater expertise.

As a result, CASQA has decided for the time being to limit its efforts to affect long-term systemic change by EPA and other federal agencies. Instead, CASQA has focused more on solidifying advances made at the state level, which will leverage the considerable authority held by the State of California for regulating the use of pesticides.

### **2.2.1 Focus on Management Agency Agreement (MAA) Between DPR and State Water Board**

In 1997, just as pesticides were first discovered to be an important pollutant in urban waterways, DPR and the State Water Board adopted their first formal agreement to collaborate to address pesticides water pollution. That agreement focused on agricultural areas; the processes it envisioned did not work well in the urban context. CASQA (and its predecessor organization the Storm Water Quality Task Force) worked with DPR and the Water Boards for the next 20 years toward establishing pesticides water quality protection systems that would work in the urban context. During this time, DPR substantially updated its science-

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<sup>19</sup> Long-term regulatory goals at the state and federal level are described in detail in Section 1.2.



based pesticide registration procedures to include a “surface water protection program” review process, it initiated an urban watershed monitoring program, and it developed approaches to implementing mitigation measures addressing urban water pollution, as evidenced by its actions on pyrethroids and fipronil. The Water Boards engaged with DPR, providing scientific and regulatory information, receiving and using information from DPR to inform design of its regulatory programs (particularly TMDLs), and cooperating in monitoring programs. In mid-2019, DPR and the State Water Board received approval to sign 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 two agencies agree “to work cooperatively to address the discharge of pesticides that may cause or contribute to surface water or groundwater pollution, including surface water toxicity.”

DPR will evaluate surface water quality risks and consider these risks when making registration decisions; promote environmentally sound pest management; and respond to water quality concerns that pose significant adverse effects to aquatic organisms. Water Boards will confer with DPR when developing regulatory programs related to pesticides; ensure waters are monitored (in coordination with DPR’s monitoring and including permittee and State Water Board’s own monitoring participation); and require and support use of best management practices relating to pesticides (structural management practices are not intended to be required in urban areas).

The Implementation Plan that accompanies the MAA describes opportunities for coordination and mutual enrichment (including cross-training), expectations for both staff and executive level communication (including an annual management-level meeting between the agencies), and current agency organization and interactions. Excerpts from the Implementation Plan:

*“In the urban environment, pesticides are transported by the municipal wastewater collection system and the municipal separate storm sewer system (MS4). PMPs [pesticides-specific management practices] focus primarily on prevention through responsible use according to the pesticide label and DPR regulations and as a part of a holistic IPM [Integrated Pest Management] strategy. DPR conducts education and outreach efforts to ensure professional applicators are up to date on regulatory actions and label changes. Wastewater treatment plants and multi-benefit storm water treatment practices such as low impact development, runoff infiltration, constructed wetlands, and restoration of riparian buffers around waterways can provide some reductions. However, they are not designed for, nor implemented to address, complex mixtures of pesticides and the effectiveness of these practices to remove various pesticides from these systems is not well understood.*

*DPR will work with the Water Boards to inform pesticide users on urban PMPs. The Water Boards, through their storm water permits, will continue to require PMPs from storm water permittees. Permittees must also include, as appropriate, education and outreach to inform residential and commercial pesticide users on responsible pesticide use and encourage municipal storm water permittees to provide local expertise into DPR’s pesticide regulatory process.*

*The Water Boards and DPR will collaborate to assess the impacts of pesticides in the urban environment through collective and comprehensive monitoring efforts, which optimize the use of monitoring resources of Water Boards, dischargers, and DPR.”*

### **2.2.2 Focus on California’s Urban Pesticide Amendments**

At the urging of CASQA, 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, it established an urban pesticides reduction project (now entitled the “Urban Pesticides Amendments”) as a top priority project for 2016 under the comprehensive stormwater strategy it adopted in December 2015, known as





“Strategy to Optimize Resource Management of Storm Water” or STORMS.<sup>20</sup> In 2018-19, the State Water Board continued working towards developing the Urban Pesticides Amendments which will be changes to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries, and the Water Quality Control Plan for Ocean Waters of California. It is important to note that a critical factor in the State Water Board’s decision to move in this direction was DPR’s demonstrated commitment and significant progress in addressing urban water quality issues caused by pesticides.<sup>21</sup> It is anticipated that the public comment period will begin in late 2019, in tandem with a State Water Board Workshop. This would be followed by adoption, anticipated in 2020. In preparation for this next phase, CASQA has been providing outreach to MS4s throughout California to discuss the new amendments in greater detail.

CASQA representatives have been participating actively in the development of the Urban Pesticide Amendments since their inception, as members of the projects Core Team and various work groups, to ensure that they are consistent with CASQA’s vision for pesticide control.<sup>22</sup> The key elements that we anticipate being in the amendments are listed below.

- 💧 Element 1: Establishment of a framework for the Water Boards to work with DPR and U.S. EPA to utilize pesticide regulatory authority as the primary means for addressing pesticides in urban runoff.
- 💧 Element 2: Adopt a program of implementation addressing urban pesticides water pollution that serves as a TMDL alternative and integrates a feasible compliance pathway for MS4s.
- 💧 Element 3: MS4 Monitoring program designed to coordinate with existing DPR and State Water Board pesticides and toxicity monitoring to support effective implementation of Elements 1 and 2.
- 💧 Element 4: Requirements for MS4s to support Elements 1 and 3 by contributing expertise on how pollutants present in urban environments enter and behave in urban runoff and water bodies.
- 💧 Element 5: Other actions that can reasonably be implemented by MS4s, such as integrated pest management (IPM) outreach, in support of pesticides reductions.

CASQA supports the State Water Board’s stated goal of implementing the Urban Pesticides Amendments “as an alternative to TMDL development to address pesticide and pesticide-related toxicity impairments in individual water bodies.” Achievement of this goal would provide substantial savings of state and MS4 agency resources as compared to establishment of multiple TMDLs throughout the state.

Elements 1-4 are consistent with CASQA Vision Action 1.4. Water Board staff have indicated their intent that the Urban Pesticides Amendments, as shown in Element 5 should also establish a consistent set of “*minimum pesticides source control measures for MS4 dischargers.*”

CASQA representatives have worked with the Water Boards to ensure that such requirements are reasonable and consistent with similar measures already in place in some regions. At this time, the list of potential minimum measures includes use of IPM, education of and outreach to residents and professional pesticide applicators, providing urban runoff scientific and management expertise to support pesticide regulatory processes, non-stormwater discharge prohibitions, and pesticide and toxicity monitoring.

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<sup>20</sup> STORMS’ overall mission is to “lead the evolution of storm water management in California by advancing the perspective that storm water is a valuable resource, supporting policies for collaborative watershed-level storm water management and pollution prevention, removing obstacles to funding, developing resources, and integrating regulatory and non-regulatory interests.” ([http://www.waterboards.ca.gov/water\\_issues/programs/stormwater/storms/](http://www.waterboards.ca.gov/water_issues/programs/stormwater/storms/))

<sup>21</sup> As reported in previous CASQA Pesticide Subcommittee Annual Reports, DPR’s accomplishments include improved modeling, active ingredient screening for urban water quality issues, monitoring, and regulatory mitigation of pyrethroids and fipronil.

<sup>22</sup> These goals have been adapted from the CASQA document, “End Goals for Pesticide Regulatory Activities,” 2014. Goal 3, above, is directly tied to Goals 2, 4, and 5 of that document.

CASQA supports the stated goal to “create a comprehensive, coordinated statewide monitoring framework for pesticides and toxicity in urban runoff and receiving water that improves resource efficiency, usefulness of data, and coordination of data collection to support management decisions.”<sup>23</sup> A well-designed and managed monitoring framework that is properly representative of urban areas can simultaneously provide more useful information and improve the utilization of resources by eliminating unnecessary MS4 monitoring requirements that do not contribute to effective management of pesticides and pesticide-caused toxicity.

**Monitoring.** Through the spring of 2019, CASQA participated in a process to set up a statewide monitoring framework. Key joint accomplishments on the establishment of the monitoring program:

- 💧 **Charter and Structure:** Agreement was reached with respect to a charter, an initial steering committee structure and membership for an Urban Pesticides Coordinated Monitoring Program (UPCMP). Figure 5 presents the proposed UPCM framework including decision-making channels. While CASQA has begun exploring options for establishing a formal, more inclusive method for MS4s to select permanent steering committee representatives, the initial steering committee structure is:
  - 2 seats for the State Water Board (1 for the Division of Water Quality, 1 for the State Water Board Office of Information Management and Analysis);
  - 2 seats for the Regional Water Boards;
  - 2 seats for the DPR;
  - 3 seats for the MS4 permittees (the PSC Chair, and representatives from Alameda County and Orange County); and
  - 1 seat for the US EPA Region 9 (non-voting Member).
- 💧 **Start-Up Grant:** At the end of May 2019, the State Water Board issued a grant to the Aquatic Science Center to fund the start-up of the monitoring program, including convening of the program’s founding steering and technical committees, development of a start-up funding plan and first year workplan.

**Technical Support.** CASQA continues to provide technical support to the Water Boards on numerous crucial and highly detailed items related to the Urban Pesticide Amendments, Staff Report, CEQA Document, monitoring program, model permit language, and the relationship of these to the Management Agency Agreement.

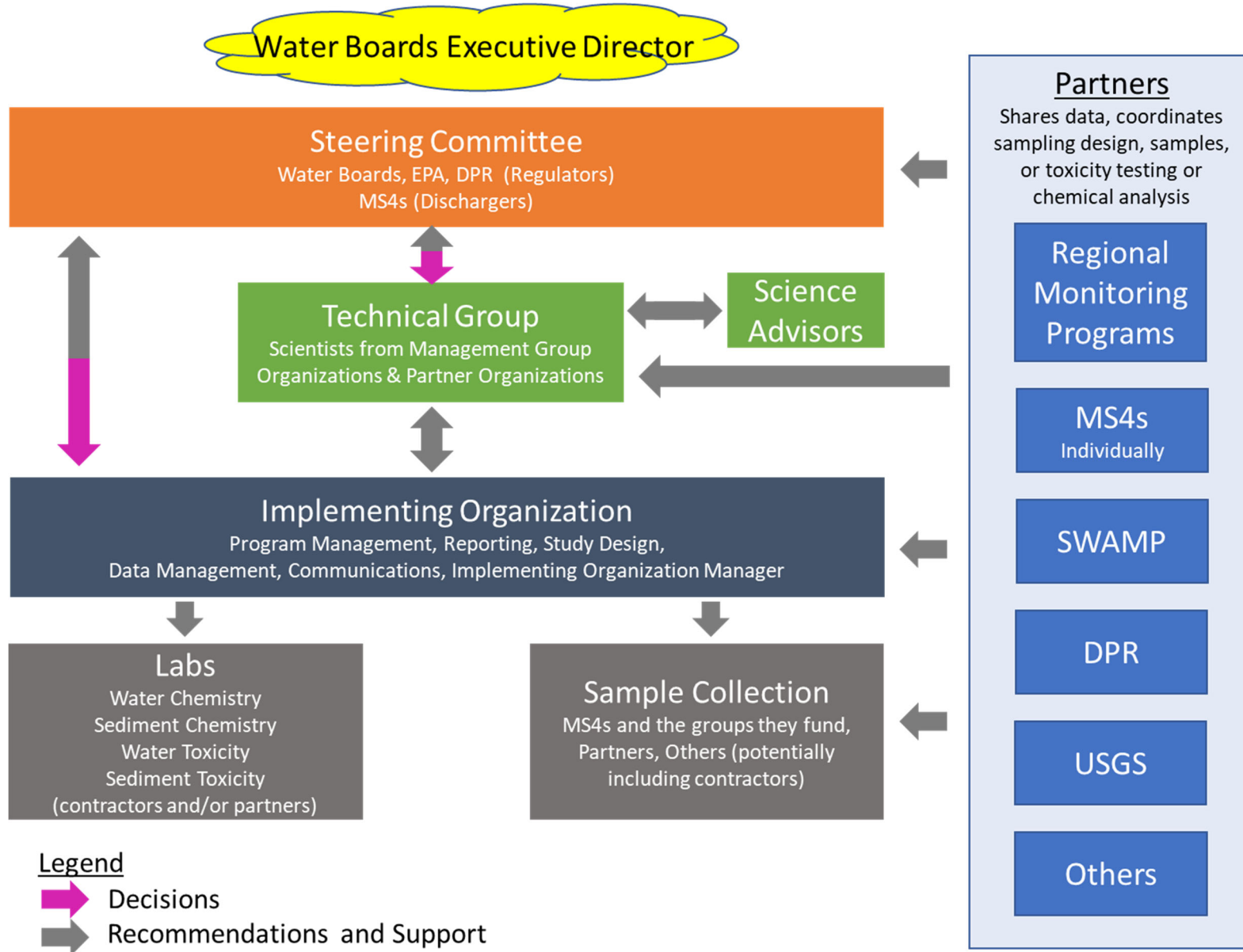
**MS4 Input.** CASQA Pesticides Subcommittee began briefings for the MS4 community to explain, gather input, and obtain support for the Urban Pesticide Amendments in advance of their public release for comment. Briefings were provided to representatives of the following MS4 groups:

- |                                |                                |                                 |
|--------------------------------|--------------------------------|---------------------------------|
| • Alameda Countywide           | • Orange County MS4 Permittees | • San Mateo Countywide          |
| • City of Salinas              | • Phase II Subcommittee        | • Ventura County MS4 Permittees |
| • Los Cerritos Watershed Group | • Santa Clara Countywide       |                                 |
| • Orange County Countywide     |                                |                                 |

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<sup>23</sup> Informational Document, CEQA Public Scoping Meeting, State Water Resources Control Board, January 25, 2017

Figure 5. Proposed UPCMP Framework



## 2.2.2 CASQA Participation in Other State Efforts

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

**Table 4. Participation in Other State Efforts to Support CASQA's Goals**

| Agency or Conference                            | Latest Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DPR's Pest Management Advisory Committee (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 integrated pest management programs. DPR conducted a multi-stakeholder initiative entitled Pests, Pesticides, and Integrated Pest Management (PPI) to identify strategic actions to identify overcome barriers and establish widespread adoption of IPM; it included urban pests as a key focus and was completed in Fall 2018. A PSC member served on the PPI steering committee as well as the Structural Pest working group.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| California Structural Pest Control Board (SPCB) | <p>A PSC member is an appointed member of the SPCB. The SPCB recognizes the potential for excessive pesticide application to impact water quality. The SPCB is in the process of adopting regulations to increase continuing education hours required in the IPM category. The SPCB's Research Advisory Panel solicited proposals urban IPM research. Five proposals were selected and collectively awarded \$1.02 million to be funded by the SPCB Research Fund. The innovative research topics target four key urban pests:</p> <ul style="list-style-type: none"> <li>• "Diet and Colony Structure of Two Emerging Invasive Pest Ants"</li> <li>• "Investigation of Rodenticide Pathways in an Urban System Through the Use of Isotopically Labelled Bait"</li> <li>• "Evaluation of bait station system efficacy for reduced-risk subterranean termite management in California"</li> <li>• "Development and Evaluation of Baiting Strategies for Control of Pest Yellowjackets in California"</li> <li>• "Improving Urban Pest Ants Management by Low-Impact IPM Strategies"</li> </ul> |
| University of California Statewide IPM (UCIPM)  | While a PSC member no longer serves on UCIPM's Strategic Planning Committee, UCIPM continues to provide resources, develop materials, and implement programs that support urban IPM, such as the ongoing blogs "Pests in the Urban Landscape," <sup>24</sup> and "Retail Nursery & Garden Center IPM News." <sup>25</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

<sup>24</sup> <http://ucanr.edu/blogs/UCIPMurbanpests/>

<sup>25</sup> <http://ipm.ucanr.edu/retail/retail-newsletter.html>

### 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. To improve ongoing pesticide regulatory processes, CASQA and the UP3 Partnership continuously track and engage in EPA and DPR activities, sharing their urban runoff and water-quality specific expertise with pesticides regulators. Typically, these efforts entail peer review of pesticides scientific assessments and risk management proposals, and sharing monitoring data, water quality regulatory background, and urban runoff agency compliance cost information. Sometimes, this involves recommending changes in an individual product's allowable uses or use instructions or requesting that regulators examine urban runoff discharges or fill critical data gaps by obtaining more data from manufacturers. CASQA and the UP3 Partnership are also working on a parallel effort to effect long-term change in the regulatory process, often using specific regulatory actions as educational opportunities on long-term issues.

In the coming year, CASQA plans to undertake activities to both 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 FY 2019-2020, we will continue engagement on specific actions for priority pesticides at the federal level, while continuing our critical "end game" activities at the state level. This is in response to:

- 💧 the immediate need to participate in pyrethroid, fipronil, malathion, and imidacloprid regulatory actions (the only such opportunity for these chemicals the next 15 years);
- 💧 the opening of a strategic window of opportunity created by OPP's requirements to revise risk assessment procedures under the ESA;
- 💧 new data revealing the extent of urban pesticides water pollution and dozens of current and anticipated 303(d) listings / TMDLs for pyrethroids, fipronil, malathion, and imidacloprid; and
- 💧 a chance to leverage our recent success at the state level toward creating a realistic long-term pesticide management framework for MS4s.

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 professional user education about new restrictions on its outdoor urban use
- 💧 Ensure DPR enforces mitigation measures for pyrethroids 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
  - Focus on providing EPA with detailed scientific information to support mitigation strategies appropriate in the urban context
  - Seek to build on and reinforce 2018-19 engagement with the EPA about the risk associated with urban uses of malathion (and the associated 303(d) listings) and the need to include traditional water quality risk assessments in tandem with complying with the ESA

(2) Seek long-term changes in the pesticide regulatory structure:

- Leverage our success at the state level and continue to be a key stakeholder in the STORMS project that is developing statewide Water Quality Control Plan amendments for urban pesticides reduction. Through this process, work with other stakeholders to implement the planned restructuring of California's urban surface water pesticides monitoring to increase its effectiveness and improve coordination.
- Seek procedure changes such that DPR continues to refine its registration procedures to address remaining gaps in water quality protection.

CASQA will continue to coordinate with the Water Boards through the UP3 Partnership to take advantage of efficiencies, increase effectiveness, and ensure that the water quality community has a consistent message. The types of activities that CASQA and the UP3 Partnership engage on an ongoing basis in are summarized in Table 5. Table 5 represents the recommended level of effort; 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 FY 2019-20.

**Table 5. Recommended Ongoing CASQA Pesticide Subcommittee Activities**

| Activity                  |                                                                                                         | Purpose                                                                                                                                                                                                                                                                                                                                                                                               | Level of Effort                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regulatory Tracking       | Track Federal Register notices                                                                          | Identify regulatory actions that may require review.                                                                                                                                                                                                                                                                                                                                                  | Daily review; analyze EPA's scientific work and provide notification to CASQA members and partners as needed.                                                                                                                                                                                                                                                                                                                 |
|                           | 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 & policies.                                                                                                                                        | Weekly review; obtain water quality assessments from DPR through public record requests; analyze from scientific and urban runoff management perspective and provide notification to CASQA members and partners as needed.                                                                                                                                                                                                    |
|                           | Track activities at the Water Boards                                                                    | Identify opportunities for improvements in TMDLs, Basin Plan Amendments, and permits.                                                                                                                                                                                                                                                                                                                 | Often weekly phone calls with Water Board staff; weekly review of noticed proceedings; review scientific information.                                                                                                                                                                                                                                                                                                         |
|                           | 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.                                                                                                                                                                                                                                                      | According to need as identified by tracking activities (average of 6 per month).                                                                                                                                                                                                                                                                                                                                              |
| 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.                                                                                                                                                        | As needed, but often several times per week. In-person meetings with DPR and EPA Region 9 approximately quarterly and OPP about 1-2 times per year in association with advisory committee meetings and scientific conferences.                                                                                                                                                                                                |
|                           | 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 and take advantage of opportunities to formally provide information suggest more robust approaches to that could be used in future regulatory process. Request and maintain communication on mitigation actions addressing highest priority pesticides. | Typically provide information and recommendations with regard to a dozen or so pesticides annually that could pose threats to water quality if EPA or DPR does not initiate certain procedures. Letters vary in length, but often are many pages and require many hours to write. As dockets are updated, review responses to comments and identify next opportunities. 4-6 meetings per year with DPR on mitigation actions. |
| 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.                                                                                                                                                                                                                                                    | 2-6 meetings per committee per year. The PSC is currently represented on DPR's external advisory committee and has sporadic representation on water board panels related to pesticides.                                                                                                                                                                                                                                       |



| Activity               |                                                                                                                                                                              | Purpose                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Level of Effort                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Educational            | Presentations to and informal discussions with EPA, DPR, Water Board, CASQA members, pesticide manufacturers, water quality researchers, and other collaborators.            | 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. | As many as a dozen opportunities to present at water quality, pesticides and chemical conferences nationally. Additional 8-10 opportunities per year for state and regional events. Informal interactions weekly. Actual participation is a few formal events because preparation of presentations and coordination with water quality community can take as much as 40 hours per opportunity. |
|                        | Developing and delivering public testimony                                                                                                                                   | Educate Water Board members about the problems with existing pesticide regulatory process, encourage change, and report on achievements.                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2-3 times per year. Preparation and coordination can take as much as 40 hours per opportunity.                                                                                                                                                                                                                                                                                                 |
| Monitoring and Science | Track major urban runoff monitoring and pesticide scientific studies; review scientific literature, monitoring data, and government reports; and maintain reference database | Stay abreast of the latest scientific findings in order to identify pesticide priorities for monitoring and mitigation, to improve methods for identifying sources of pesticides in urban runoff, and to support input and discussions with regulators toward improving pesticide regulation, which is science-based.                                                                                                                                                                                                                                                                         | Review about 10 important publications per month and a dozen meetings per year.                                                                                                                                                                                                                                                                                                                |
|                        | Peer review EPA, DPR, and Partner work plans and reports                                                                                                                     | Provide insights and ensure that work plans and reports are utilizing latest science regarding urban pesticide use, fate and transport, and water quality impacts and study designs focus on the most important information gaps about urban runoff pesticides water pollution.                                                                                                                                                                                                                                                                                                               | Peer review approximately 6 documents per year, which can take up to 8 hours each.                                                                                                                                                                                                                                                                                                             |
|                        | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2-3 updates per year                                                                                                                                                                                                                                                                                                                                                                           |
|                        | Develop urban conceptual models and track urban runoff numeric model development                                                                                             | Identify major sources of pesticides in urban runoff to focus identification of mitigation and prevention opportunities. Encourage better EPA and DPR predictive modeling to improve pesticide registration decisions.                                                                                                                                                                                                                                                                                                                                                                        | Review 1-2 modeling publications per month. Develop one conceptual model annually (20-40 hours).                                                                                                                                                                                                                                                                                               |
|                        | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Detailed analysis is infrequent because finding, compiling, and analyzing data requires very high level of effort and funding. CASQA undertook a detailed monitoring summary in 2013. Report is available at <a href="http://www.casqa.org">www.casqa.org</a> .                                                                                                                                |

| Activity  |                                                                                                                                                                                                    | Purpose                                                                                                                                                                                                                                                                                                  | Level of Effort                                          |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Reporting | Prepare Monthly Action Plans                                                                                                                                                                       | Coordinate CASQA's regulatory actions with Partners                                                                                                                                                                                                                                                      | 3 hours/month                                            |
|           | Prepare PSC 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. | Preparation and coordination takes about 50 to 60 hours. |

**Table 6. Anticipated Opportunities for CASQA and the UP3 Partnership Pesticides Regulatory Engagement in 2019-2020**

| EPA Pesticide Registration Review (15-year cycle)                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Environmental Risk Assessments                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| <ul style="list-style-type: none"> <li>• Priority 1 pesticides: Fipronil</li> <li>• Priority 2-4 pesticides: Chlorothalonil, Chromated Arsenicals, Copper 8-quinolinolate, Irgarol, Creosote, Oxadiazon, Oxyfluorfen, MCPP (phenoxy herbicide), Dichromic acid, Halohydantoin, o-Phenyl phenol, Pentachlorophenol (Pentachlorophenol, Dioxins), Sodium bromide, Thiophanate methyl, Triclopyr; others (schedule unknown)</li> </ul>                                        |  |
| Endangered Species Act Biological Evaluation (Risk Assessment)                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| <ul style="list-style-type: none"> <li>• Methomyl</li> <li>• Carbaryl</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Proposed Decisions                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| <ul style="list-style-type: none"> <li>• Priority 1 pesticides: Pyrethroids and Imidacloprid</li> <li>• Priority 2-4 pesticides: 2,4-D, 2,4-DP (phenoxy herbicide), o-Benzyl-p-chlorophenol, Chlorine Gas, Dithiopyr, (phenoxy herbicide), Neonics (Clothianidin, Dinotefuran, Thiamethoxam, Acetamiprid), Piperonyl butoxide (PBO) (pyrethroids synergist), Pyrethrins, Simazine, Tralopyril (Econeal), Triclosan, Zinc metal salts; others (schedule unknown)</li> </ul> |  |



### **DPR New Pesticide Registration Decisions**

- Proposed new urban pyrethroids (five momfluorothrin products, one alpha-cypermethrin product and one transfluthrin product)
- Proposed expansion of bifenthrin use in non-residential urban locations
- Proposed new fipronil products: fipronil-bifenthrin landscaping product, termite product, fipronil-imidacloprid foam outdoor product, product for yellow jackets
- Proposed ant and termite product containing the proposed new pesticide broflanilide.
- Novaluron product that has conflicting label requirements
- Proposed copper-microparticle containing paint additive
- Others (schedule unknown)

### **Other DPR-related Items**

- Discuss potential mitigation measures for imidacloprid in urban runoff
- Carbaryl – proposed regulations would restrict use and end sale of consumer products
- Fipronil mitigation measure implementation including outreach to professional applicators and effectiveness monitoring
- Pyrethroids – possible updates to water quality protection regulations and/or implementation of other mitigation measures
- Updates to Methodology for Evaluating Pesticide Registration Applications for Surface Water Protection – development of new and updated modules to continue to improve accuracy of urban evaluations
- Registration Application Surface Water Reviews – continue to follow up on communications requesting review of all storm drain products, outdoor antimicrobials, and swimming pool additives

### **Water Boards**

- State Water Board Provisions for Toxicity Assessment and Control, which include statewide numeric water quality objectives for both acute and chronic toxicity and an implementation program to control toxicity
- STORMS Urban Pesticides Amendments
- Pesticides 303(d) listings
- Pesticide TMDL implementation requirements for permittees

## **Appendix: Regulatory Participation Outcomes and Effectiveness Assessment Summary Tables**

See companion document.

# Pesticides Subcommittee Annual Report and Effectiveness Assessment 2018-2019

Appendix:  
Regulatory Participation Outcomes and  
Effectiveness Assessment Summary Tables

California Stormwater Quality Association



Final Report  
August 2019

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2,4-DP (June 2019)

Boric Acid (November 2018)

Copper (November 2018)

Deltamethrin (February 2019)

Dichlobenil (November 2018 and April 2019)

Hydramethylnon (June 2019)

Indoxacarb (November 2018 and April 2019)

MCPA (November 2018)

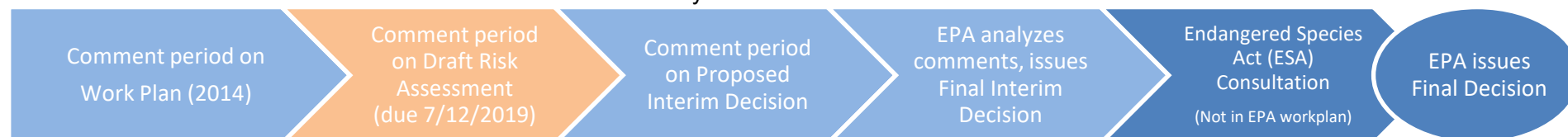
Nanosilver (November 2018)

Pyriproxyfen (November 2018)

Spinetoram/Spinosad (April 2019)

Zinc and Salts (November 2018)

**Pesticide:** 2,4-DP, EPA-HQ-OPP-2013-0726  
**Use:** Phenoxy herbicide with urban uses.  
**Why we care:** Commonly used herbicide that is toxic to aquatic plants and some aquatic invertebrates. Highly water soluble.  
**Actions taken:** In 2014, the Central Valley and SF Bay Regional Water Quality Control Boards both submitted comment letters on the draft Work Plan, based on part on scientific information provided by CASQA.  
**Status:** EPA released the Draft Risk Assessment in May 2019.

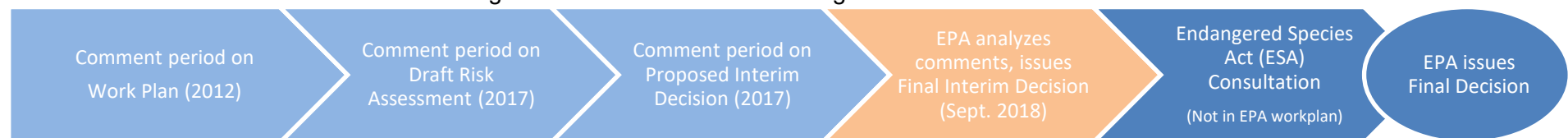


**Next steps:** The Proposed Interim Decision will likely be released in 2020.  
**Recommendation:** Keep on tracking list and watch for Proposed Interim Decision.

| 2014 Comments to EPA from the SF Bay Regional Water Quality Control Board on the Draft Work Plan                                                                                                                                                                                                                                                                                                                                                                                                  | EPA Response                                                                                                                                                                  | Did EPA incorporate the Water Board's comment?                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Aquatic toxicity data:</b> "For the 2,4-DB and 2,4-DP registrations, we support the stated requirements for aquatic toxicity data." (Statement of support of EPA's request during the Work Plan process.)                                                                                                                                                                                                                                                                                      | EPA noted that there was "no data" or that "data was not available" for many species. (pp.4-7)                                                                                | No. Although EPA requested aquatic toxicity data from the registrants in accordance with the Work Plan, the registrants did not provide aquatic toxicity data for many species, including estuarine/marine invertebrates. EPA did not enforce its data requirement. |
| <b>Degradates:</b> "We strongly encourage EPA to request data for fate and aquatic toxicity for 2,4-DCP, a degradate of both these herbicides as well as of 2,4-D...2,4-DB and 2,4-DP are used to control weeds in turf, are commonly used in urban areas, and are readily available in retail stores. They have relatively high water solubility and move to surface waters via rain runoff and irrigation overflow." (Note: Central Valley Regional Water Control Board had a similar comment.) | EPA notes that its previous assessment identified concern regarding the degradate DCP, but EPA chose not to quantitatively incorporate it into the current assessment. (p. 4) | No. Despite noting evidence of toxicity of both degradates, and acknowledging the lack of information, EPA concluded that there are no risk concerns.                                                                                                               |

|                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Consider urban environments:</b> “It is imperative that EPA fully consider their potential ecological risks in urban settings, including and in particular, the fate and aquatic toxicity impacts from the common degradate 2,4-DCP.”</p>                               | <p>EPA noted that 2,4-DP and its degradates was found in monitoring data from DPR, USDA Pesticide Monitoring Data, and the Federal Water Quality Portal (which includes USGS data). EPA noted that there is a lack of studies and monitoring data for DCP. “The maximum modeling values are several orders of magnitude lower than the monitoring data. The relative contribution of 2,4-DCP from other phenoxy herbicides into surface water and groundwater is a major uncertainty; however, 2,4-D is one of the most widely used phenoxy herbicides.” (p. 19)</p> | <p>No. EPA discounted degradate monitoring data due to lack of understanding of the degradate source. EPA did not fully consider ecological effects in urban settings for either 2,4-DP or DCP.</p> |
| <p><b>Cumulative risk:</b> “(W)e encourage EPA to consider the cumulative risk of additive toxicities, both between 2,4-DB and 2,4-DP and also between these herbicides and other pesticides.” (Note: Central Valley Regional Water Control Board had a similar comment.)</p> | <p>EPA did not address the effect of cumulative risk in the Risk Assessment.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>No. EPA did not do a cumulative risk assessment for these related herbicides.</p>                                                                                                                |

**Pesticide:** **Boric Acid/ Sodium Salts**, such as Sodium Tetraborate Pentahydrate (BioGuard Optimizer, ProTeam Supreme)  
**Use:** Pool chemical (pH stabilizer); EPA-HQ-OPP-2009-0306  
**Why we care:** Current labels do not forbid discharging pool/hot tub water with this chemical to natural water bodies, storm drains, gutters, and there are no requirements to contact local authorities before discharging to the sewer system.  
**Actions taken:** CASQA and BACWA sent EPA a comment letter on the Proposed Interim Decision in July 2017.  
**Status:** EPA released the Interim Registration Review Decision in August 2018.



**Next steps:** ESA Consultation is required but unlikely to begin before 2022. Then EPA will issue a Final Decision.  
**Recommendation:** No action is needed at this time. Keep on tracking list and watch for future ESA consultation process.

| CASQA Comments to EPA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | EPA Response                                                                                                                                                                                                                                                                                                 | Did EPA incorporate CASQA's comment? |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Add these sentences to all labels: <i>"Before draining a treated pool, spa, or hot tub, contact your local sanitary sewer and storm drain authorities and follow their discharge instructions. Do not discharge treated pool or spa water to any location that flows to a gutter or storm drain or natural water body unless discharge is allowed by state and local authorities"</i> , which would make the label consistent with other recently updated labels for pool chemicals. (Previous CASQA comment had suggested slightly different wording, but CASQA and POTW colleagues worked with EPA on revised language that addresses differences in discharge requirements around the nation.) | Despite a request from industry to not prohibit discharge of pool water to landscape and water bodies, EPA agreed with CASQA's comments and added these two sentences to all pool chemical labels that contain boric acid/ sodium salts. EPA also thanked CASQA for its input and support with this process. | YES                                  |

**Pesticide:** Copper Compounds; EPA-HQ-OPP-2010-0212

**Use:** Swimming pool treatments and other various conventional and antimicrobial uses

**Why we care:** They pose a significant risk to water quality in urban and suburban areas. Numerous surface waters that receive urban runoff are impaired by copper (i.e., on the CWA 303(d) list) and many have Total Maximum Daily Loads (TMDLs), and San Francisco Bay has a site-specific copper objective and management program that requires continued pollution prevention activity.

**Actions taken:** CASQA, the National Municipal Stormwater Alliance and the SF Water Board sent EPA comment letters on the Proposed Interim Decision in July 2017 (BACWA/NACWA determined letters were unnecessary). CASQA, the SF Water Board, BACWA, and NACWA sent comments on the Draft Risk Assessment in 2016. CASQA, the SF Water Board, and Tri-TAC sent letters commenting on Registration Review in 2010.

**Status:** EPA released the Interim Registration Review Decision in December 2018.



**Next steps:** ESA Consultation is required but unlikely to begin before 2022. Then EPA will issue a Final Decision.

**Recommendation:** No action is needed at this time. Keep on tracking list and watch for future ESA consultation process.

| CASQA Comments to EPA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | EPA Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Did EPA incorporate CASQA's comment?                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p>CASQA stated that all storm drain applications of copper should be prohibited. EPA responded that some applications are acceptable as long as applicators try to avoid simultaneous applications. (CASQA knows that this is not possible to manage since various agencies, businesses, and private citizens could be using copper at different points in the storm drain system.)</p> <p>Further, EPA proposes that labels must state a maximum annual application rate of 2 pounds active ingredient (0.5 pounds metallic copper) per drain per year for storm drain root control--a recommendation in direct conflict with the CWA</p> | <p>In responding the National Municipal Stormwater Alliance (NMSA), EPA responded to CASQA's comments: EPA thanks the NMSA for comments and additional information. EPA agrees that the use of copper pesticides in MS4 systems runs contrary to the requirements of the MS4 NPDES permit and will add label language prohibiting such uses. For drainage systems that are not subject to the requirements of an MS4 permit, EPA will continue to allow the use of copper root control products with advisory statements and risk mitigation language. EPA expects that the prohibition of applications to MS4</p> | <p><b>Partially</b></p> <p>EPA will be prohibiting applications of copper compounds directly into MS4 and other stormdrain systems. Unfortunately, the revised language <b>allows for private entities with storm drains that flow into public storm drain systems to continue to apply copper root control chemicals into their storm drains.</b> Any such use could contribute a significant slug load of copper into the public stormdrain system.</p> |



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| <p>and NPDES permits. Such applications would be essentially uncontrollable by municipal separate storm sewer system (MS4) agencies, because they would have no way of knowing when and where they are use, and because regulation of pesticide use by local agencies is precluded by law in many states, including California.</p> <p>Chemical root control is unnecessary for storm drains. In storm drain systems –unlike sanitary sewers– root intrusion is not a common problem. When clearing storm drains is necessary, non-chemical methods like hydroflushing or mechanical clearing have long been used and are standard industry practice. While clearing is not typically done for roots, when storm drain lines are cleared, to comply with MS4 NPDES permits, discharges are treated for pollutant removal (e.g., sediment) and/or diverted into sanitary sewer systems.</p> <p>We recommend that EPA consider using language that is included on other registered root-control products: “Do not use in storm, field or other drains unless effluent is treated in a sanitary sewer system.”</p> | <p>systems will support risk management goals by greatly reducing the amount of allowable scenarios in which copper may be applied to storm drains that discharge directly to surface waters.</p> <p>EPA’s revised language:</p> <p><i>“Stormwater Advisory Statement: This product may be applied for the purposes of root intrusion control in storm drains or storm sewers that can discharge directly or indirectly into ephemeral or permanent waterbodies. <b>This product must not be used in any municipal or public storm sewer or “MS4” system, or any storm drain system otherwise covered under an NPDES MS4 discharge permit.</b> Copper will accumulate with repeated applications in the waterbodies to which treated storm drains/sewers discharge. To the extent possible, avoid simultaneous treatments of multiple drain systems that discharge to the same waterbody. Staggering applications to individual stormwater collection points to allow interceding storm events to clear the product from previously treated drains can help reduce the impact to aquatic organisms in receiving waterbodies. Development of and adherence to, a pesticide management plan for storm drains is encouraged.”</i></p> <p><i>“Maximum annual application rate of 0.5 lbs metallic copper per drain per year. This product may not be used in municipal or public storm drains and storm sewers.”</i></p> |                   |
| <p>CASQA concurs with OPP’s findings that the use of copper-based pesticide products in pools and spas may pose a significant threat to organisms in the aquatic environment. Because pesticide labels with adequate mitigation are an essential line of defense to prevent toxic impacts on receiving waters, we support EPA’s</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>The Agency thanks CASQA, NMSA and SFBRWQCB for their comments and support for proposed label language for swimming pools, hot tubs, and spas.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p><b>YES</b></p> |



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| <p>proposal to include label language first developed for lithium hypochlorite:</p> <p><i>"Before draining a treated pool, spa, or hot tub, contact your local sanitary sewer and storm drain authorities and follow their discharge instructions. Do not discharge treated pool or spa water to any location that flows to a gutter or storm drain or natural water body unless discharge is allowed by state and local authorities."</i></p>                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                  |
| <p>CASQA requests that the labeling language be expanded to include products for outdoor fountains. CASQA requests that EPA additionally require the pool and spa draining language be placed on labels for copper products sold for use in outdoor fountains for same reasons that EPA has required this language for pool products. Similar to pools and spas, fountains are also be drained regularly for maintenance, with potential adverse water quality consequences similar to those associated with draining pools and spas.</p> | <p>EPA is moving forward with the expansion of pool, hot tub, and spa discharge language to include outdoor fountains.</p> <p><i>"Before draining a treated [pool,] [spa,] [hot tub,] or [fountain] contact your local sanitary sewer and storm drain authorities and follow their discharge instructions. Do not discharge treated pool or spa water to any location that flows to a gutter, storm drain or natural water body unless discharge is allowed by state and local authorities."</i></p> | <p><b>YES</b></p> <p>EPA's revised language requires consultation with local authorities, which is a move in the right direction. However, the discharge ban (second sentence) does not include hot tubs or fountains. It appears that this may have been overlooked by EPA.</p> |

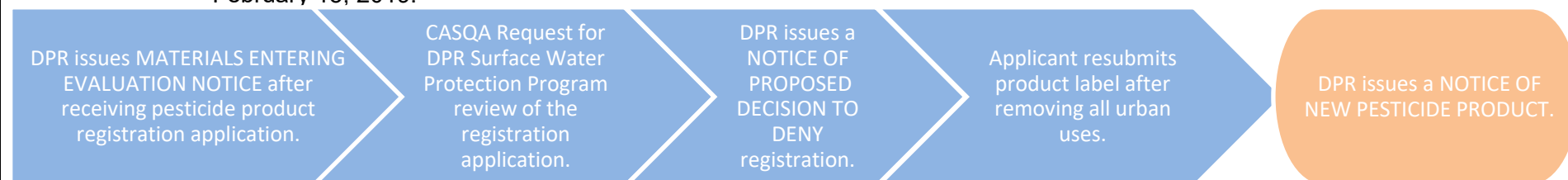
**Pesticide:** Deltamethrin; EPA–HQ–OPP–2009–0637

**Use:** Insecticide used for bedbugs, ants, cockroaches (among other uses). Applicant had initially proposed a new urban screen product in CA.

**Why we care:** Pyrethroid. Highly toxic to aquatic invertebrates. Monitoring data exceeding benchmarks, 303(d) listings, TMDLs, CWA Priority Pollutant.

**Actions taken:** CASQA Pesticide Subcommittee consultants noted that a new deltamethrin product (a screen material for urban areas) was being considered for registration in CA. Dave Tamayo (County of Sacramento) sent a request in May 2018 that DPR's Surface Water Protection Division perform an evaluation of this product. DPR issued a Notice of Proposed Decision to Deny (based on surface water evaluation) on Dec. 7, 2018.

**Status:** Applicant resubmitted product label--removing all urban uses--and DPR issues a Notice of New Pesticide Product on February 15, 2019.



**Next steps:** No further action required, since applicant withdrew all urban uses of the product.

| CASQA Action:                                                                                                                                                                                                                                                                                                                        | Result:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CASQA Pesticide Subcommittee consultants noted that a new deltamethrin product (a window/door screen material for urban areas) was being considered for registration in CA by DPR. Dave Tamayo (County of Sacramento) sent a request in May 2018 that DPR's Surface Water Protection Division perform an evaluation of this product. | Due to the request from the CASQA Pesticide Subcommittee, DPR performed an evaluation of this product and the subsequent Environmental Monitoring Evaluation (including modeling) did <i>not</i> support registration. DPR subsequently issued a Notice of Proposed Decision to Deny the product. The applicant subsequently resubmitted the product after removing all urban uses from the product label. <b>The actions of the CASQA Pesticide Subcommittee successfully prevented this high-risk product from being labeled for urban use in California.</b> |

**Pesticide:** Dichlobenil, EPA-HQ-OPP-2012-0395

**Use:** Root control in sewer lines (almost 94% of use is root control)

**Why we care:** Dichlobenil is a root control chemical, commonly used in sewers but currently permitted to be used in storm drains. It is known to be toxic to fish and aquatic invertebrates.

**Actions taken:** CASQA, BACWA, NACWA, Tri-TAC, and SF Bay Water Board commented on the Work Plan in 2012. CASQA, BACWA, NACWA, and SF Bay Water Board the Draft Risk Assessment in 2017. Most recently, CASQA, BACWA and SF Bay Water Board sent EPA comments on the Proposed Interim Decision in October 2018.

**Status:** EPA released the Proposed Interim Registration Review Decision in September 2018.



**Next steps:** EPA will analyze comments and issue a Final Interim Decision. ESA Consultation is required but unlikely to begin before 2022.

**Recommendation:** No action is needed at this time. Keep on tracking list and watch for Interim Decision.

| CASQA Comments to EPA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | EPA Response                                                                                                                                                                                                                                                              | Did EPA incorporate CASQA's comment? |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <p>CASQA's primary concern regarding registration of dichlobenil root control products is the potential for it to be used in "storm sewers, drain lines, and drains." Use of dichlobenil in storm drains could harm aquatic organisms and cause violations of the Clean Water Act (CWA).</p> <p>CASQA is pleased that EPA's Proposed Interim Decision includes label language <u>prohibiting</u> product use in storm, field, and other drain systems that do not discharge to a sanitary sewer system for treatment. The proposed label prohibitions harmonize with FIFRA and CWA implementation and help to prevent impacts to receiving water aquatic life beneficial uses resulting from dichlobenil pollution in discharges of urban runoff via municipal storm drain systems.</p> | <p>In the Proposed Interim Registration Review Decision (Sept. 2018) EPA noted that it would be adding the following label language to all labels:</p> <p><i>"Do not use in storm, field, or other drains unless effluent is treated in a sanitary sewer system."</i></p> | <p>YES</p>                           |

**Pesticide:** Dichlobenil, EPA-HQ-OPP-2012-0395

**Use:** Root control in sewer lines (almost 94% of use is root control)

**Why we care:** Dichlobenil is a root control chemical, commonly used in sewers but currently permitted to be used in storm drains. It is known to be toxic to fish and aquatic invertebrates.

**Actions taken:** CASQA, BACWA, NACWA, Tri-TAC, and SF Bay Water Board commented on the Work Plan in 2012. CASQA, BACWA, NACWA, and SF Bay Water Board the Draft Risk Assessment in 2017. CASQA, BACWA and SF Bay Water Board sent EPA comments on the Proposed Interim Decision in October 2018.

**Status:** EPA released the Final Interim Registration Review Decision in March 2019.

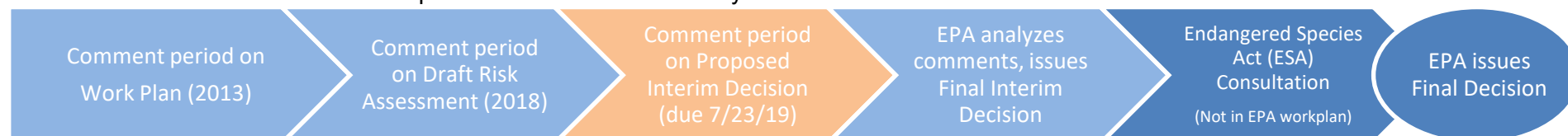


**Next steps:** ESA Consultation is required but unlikely to begin before 2022.

**Recommendation:** Keep on tracking list and watch for Interim Decision.

| CASQA Comments to EPA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | EPA Response                                                                                                                                                                                                                                                                                                      | Did EPA incorporate CASQA's comment? |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <p>CASQA's primary concern regarding registration of dichlobenil root control products is the potential for it to be used in "storm sewers, drain lines, and drains." Use of dichlobenil in storm drains could harm aquatic organisms and cause violations of the Clean Water Act (CWA).</p> <p>CASQA is pleased that EPA's Proposed Interim Decision includes label language <u>prohibiting</u> product use in storm, field, and other drain systems that do not discharge to a sanitary sewer system for treatment. The proposed label prohibitions harmonize with FIFRA and CWA implementation and help to prevent impacts to receiving water aquatic life beneficial uses resulting from dichlobenil pollution in discharges of urban runoff via municipal storm drain systems.</p> | <p>In the Proposed and Final Interim Registration Review Decisions (Sept. 2018 and March 2019, respectively) EPA noted that it would be adding the following label language to all labels:</p> <p><i>"Do not use in storm, field, or other drains unless effluent is treated in a sanitary sewer system."</i></p> | <p>YES</p>                           |

**Pesticide:** Hydramethylnon, EPA-HQ-OPP-2012-0869  
**Use:** Broadcast treatment of ants and other invertebrates in urban settings. Also used in agriculture.  
**Why we care:** Pyrethroid substitute; highly toxic to fish and freshwater invertebrates; accumulates in sediments.  
**Actions taken:** In 2013, CASQA and SF Bay Regional Water Quality Control Board each submitted comment letters on the Draft Work Plan. CASQA reviewed the 2018 Preliminary Ecological Risk Assessment but did not comment as it did not identify major errors.  
**Status:** EPA released the Proposed Interim Decision in May 2019.



**Next steps:** Comments are due on the Proposed Interim Decision on July 23, 2019. The Final Interim Decision will likely be released in 2020.

**Recommendation:** Keep on tracking list and watch for Final Proposed Interim Decision.

| CASQA Comments to EPA on the Draft Work Plan (2013)                                                                                                                                                                                                                                                                                                                                                                                        | EPA Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Did EPA incorporate CASQA's comment?                                                                                                                                                                                                                                                       |
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| <b>Evaluate the path to urban runoff.</b> Modify the aquatic risk assessment problem formulation, work plan, and data requirements to address transport via urban runoff to surface waters, particularly from impervious surfaces. Examples of many of the necessary changes appear in EPA's final Registration Review Work Plans for bifenthrin and permethrin, reflecting EPA's improved urban water quality risk assessment procedures. | In the Preliminary Ecological Risk Assessment (ERA), EPA acknowledged that there was significant risk due to the use of hydramethylnon (ERA, p. 50) and in the 2019 Proposed Interim Decision (PID) listed several proposed mitigation measures, including updates to labels (PID, pp. 17-18). "To reduce the potential for runoff into urban waters, the EPA proposes to clarify proper use of broadcast applications in areas with impervious surfaces (e.g., driveways and patios), in conjunction with standardizing a rain advisory across labels. EPA is proposing to update the current environmental hazard statement for fish toxicity to include a warning for aquatic invertebrates as well." (PID, p. 13) The rain advisory states to "Avoid making applications if it is likely to rain within 24 hours of application." | <b>Partial incorporation.</b> Added new label language about environmental hazards, a rain advisory, and avoidance of broadcast applications on impervious surfaces. Many of the mitigation measures are weakly worded such as the rain advisory using "avoid" instead of "is prohibited." |

|                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                       |                                                                |
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| <b>Evaluate sediments.</b> Require additional assessments of the toxicity of hydramethylnon to sediment dwelling, benthic macroinvertebrates in the risk assessment.                                                                                                        | Although EPA agreed (in 2013 Final Work Plan) to model sediments, there was no sediment analysis provided in the Risk Assessment and therefore sediments were not addressed in the PID.               | <b>No.</b>                                                     |
| <b>Consider degradates.</b> Require development of commercially applicable analytical methods for hydramethylnon and its major degradates.                                                                                                                                  | Although EPA initially stated (in 2013 Final Work Plan) that it would consider degradates and request degradate data from registrants, it appears that this was not done.                             | <b>No.</b> Analysis of degradates is not mentioned in the PID. |
| <b>Lengthen review timeline.</b> Modify the proposed registration review timeline to reflect a reasonable period for public review of the draft risk assessment, as the proposed 30-day public comment period is inadequate for review of these highly technical documents. | A 60-day comment period was allowed for the next review cycle.                                                                                                                                        | <b>Yes.</b>                                                    |
| <b>Consider cumulative effects of multiple pesticides.</b>                                                                                                                                                                                                                  | Although EPA initially stated (in 2013 Final Work Plan) that it would consider multi-residue monitoring data and evaluate degradates and mixtures to the extent possible, this analysis was not done. | <b>No.</b>                                                     |
| <b>Use California DPR Sales Data.</b>                                                                                                                                                                                                                                       | EPA acknowledged DPR data and noted that all reviewers are welcome to submit data. (EPA's 2013 Response to Comments, p.6)                                                                             | <b>Yes.</b> DPR sales data was used in the Risk Assessment.    |

**Pesticide:** Indoxacarb EPA-HQ-OPP-2013-0367, (Advion, Arilon, Activyl pet flea product)  
**Use:** Outdoor insect control; also used in pet “spot-on” treatments and in agriculture  
**Why we care:** Indoxacarb is a priority for CASQA due to its toxicity to aquatic life in surface waters, and it and its degradates’ ability to persist and accumulate in soils and sediments.  
**Actions taken:** CASQA, the SF Bay Water Board, and the Central Valley Water Board commented on the Draft Work Plan in 2013. CASQA, BACWA, Tri-TAC, and the SF Bay Water Board commented on the Draft Risk Assessment in Nov. 2017.  
**Status:** EPA released the Proposed Interim Registration Review Decision in August 2018.



**Next steps:** EPA will analyze comments and issue a Final Interim Decision. ESA Consultation is required but unlikely to begin before 2022.

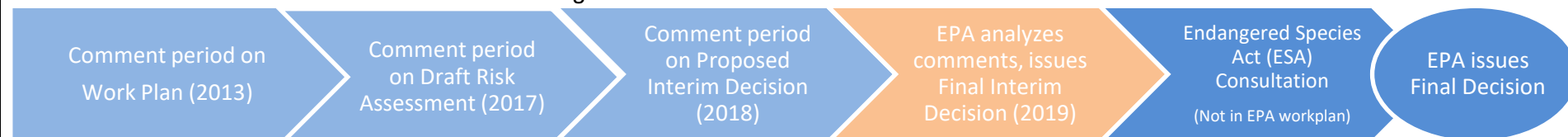
**Recommendation:** No action is recommended at this time. Keep on tracking list and watch for final Interim Decision.

| CASQA Comments to EPA                                                                                               | EPA Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Did EPA incorporate CASQA's comment? |
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| Require that no outdoor application be made when rainfall is forecast within 48 hours.                              | In the Aug. 2018 Proposed Interim Registration Review Decision, the EPA decided that future labels will contain wording specifying a 24-hour window (instead of the 48-hour window that CASQA requested). The wording is constructed as informational and is not a clear application prohibition.                                                                                                                                                                                                                                                                      | Partial incorporation.               |
| Perimeter band: Utilize efficacy data to determine the smallest treated area that will achieve target pest control. | EPA has proposed that the band be reduced from 10 feet, down to 5 feet from house and 2 feet up the wall. EPA notes that “(t)he technical registrant for non-agricultural uses has agreed to this label language.” It is unknown if EPA utilized efficacy data to determine the smallest treated area that will achieve target pest control. This treatment area is larger than DPR has allowed for California products. It would apply in California only to a single granular product registered prior to DPR’s establishment of its urban runoff review procedures. | Partial incorporation.               |
| Prohibit application of granular products to any impervious surface.                                                | This comment was fully incorporated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | YES                                  |



|                                                                                                             |                                                                                                                                                                        |                        |
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| Prohibit application of granular product where product may contact surface water, storm drain, gutter, etc. | This comment was fully incorporated.                                                                                                                                   | YES                    |
| Require immediate “sweep back” of any granules that are accidentally on impervious surfaces.                | This comment was partially incorporated, as future labels will direct users to sweep back. The wording is constructed as informational; it is not a clear requirement. | Partial incorporation. |

**Pesticide:** Indoxacarb EPA-HQ-OPP-2013-0367, (Advion, Arilon, Activyl pet flea product)  
**Use:** Outdoor insect control; also used in pet “spot-on” treatments and in agriculture  
**Why we care:** Indoxacarb is a priority for CASQA due to its toxicity to aquatic life in surface waters, and it and its degradates’ ability to persist and accumulate in soils and sediments.  
**Actions taken:** CASQA, the SF Bay Water Board, and the Central Valley Water Board commented on the Draft Work Plan in 2013. CASQA, BACWA, Tri-TAC, and the SF Bay Water Board commented on the Draft Risk Assessment in Nov. 2017.  
**Status:** EPA released the Final Interim Registration Review Decision in March 2019.



**Next steps:** ESA Consultation is required but unlikely to begin before 2022.

**Recommendation:** Keep on tracking list and watch for final Interim Decision.

| CASQA Comments to EPA                                                                                               | EPA Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Did EPA incorporate CASQA's comment? |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Require that no outdoor application be made when rainfall is forecast within 48 hours.                              | In the Proposed and Final Interim Registration Review Decisions, the EPA decided that future labels will contain wording specifying a 24-hour window (instead of the 48-hour window that CASQA requested). The wording is constructed as informational and is not a clear application prohibition.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Partial incorporation.               |
| Perimeter band: Utilize efficacy data to determine the smallest treated area that will achieve target pest control. | EPA has proposed that the band be reduced from 10 feet from the house--down to 5 feet from house and 2 feet up the wall. The new label language allows the end-product user to determine the effectiveness of the product by allowing them to “(a)pply just enough product to be effective but in a band of no more than a total of 7 feet in width.” EPA notes that “(t)he technical registrant for non-agricultural uses has agreed to this label language.” It is unknown if EPA utilized efficacy data to determine the smallest treated area that will achieve target pest control. This treatment area is larger than DPR has allowed for California products. It would apply in California only to a single granular product registered prior to DPR’s establishment of its urban runoff review procedures. | Partial incorporation.               |

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| Prohibit application of granular products to any impervious surface.                                        | This comment was fully incorporated.                                                                                                                                   | YES                    |
| Prohibit application of granular product where product may contact surface water, storm drain, gutter, etc. | This comment was fully incorporated.                                                                                                                                   | YES                    |
| Require immediate "sweep back" of any granules that are accidentally on impervious surfaces.                | This comment was partially incorporated, as future labels will direct users to sweep back. The wording is constructed as informational; it is not a clear requirement. | Partial incorporation. |

**Pesticide:** Indoxacarb, EPA-HQ-OPP-2013-0367

**Use:** Outdoor insect control

**Why we care:** Indoxacarb is a priority for CASQA due to its toxicity to aquatic life in surface waters, and it and its degradates' ability to persist and accumulate in soils and sediments.

**Actions taken:** CASQA Pesticide Subcommittee consultants noted that an existing indoxacarb product (a bait for fire ants) was requesting a product label change in California in both the Materials Entering Evaluation Notice and the Notice of Proposed Decisions to Register Pesticide Products on 3/14/19. The Subcommittee consultants noted that an important part of the label stipulating clean-up practices was omitted from the proposed revised label. They notified DPR of this omission, and DPR pulled the product from the registration process.

**Status:** The product was pulled from the California registration process on 3/21/19.

DPR issues MATERIALS ENTERING EVALUATION NOTICE and NOTICE of PROPOSED DECISION TO REGISTER PESTICIDE PRODUCT after receiving pesticide product registration application for label change.

CASQA Pesticide Subcommittee requested that DPR check applicaiton to see if revised label language was correct.

DPR pulls product update from the registration process. (Applicant will have to reapply with corrected label.)

**Next steps:** Continue tracking indoxacarb registrations. If applicant re-submits product, review to make sure that proposed label language is corrected.

| CASQA Action:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Result:                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>CASQA Pesticide Subcommittee consultants noted that applicants for an existing indoxacarb product (a bait for fire ants) were requesting a product label change in California in both the Materials Entering Evaluation Notice and the Notice of Proposed Decisions to Register Pesticide Products on 3/14/19. It was noted that some previously omitted portions of the standard environmental hazards language was added in Section 2.3 ("<i>This pesticide is toxic to fish and aquatic invertebrates.</i>" and "<i>Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas.</i>"). However, the Workgroup consultants noted that an important part of the label stipulating clean-up practices was omitted from the proposed revised label. Specifically, the revised label deletes the sentence: "<i>Cover, incorporate, or clean up granules that are spilled.</i>" They notified DPR of this omission.</p> | <p>Due to the request from the CASQA Pesticide Subcommittee, DPR pulled the product from the registration process. <b>The actions of the CASQA Pesticide Subcommittee successfully prevented this high-risk product from having important environmental safeguards removed from its label.</b></p> |

**Pesticide:** MCPA; EPA–HQ–OPP–2014–0180

**Use:** Phenoxy herbicide, commonly formulated with other pesticides. MCPA is frequently applied at locations that could run off into urban storm drainage systems, such as on right-of-ways.

**Why we care:** Toxic to aquatic plants. Toxic to some aquatic invertebrates.

**Actions taken:** CASQA has been tracking EPA actions on this pesticide since 2014. The Central Valley Water Board commented on the Work Plan in 2014.

**Status:** EPA released the Draft Risk Assessment in December 2018.



**Next steps:** EPA will analyze comments and issue a Proposed Interim Decision.

**Recommendation:** No action is needed at this time. Keep on tracking list and watch for Proposed Interim Decision.

| From EPA's Draft Risk Assessment:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Response from CASQA's Perspective:                                                                                                                                           |
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| Non-agricultural use is common nationally, with >1,318,000 pounds used for this purpose each year, mostly on turf. For "rights-of-way", >25,000 pounds is used nationwide each year. Up to 3 pounds can be used at a time for spot treatment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MCPA could be used on or near impermeable surfaces in "right-of-ways" that could cause runoff to aquatic environments. Unknown if runoff is concentrated enough to be toxic. |
| <b>EPA considered monitoring data submitted by DPR:</b> California Department of Pesticide Regulations (Cal DPR) submitted monitoring data for MCPA to include in the registration review risk assessment. The monitoring was conducted in four large urban areas in northern and southern California, including the greater Sacramento area, the San Francisco Bay area, the Los Angeles area, and the San Diego area. The purpose of the monitoring was to assess urban pesticide use and water quality in urban drainage and receiving water from stormwater runoff and baseflow in California's major urbanized areas. Of the 63 pesticides/degradates analyzed for, 30 different pesticides (including degradates) above their analytical reporting limit (18 insecticides and 12 herbicides) were detected in urban waters. The conclusion of the study was that rain storms drive most MCPA into urban surface waters. MCPA was more frequently found during rain runoff than during dry flow sampling (Ensminger and Kelley, 2011). The overall MCPA frequency of detection was 24%; if trace detections are considered, frequency increased to 32% in four sampling sites monitored in 2008 and 2009. In this study, MCPA was detected along with 30 different pesticides and degradates. The main herbicides detected besides MCPA were 2,4-D, triclopyr, dicamba, | EPA considered the monitoring data submitted by DPR and by acknowledging that MCPA enters urban creeks during wet weather events.                                            |

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| <p>diuron, and pendimethalin. The summary of monitoring results for MCPA is presented in Table 5.1 below. The table also provides a summary of additional data collected in rivers, creeks, storm drains, and outfalls, that were collected until July 2016, and include some of the MCPA urban project data within. (p. 16)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                        |
| <p><b>EPA found low-level, but significant risks to aquatic plants.</b> Only pastureland/rangeland had predicted exceedances, but the rights-of-way modeling did not address the allowable 3 pound “spot” applications, which could occur near drainage systems. (Instead, 1.5-pound per acre applications were the only ones modeled).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>EPA’s modeling does not yet address non-agricultural uses very well and might underestimate MCPA concentrations in urban runoff.</p>                                                                |
| <p><b>EPA did not complete a cumulative risk assessment of this plus the many other phenoxy herbicides.</b> In comments on the Registration Review workplan, the Central Valley Water Board noted the high toxicity of phenoxy herbicides to algae and aquatic macrophytes as well as aquatic invertebrates and the frequent detection of multiple phenoxy herbicides together in surface water. It requested that EPA consider the cumulative additive toxicity of the phenoxy herbicides as a group in its ecological risk assessment.</p> <p>According to EPA “EPA appreciates the need to address cumulative risk from mixtures of pesticides both within and across modes of action. EPA, FWS, and NMFS collectively engaged the National Academy of Sciences (NAS) on the issue of mixtures as part of the broader approach to conduct ESA compliant pesticide risk assessments. As noted by the NAS report, the ability to quantitatively assess risk from mixtures (tank, formulated product, and environmental) is perhaps the most daunting challenge facing EPA and the Services. EPA currently considers cumulative mixture toxicity where data are available on combined effects from one or more compounds. EPA acknowledges that mixtures represent a consideration that may influence the toxicity of the active ingredient; however, there are many uncertainties and limitations to quantitatively assessing the impact of mixtures on the overall risk picture. As the NAS noted, there are significant challenges to incorporation of mixtures analyses into the risk assessment process including the lack of a generic peer-reviewed method to assess the risks from mixtures, uncertainty on the temporal aspects of exposure to mixture constituents (e.g. each constituent behaves differently once in the environment), lack of knowledge about mechanism of action in non-targets, and uncertainty on the portability of observed interactions across taxa. EPA and the Services have made the issue of developing an approach for assessing mixtures toxicity a priority for future risk assessments.”</p> | <p>The lack of cumulative evaluation of phenoxy herbicides risks leaves a gap that may be under-protective of water quality depending on the actual cumulative risks, which are currently unknown.</p> |

**Pesticide:** Nanosilver, EPA-HQ-OPP-2011-0370  
**Use:** Swimming pool algaecide, fabric treatments, materials preservatives (including for outdoor paint).  
**Why we care:** Nanosilver is a priority due to its toxicity to aquatic organisms and the numerous silver 303(d) listings.  
**Actions taken:** BACWA, NACWA, CASQA, the SF Water Board, and Tri-TAC sent EPA a letter in response to the Work Plan in 2012.  
**Status:** EPA released the Final Work Plan in October 2018.



**Next steps:** The EPA does not solicit comments on Final Work Plans. The next opportunity to comment is on the Draft Risk Assessment.  
**Recommendation:** No action is needed at this time but this pesticide should continue to be tracked.

| CASQA Comments to EPA                                                                                                                                                                                                                                                                                                                                  | EPA Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Did EPA incorporate CASQA's comment? |
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| CASQA provided scientific papers & citations to EPA. For example, CASQA shared that research found that a portion of poly(vinylpyrrolidone)-coated silver nanoparticles placed directly into simulated wetlands was mobile between environmental compartments and bioavailable. Another study indicated that particle size may affect bioavailability. | The citations provided in the comments generally refer to public literature information on nanomaterials, which typically differ from submitted pesticidal nanosilver chemistries sufficiently to make data comparisons invalid. EPA anticipates requiring studies for each unique registered nanosilver chemistry and will consider studies from the open literature, including those submitted by registrants, to the extent that appropriate comparisons are possible with respect to the chemistries and use patterns at issue. | <b>TBD</b>                           |
| What are the fate, transport and effects on aquatic life of nanosilver discharged directly to surface waters?                                                                                                                                                                                                                                          | The workplan is designed to obtain additional data and other information in order to conduct risk assessments of potential exposures through registered uses of nanosilver products. (EPA has required a slate of special tests to characterize nanoparticles). The information from these studies, existing information, and other data from the open literature will be used to characterize the aquatic                                                                                                                          | <b>TBD</b>                           |



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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | risks, as appropriate. If CASQA is aware of specific studies that the Agency does not currently have, please submit them to the Chemical Review Manager.                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| What is the potential for nanosilver to accumulate in aquatic and terrestrial food chains? Recent research indicates that gold nanoparticles biomagnify in a terrestrial food chain.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | There are presently insufficient data to prepare a more current assessment of these scenarios for each unique active ingredient included in this case. The workplan is designed to obtain data and other information sufficient to make this determination as part of the registration review risk assessment process.                                                                                                                                                                                                                                          | <b>TBD</b> |
| Are nanoparticles able to deliver silver ions to new environmental locations, perhaps within organisms that take them up? For example, filter-feeding organisms have been shown to be more sensitive to nanosilver, perhaps because they are ingesting and accumulating the particles.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>The workplan is designed to obtain data and other information, regarding silver nanoparticle/ion transport, and the potential sensitivity of filter-feeding organisms and other aquatic receptors as part of the risk assessment process.</p> <p>It is unclear at this point whether the EPA's data requirements will provide the information necessary to address this question in detail.</p>                                                                                                                                                              | <b>TBD</b> |
| What are the risks of nanosilver pesticides in final products? It is important that EPA evaluate the environmental risks associated with the final product that is sold to the consumer, including any carrier material. For example, nanoscale pesticides are used in products like treated wood and fabrics that are not ordinarily labeled as pesticides. In some of these products, the nanoscale material is created during the treatment of the material. <sup>10</sup> In addition, EPA should also evaluate the impacts of disposal of final products treated with nanosilver, particularly products that consumers would not normally consider as hazardous, such as fabric. California's hazardous waste standard for total silver content is 500 milligrams per kilogram. | <p>The planned assessment is intended to evaluate the risks of the specifically manufactured nanosilver particles as they are released from treated articles. For example, EPA has required data to characterize leaching from paints and fabrics. Often EPA only evaluates releases from manufacturing treated products, so this is a positive development.</p> <p>Exposures from disposal of treated products is likely less than the maximum estimated exposures from direct use and thus such exposures are assessed as part of the broader assessment.</p> | <b>TBD</b> |
| <p>We request that EPA specifically evaluate these uses for their potential environmental exposures.</p> <ul style="list-style-type: none"> <li>Swimming Pool Algaecide</li> <li>Fabric Treatments</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The workplan is designed to obtain data and other information in order to conduct risk assessments of potential aquatic exposures through registered uses of nanosilver products.                                                                                                                                                                                                                                                                                                                                                                               | <b>TBD</b> |

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| <ul style="list-style-type: none"> <li>Materials Preservatives</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                           | Data requirements include paint and textile leaching and pool product environmental fate studies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| <p>CASQA expressed concern that the nanosilver registration review docket does not provide the level of detail often included in most OPP environmental risk assessment work plans. The Environmental Summary primarily focuses on fabric treatments, and does not address risks, data gaps or data requirements pertaining to other registered uses. CASQA cited the Bifenthrin Registration Review workplan as example of how EPA could develop a more robust and informative assessment plan for nanosilver.</p> | <p>The Environmental Summary primarily focused on fabric treatments because at the time it was written, there was only one product registered as nanosilver, which was used for fabric treatments. This Final Work Plan includes more products and more uses (e.g. pool uses) and so has expanded the focus of the data requirements and risk assessments accordingly. Also, the use of the bifenthrin work plan as an example is not appropriate for nanosilver because there are no previous assessments to rely upon for nanosilver.</p> <p>Before issuing the final workplan, EPA requested that all manufacturers of silver-containing pesticides provide nanoparticle content information. Responses were received from many (but apparently not all) manufacturers. The list of products in the current workplan includes all products currently known to contain nanosilver.</p> <p>During registration review, all uses of all registered nanosilver products will be assessed. However, as with other pesticides, future nanosilver products will continue to be held to these same standards. Thus, if registrants wish to register new uses for their products, for example, the Agency will require data and other information consistent with that described in this FWP to address the proposed uses.</p> | <b>TBD</b> |
| <p>To detect pollutants, local, state and federal surface water quality monitoring programs need analytical methods with sufficiently low detection limits that are practicable in commercial and government analytical laboratories. There are no such methods for nanoparticles, though it is especially important to have sufficiently sensitive analytical methods for environmentally</p>                                                                                                                      | <p>Existing analytical instrumentation/techniques are being modified for nanosilver detection in the above sample matrices. (This is required for EPA to accept the various required environmental testing data). Most detection methods require a breakdown of the physical nanoparticle for quantitation. At the same</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>TBD</b> |

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| relevant matrices such as surface water, sediments and soil. We believe that the manufacturer, at the time of registration of its product, should be responsible for development of these methods. CASQA requests that EPA require the registrants to develop water, soil and sediment chemical analysis methods for nanosilver with appropriate method detection limits. California DPR has already established specifications for pesticide analysis method development, which EPA may draw from to develop a data requirement. | time, not all detection methods are adequate for particle analysis. But, as research advances, as it has greatly in the past few years, more techniques will be either coupled or newly developed for nanosilver. Proposals and test protocols for non-standard test methods should be discussed with the Agency prior to being conducted. |            |
| Like BACWA, CASQA is concerned that toxicity related to nanosilver could be additive with other forms of silver pesticides, including silver nitrate, silver chloride, and colloidal and ionic silver. Because there is relatively little information about the effects of nanosilver on aquatic life, we support the ecological data requirements for freshwater and marine settings.                                                                                                                                            | The Agency concurs with the comment that toxicity related to nanosilver could be additive with other forms of silver pesticides.                                                                                                                                                                                                           | <b>TBD</b> |
| CASQA looks to EPA to ensure that pesticide regulatory processes adequately consider potential water quality impacts, so that in the future, water quality impacts are prevented before they result in CWA Section 303(d) impaired waters listings. Because local agencies in most states do not have authority to regulate pesticide uses or application patterns, it is the responsibility of federal and state pesticide regulators to control pesticide uses sufficiently to prevent surface water toxicity.                  | The Agency acknowledges your comment and plans to ensure that pesticide regulatory processes adequately consider potential water quality impacts to prevent potential for future incidents that lead to a change to impaired waters listings under the Clean Water Act Section 303(d).                                                     | <b>TBD</b> |

**Pesticide:** Pyriproxyfen, EPA-HQ-OPP-2011-0677  
**Use:** Indoor/ outdoor insecticide used to control fleas, roaches, and ants  
**Why we care:** The EPA's ecological risk assessment – which omitted applications in storm drains - nevertheless found significant chronic risks to aquatic invertebrates. The actual water quality risks are unclear due to shortcomings in EPA risk assessment methodologies.  
**Actions taken:** BACWA, NACWA, and SF Bay Water Board sent EPA comments on the Proposed Interim Decision in March 2018.  
**Status:** EPA released the Proposed Interim Registration Review Decision in February 2018.



**Next steps:** EPA will analyze comments and issue a Final Interim Decision. ESA Consultation is required but unlikely to begin before 2022.

**Recommendation:** No action is needed at this time. Keep on tracking list and watch for Interim Decision.

| Water Board Comments to EPA (based on scientific information provided by CASQA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | EPA Response                                  | Did EPA incorporate Water Board's comment? |
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| The ecological risk assessment should more fully assess the impacts of pyriproxyfen applications to storm drain catch basins, particularly for mosquito abatement. While the risk assessment properly recognizes the connection between catch basins and surface water, it assigns catch basin discharges only to times when rain events occur. Even in our semi-arid urban areas, discharges regularly occur during dry weather due to over-irrigation and pumping of groundwater into the storm sewer collection system.                                                                                                                                                                                                                                                                                                                                                                                                                                            | The EPA neglected to respond to this comment. | NO                                         |
| The ecological risk assessment found significant chronic risks to aquatic invertebrates from outdoor uses of pyriproxyfen. Given the likelihood of significant risks, mitigation options should be evaluated for the pyriproxyfen uses that are most important from an urban runoff perspective. These include applications directly to storm drains (referred to as “sewer catchments” in the risk assessment), structural perimeter applications, broadcast applications to impervious surfaces and turf, and use at nurseries. Existing mitigation measures for agricultural uses, such as buffer zones and drift prevention, are not applicable to the urban context. We request that U.S. EPA evaluate mitigation options for these outdoor urban uses of pyriproxyfen. In addition, because pyriproxyfen may be less hazardous than available alternatives of outdoor pest control, we request that the benefits assessment compare pyriproxyfen risks to risks | The EPA neglected to respond to this comment. | NO                                         |

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| associated with other insecticides similarly used in urban settings, including for mosquito abatement. |  |  |
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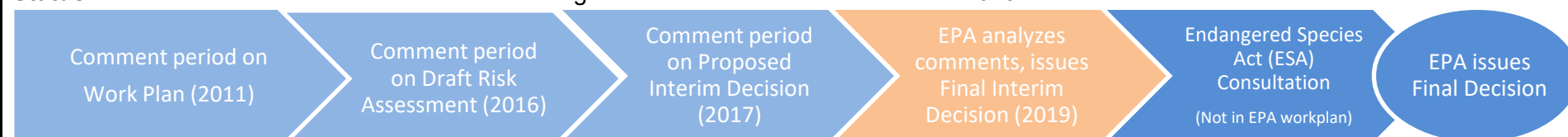
**Pesticide:** **Spinetoram** EPA-HQ-OPP-2011-0666 and **Spinosad** EPA-HQ-OPP-2011-0667

**Use:** Outdoor insecticide for fire ant mounds; used directly in storm drains and catchments for mosquito control; also used for pet flea control (cats)

**Why we care:** High aquatic toxicity and highly toxic degradates. Persistent in aquatic ecosystems.

**Actions taken:** CASQA and the SF Bay Water Board commented on the Draft Work Plan in 2011. BACWA and NACWA commented on the Draft Risk Assessment in 2016.

**Status:** EPA released the Final Interim Registration Review Decision in March 2019.



**Next steps:** ESA Consultation is required but unlikely to begin before 2022.

**Recommendation:** Keep on tracking list and watch for final Interim Decision.

| CASQA Comments to EPA                                                                                                                                                                                                                                                                                                                                                                                                                            | Did EPA incorporate CASQA's comment?                                                                                                                                                                                                                             |
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| EPA's Registration Review process must address urban uses. The Analysis Plan (Section VII of the Problem Formulation document) describes only agricultural runoff modeling to evaluate exposure of aquatic organisms to Spinosad and Spinetoram and is silent on urban runoff modeling. The conceptual model and risk analysis modeling approach needs to explicitly include urban sources/pathways.                                             | Partially incorporated. EPA used its "turf" scenario to model urban use, which is not a perfect match for how the product is used on fire ant mounds. EPA did not model the other non-agricultural uses, including use inside storm drains and pet flea control. |
| The Risk Assessment must include consideration of the potential ecological effects resulting from direct application of Spinosad and Spinetoram to storm drainage systems (e.g., catch basins) for mosquito control.                                                                                                                                                                                                                             | Not incorporated.                                                                                                                                                                                                                                                |
| The environmental fate and effects of pesticides are very active areas of research among both academic institutions and government agencies, and the literature is growing rapidly. It is essential for U.S. EPA to acquire and include all relevant data within the Risk Assessment. For example, a recent journal article documents a Spinosad LC50 for <i>C. dubia</i> of 1.78 ppb, much lower than is documented in the Problem Formulation. | Incorporated.                                                                                                                                                                                                                                                    |
| Given the relatively high Koc values for both Spinosad and Spinetoram and their degradates, and the rapid partitioning of these pesticides from water to sediment, CASQA believes additional study is needed to quantify the environmental effects of these pesticides on benthic invertebrates.                                                                                                                                                 | Incorporated. Benthic invertebrates were included in the analysis.                                                                                                                                                                                               |

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| CASQA encourages EPA to pursue development of a protocol for quantitative assessment of cumulative impacts of pesticide mixtures, as this appears to be a significant factor contributing to the observed toxicity in urban creeks. | Not incorporated. |
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**Pesticide:** Zinc and Zinc Salts; EPA-HQ-OPP-2009-0011  
**Use:** Swimming pool algicide, herbicide for moss, material preservative, wood preservative.  
**Why we care:** Highly toxic to aquatic invertebrates. 303(d) listings, TMDLs, CWA Priority Pollutant.  
**Actions taken:** CASQA has been tracking EPA actions on this pesticide since 2009.  
**Status:** EPA released the Draft Risk Assessment in December 2018.



**Next steps:** EPA will analyze comments and issue a Proposed Interim Decision. No ESA consultation is currently planned.  
**Recommendation:** Continue tracking, including how EPA responds to partner agencies who sent written comments on risk assessment.

| From EPA's Draft Risk Assessment:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Response from CASQA's Perspective:                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <p><b>EPA did not quantitatively assess discharges. It made unsupported qualitative claims that use in swimming pools, spas, and fountains will not cause any direct or indirect adverse effects:</b></p> <p><i>"The algicide use in swimming pools, hot-tubs and spas will have little exposure to nontarget organisms because the biocide treated water would be contained in the pool, hot-tub or spa and not exposed to nontarget organisms. The only potential exposure scenario would occur when the pool or spa is drained for cleaning and the treated water released. The amount of zinc added to the environment from this scenario would be expected to be low and not add significantly to the natural levels of zinc." (p.4)</i></p> <p><i>"The Agency has no expectation that the antimicrobial uses of zinc salts will cause any direct or indirect adverse effects to endangered or threatened species. EPA has made a "no effects" determination for zinc salts under the Endangered Species Act (ESA) for all listed species and designated critical habitat for that species." (p.4)</i></p> | <p>If EPA had conducted an assessment of the effects of zinc released to the from pools, spas, and fountains, it would have predicted exceedance of the zinc acute water quality criteria in creeks and could have examined potential impacts on stormwater.</p> <p>Because EPA identified no significant risk EPA is unlikely to require that product labels include the requirement to contact local agencies before discharging treated water from pools, spas, hot tubs, and fountains.</p> |
| <p><b>EPA Acknowledges TMDLs but states that there is no way of understanding how and if pesticides affect these streams.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Although zinc is ubiquitous in the environment, that does not preclude the need to evaluate concentrated discharges of zinc-containing swimming pool water.</p>                                                                                                                                                                                                                                                                                                                              |

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| <p><i>“Based on the EPA Office of Water (OW) website, there are 276 streams (333 including tributaries) in the U.S. with zinc impairments and associated TMDLs. These streams were located across the geographical U.S. Of these streams, 97 are located in the western U.S. (CA, CO, MT) and 28 were located in Arkansas. Zinc is a ubiquitous metal that is present in water from a variety of sources and cannot be traced to any pesticidal use.” (p. 14)</i></p>                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>EPA did not use the zinc water quality criteria to evaluate water quality risks. Despite knowing that zinc salts degrade to zinc ions, EPA based its risk assessment on registrant-submitted toxicity data for salts:</b></p> <p><i>“... toxicity values for zinc found in the literature demonstrated higher toxicity levels than those found in the submitted studies....Since the Agency has submitted studies testing the actual pesticide active ingredients, which are more complete than the open literature citations, the data from these submitted studies will be used as the ecotoxicity endpoints.” (p. 15)</i></p> | <p>The most sensitive aquatic toxicity endpoint that EPA used in its evaluation (170 ug/L acute; 90 ug/L chronic – Table 2, p. 15) is slightly higher than EPA’s National Recommended saltwater aquatic life water quality criteria 90 ug/L acute; 81 ug/L chronic), but lower than the typical freshwater criterion of 120ug/L (this hardness-based value depends on local conditions).</p> |
| <p><b>EPA mentions wood treated with zinc but did no quantitative analysis.</b> Without any examination of effects in areas where treated wood is used, EPA assumed that there would be no risk due to the low market share of a single type of product (ammoniacal copper zinc arsenate [ACZA]), which it is used in less than 1% of all treated wood products. (p. 13). Without any calculations, EPA stated “The incremental addition of zinc resulting from antimicrobial uses of zinc and zinc salts is expected to be insignificant compared to levels of naturally occurring zinc.”</p>                                         | <p>EPA should prepare at least a rough quantitative estimate of pesticide releases into surface waters to justify any claim that releases are negligible. In this case, there is potential for localized effects in creeks and other small water bodies where treated wood is used.</p>                                                                                                      |