



**PESTICIDE REGISTRATION  
AND EVALUATION COMMITTEE (PREC)  
Meeting Minutes – March 17, 2023**

**Committee Members/Alternates in Attendance:**

Edgar Vidrio – Department of Public Health (CDPH)  
Fabiola Estrada – U.S. Environmental Protection Agency (EPA), Region 9  
Garrett Keating – Department of Industrial Relations (DIR)  
Heather Williams – Department of Resources Recycling and Recovery (CalRecycle)  
Jaime Rudd – Department of Fish and Wildlife (DFW)  
Katherine Sutherland-Ashley – Office of Environmental Health Hazard Assessment (OEHHA)  
Kevi Mace – California Department of Food and Agriculture (CDFA)  
Lynn Baker – Air Resources Board (ARB)  
Mai Ngo – Department of Toxic Substances Control (DTSC)  
Kari Arnold – University of California (UC), Davis, IR-4 Program  
Ruben Arroyo – CA Agricultural Commissioners and Sealers Association (CACASA)  
Tom Ineichen – Structural Pest Control Board (SPCB)  
Tulio Macedo – Department of Pesticide Regulation (DPR)

**Visitors in Attendance:**

*Note: Only attendees who identified themselves using their full name are listed below*

April Vingum  
Armand Ruby  
Cameron Blackford – Compliance Services International  
Carol Saunders  
Chris Hassinger  
Christabelle Parnanthu  
Elana Varner  
Grecia Orozco – Center on Race, Poverty, & the Environment  
James Nakashima – Office of Environmental Health Hazard Assessment (OEHHA)  
Jessi Rader  
Jing Tao – Office of Environmental Health Hazard Assessment (OEHHA)  
John Bottorff  
Justine Weinberg  
Leslie Simek  
Mark Weller – Californians for Pesticide Reform  
Martin Cunningham – Wyandotte County Health Department  
Mike Zeiss  
Peter Meertens – Central Coast Regional Water Quality Control Board  
Ryan Pessah  
Scott Jackson  
Stan Armstrong – Air Resources Board (ARB)  
Tashina Sanders

**DPR Staff in Attendance:**

Aimee Norman – Integrated Pest Management Branch  
Aisha Iqbal – Pesticide Registration Branch  
Alyssa Knudsen – Pesticide Registration Branch  
Andrew Turcotte – Pesticide Registration Branch  
Anson Main – Evaluation Monitoring Branch  
Brenna McNabb – Pesticide Registration Branch  
Brittanie Clendenin – Pesticide Registration Branch  
Christine Herrera – Worker Health and Safety Branch  
Gayatri Sankaran – Human Health Assessment Branch  
Joy Dias – Environmental Monitoring Branch  
JT Teerlink – Pesticide Programs Division  
Minh Pham – Environmental Monitoring Branch  
Nan Singhasemanon – Pesticide Programs Division  
Pedro Lima – Environmental Monitoring Branch  
Robert Budd – Environmental Monitoring Branch  
Xin Deng – Environmental Monitoring Branch

**1. Introductions and Committee Business – Tulio Macedo, Chair, DPR**

- a. Approximately fifty-one (51) people attended the meeting.
- b. DPR issued a notice of proposed regulation action for regulations concerning pesticide decontamination sites on March 17. The proposed action will amend the contamination requirements for employees handling pesticides and improve eye-wash regulations compliance. The comment period ends May 2, 2023 and the rulemaking documents are available on DPR's [Proposed and Recently Adopted Regulations](https://cdpr.ca.gov/docs/legbills/rulepkgs.htm) Web site <cdpr.ca.gov/docs/legbills/rulepkgs.htm>
- c. The neonicotinoid pesticide exposure protection regulations were submitted to the Office of Administrative Law for review on February 24.
- d. The comment period for the spray adjuvant ingredient statement requirements regulations closed on December 20th, 2022 and DPR is currently reviewing comments received during the comment period.
- e. The comment period for the health risk mitigation and volatile organic compound emission reductions for 1,3-D closed on January 18, 2023, and DPR is currently reviewing comments received during the comment period.

**2. Sustainable Pest Management Roadmap Overview & Next Steps – Aimee Norman, DPR**

Much progress has been made over the years to transition to safer and more sustainable pest management practices, however there is still more work to do. Although California has a strict regulatory system and a very robust risk assessment process, there are still chemical tools in use that can cause harm to humans and to the environment. The Sustainable Pest Management

(SPM) Roadmap supports DPR's continued work to reduce health and environmental risks associated with pesticide use, especially in areas that are disproportionately burdened by multiple sources of pollution.

The SPM work group was formed following a recommendation that came out of the chlorpyrifos alternatives work group and in light of the state's recognition of the need for a holistic system wide approach to sustainable pest management in both urban and agricultural settings. The group was composed of 25 Members who are focused on agriculture and a subgroup of eight members who focused on pest management and urban settings. The members came from a very diverse range of backgrounds and brought a variety of interests and perspectives to the table. The charge for the work group was to develop this road map, and to do so by aligning on a pathway that would minimize reliance on the use of high-risk pesticides and promote solutions that protect health and safety; are agronomically and economically sound; eliminate racial and other disparities; and engage, educate and promote collaboration towards safe, sustainable pest management practices in both agricultural and urban spaces. The diversity of perspectives in the work group and the ability to collaborate and engage across the differences were critical elements in their successful development of the road map and DPR believes those same elements will be critical in supporting implementation of the road map.

Sustainable pest management can be summarized as a holistic whole systems approach that builds on the concept of integrated pest management but includes the wider context of the three sustainability pillars: human health and social equity, environmental protection, and economic vitality. SPM and the road map itself build on the state's existing integrated pest management foundation. Like integrated pest management (IPM), SPM guides pest management decisions, and includes a wide range of tools and approaches. It goes beyond a checklist of practices or products to address the impacts on communities and equity; the linkages to broader environmental issues such as water conservation, biodiversity conservation, climate impact, and soil health; and it includes a broader consideration of economic benefits and impacts.

In creating the road map, the workgroup developed and agreed upon a North Star to serve as the vision for the future. The North Star reads:

By 2050, pest management approaches in agricultural and urban contexts in California will promote human health and safety, ecosystem resilience, agricultural sustainability, community wellbeing, and economic vitality. The implementation of these approaches will help steward the state's natural and cultural resources, enabling healthy lives for all and an abundant healthy food supply for future generations.

The road map includes two aspirational top-level goals to be achieved by the year 2050: the elimination of priority pesticides through the transition to sustainable pest management practices, and the adoption of sustainable pest management as the de facto pest management system in the state. The work group chose the year 2050 because they recognize that system wide change takes time, and there is a need to develop alternatives to priority pesticides as a very essential and critical part of the transition process. It's also important to note in considering these goals that a

priority outcome of the goals is the elimination of the adverse human health and environmental impacts that are associated with pesticide use.

The road map defines priority pesticides as being a subset of high-risk pesticides. The work group members, who came from a wide range of backgrounds, had a diverse range of opinions about how to approach defining priority pesticides. After much extended conversation, they were not able to come to consensus on a formal definition for the term priority pesticide, however, they did find agreement around the concept that those pesticides have the characteristics of posing high risk. From that common ground, the work group went on to define high-risk pesticides as active ingredients and/or formulations or uses that are highly hazardous that pose a likelihood of, or are known to cause, significant or widespread human and/or ecological impacts from their use.

The work group went on to outline criteria that would apply in classifying priority pesticides. These criteria include hazard and risk classifications, the availability of effective alternative products or practices, and special consideration of pest management situations that potentially cause severe or widespread adverse impacts. It's important to note that priority pesticides will be identified by DPR with advice from a multi-stakeholder SPM Priorities Advisory Committee.

In addition to the North Star, the definition of sustainable pest management, and the top-level 2050 goals mentioned above, road map includes Keystone actions. These are urgent, foundationally critical interconnected actions that must happen in order to accomplish the goals of the road map. It also includes leverage points - specific identified areas where sustained and focused effort is needed to help influence the transition. It further includes a subset of goals that are aimed in various ways. Some goals are aimed at advancing sustainable pest management generally and there are additional goals that are specifically aimed at advancing sustainable pest management in either agricultural contexts or urban contexts. Lastly, the document includes priority actions - specific actions that the work group identified that can be taken or recommended to support achievement of all of the goals.

In developing the road map, the work group came together to identify and address a wide range of interests and perspectives, and developed the North Star vision to which all parties were able to agree. It's important to note that work group members sometimes had opposing viewpoints about how to best reach the North Star, and at times struggled to reconcile divergent thinking. The road map reflects their work to identify solutions that everyone was willing to work and live with and live with, but that doesn't mean that every member valued each goal or recommendation equally. However, it was agreed that, as a whole, the road map works to provide a holistic, system wide approach to accelerating safer, more sustainable pest management.

The first Keystone action is to prioritize prevention. These actions would strengthen California's commitment to pest prevention in two fundamental ways. First, it involves proactively preventing the establishment of new invasive pest species through a significant expansion of the state's biosecurity and invasive pest mitigation system. And second, it involves proactively

eliminating pest conducive conditions in both agricultural and urban settings. The next Keystone action is to coordinate state-level leadership. This includes efforts to create an accountable and connected leadership structure that embeds sustainable pest management principles across agencies. It would enhance DPR's ability to champion sustainable pest management practices in both agricultural and urban settings, and would encourage and promote the development of alternatives to priority pesticides by encouraging research and innovation.

The next Keystone action is to invest in building sustainable pest management knowledge in agricultural and urban pest management. This would be accomplished by significantly investing in SPM-focused research and outreach, so that all pest management practitioners have equal and adequate access to the support and resources that are necessary to develop and implement their own SPM systems in ways that effectively manage pests, minimize adverse impacts to humans and the environment, and are economically viable. In the context of agricultural pest management, this includes securing a significant increase in SPM-trained technical advisors. It also includes funding for SPM research and outreach, and adding human capacity for those programs in ways that reflect and serve the diversity of California's farms and agricultural producers. In the context of urban pest management, this would include expanding funding and infrastructure for urban SPM research, innovation, and outreach to align with and reflect the volume and impacts of pesticides used in urban environments. This requires providing adequate dedicated annual funding for urban-focused academics, research, and extension.

Another Keystone action is to improve California's pesticide registration processes and bring more alternative products to market. This includes improving DPR's registration review process to prioritize and expedite safer, more sustainable alternative products, as well as improving DPR processes for evaluating currently registered pesticides. The final Keystone action involves enhancing monitoring and data collection. These efforts would expand and fund monitoring and data collection of health and environmental impacts to support regulatory decisions.

By 2025, as a first step in implementation, the road map recommends that the state develop a plan, funding mechanisms, and programs to prioritize pesticides for reduction and to support the change necessary to transition away from the use of high-risk pesticides. DPR recognizes that no one recommendation or leverage point will bring about system wide change on its own. To meet the 2050 goals, the full breadth of the road map must be implemented, which will require the entire system working together to create the conditions that are necessary to realize these outcomes. DPR is asking all partners and stakeholders to join in making this bold vision a reality. The public comment period for the SPM roadmap closed on Monday, March 13. DPR will use that feedback to inform prioritization and implementation planning and plans on continued public and stakeholder engagement moving forward. The SPM document, as well as public webinars that provide a more detailed orientation to the road map for both agricultural environments and urban environments are available on the [SPM Web site](https://cdpr.ca.gov/docs/sustainable_pest_management_roadmap/) <cdpr.ca.gov/docs/sustainable\_pest\_management\_roadmap/> and [DPR's YouTube channel](https://youtube.com/CaliforniaPesticides) <youtube.com/CaliforniaPesticides>.

### ***Committee Comment***

Ruben Arroyo asked if there will be some sort of mandate or regulation attached to the list of priority pesticides to reduce the use or if the list will only offer alternatives. Aimee Norman replied that those types of decisions have not been discussed or considered; at this point, DPR is evaluating the road map and working through how it would be implemented.

Tom Ineichen asked if there has been any kind of implementation or discussion regarding the change of industry starting to use products that are not registered pesticides and how that will impact the ability to regulate any of these issues. Tom clarified that he was referring to Section 25(b) products that are not considered or defined as pesticides by U.S. EPA, but still require registration in California. Aimee Norman replied that DPR is in the initial stage of figuring out how to move forward with the roadmap and have not yet delved into those deep details, but those conversations will likely come as DPR moves forward and works through the roadmap recommendations.

Tom Ineichen asked if PREC will continue to get updates to the Sustainable Pest Management process at every meeting or only if there are significant changes. Aimee Norman replied that if there are significant changes, DPR will certainly reach out to the appropriate stakeholders and partners to provide updates. Aimee added that if PREC members are interested in interim updates they may request the topic as an agenda item.

### ***Public Comment***

John Bottorff submitted the following comments and question via the Q&A function:

I don't see anything in the road map to reduce the overall use of synthetic pesticides, like setting a goal for 50% reduction in 10 years, increase certified organic farms by 75%, etc. Only stopping the use of RUP [Restricted Use Pesticides] in 30 years will do nothing for human and environmental health. Alternatives to RUPs will just mean more petrochemicals unless we change how we farm. Was there any conversation on changing how we farm? Agroecology, organic, regenerative, and permaculture practices - moving to those would be systemic. Just stopping RUP is not systemic.

Aimee Norman replied that the roadmap recommendations are submitted as a package. Aimee added that the roadmap does address the reduction of priority pesticides, but also includes many recommendations focused on education, building peer networks, extending technical assistance, and looking at additional ways to change practices on farms and in urban environments.

An anonymous attendee asked when the list of priority pesticides will be published. Aimee Norman replied that while there is no current timeframe, development of a list of priority pesticides will be one of the initial actions that DPR will be working on. Aimee added that identifying priority pesticides will be a process of engaging with an advisory committee and doing more extensive review of these pesticides.

John Bottorff asked if there is a list of all who were in the working group with their affiliation. John added that having members who have a financial interest in the continued use of synthetic pesticides is an issue. Aimee Norman replied that page two of the roadmap lists all the members and their affiliations.

John Bottorff asked why develop new technologies to replace RUP. John added that there are already existing agricultural practices that do not use pesticides and the money going to the chemical industry should go to farmers. Aimee Norman replied that the intent of the roadmap is to provide a range of practices and tools that will accommodate different needs, styles, and approaches to addressing these problems. Aimee added that DPR cannot necessarily mandate a specific process - SPM is a suite of decision-making tools to help support the transition, rather than a mandated checklist of practices.

Mike Zeiss asked about the expected schedule for convening the panel that will decide which pesticides are priorities. Aimee Norman replied that DPR is in the beginning stages of this process, having just released the road map at the end of January and closed the public comment period March 13. Aimee added that DPR is still examining the feedback from the public comment period and will be using that information to help move forward but does not have a defined timeline yet.

Mike Zeiss asked which PREC member organizations had representatives on the SPM work group. Aimee Norman replied that Kevi Mace from CDFA served as a technical advisor on the workgroup.

An anonymous attendee asked who will make up the Sustainable Pest Management Priorities Advisory Committee and whether DPR intends to have other agencies like OEHHA represented. Aimee Norman replied that the composition of the work group has not yet been decided or discussed and may be influenced by feedback from the public comment period.

James Nakashima asked if the priority Pesticide Advisory Committee has already been formed. Aimee Norman replied that it has not.

John Bottorff commented that as the vast majority of DPR funding comes from the registration of pesticides, DPR appears to be reluctant to stop the use of pesticides. John then asked how DPR can change its funding so that it can focus on protecting human health? Aimee Norman replied that, concurrent to these discussions on implementation, there are obviously many needs for funding to implement the recommendations. Aimee added that DPR also has a separate effort ongoing to determine the appropriate funding for the mill assessment and for supporting DPR's work in the future.

Mike Zeiss asked that given the need to make SPM the de facto approach, and to collaborate across all state agencies, isn't it important to use PREC and its members. Aimee Norman replied that DPR is planning to reach out to as many partners and stakeholders as possible, and that

PREC is going to be deeply involved and engaged with some of the implementation decisions going forward.

Justine Weinberg asked if worker health and safety is part of the decision-making? Aimee Norman replied that the work group had members who represented farm worker interests and that there were many discussions about worker health and safety in terms of developing the road map content. Aimee added that moving forward, worker health and safety will continue to be part of the conversation.

A representative from Kahn, Soares & Conway, LLP asked if the department will be providing a rebuttal to comments. Aimee Norman replied that the department received over 4,000 comments during the public comment period. Aimee added that she did not have an answer to this question at the moment but would find the answer and follow-up. Tulio Macedo requested that the asker send the question to <[PRECcomments@cdpr.ca.gov](mailto:PRECcomments@cdpr.ca.gov)> so that staff would have the asker's email address and be able to reply in writing.

### **3. Monitoring for Pesticides in Urban Landscapes – Robert Budd, DPR**

The objectives of the Surface Water Protection Program's (SWPP) urban monitoring project are to determine which pesticides are present in urban surface waters, to evaluate the potential ecological concern through comparisons of detected concentrations with toxicity thresholds, and to conduct toxicity testing using laboratory test species at a subset of our locations. The project also evaluates the effectiveness of regulatory and structural mitigation strategies and assesses the long-term trends using robust datasets. This presentation focuses on the first four of the five objectives.

SWPP's sampling design includes four monitoring events per year, with two events occurring during the dry season and two during rain events. SWPP has learned from past experience that the first storm of the season contains the highest concentrations, so that period is specifically targeted. Staff utilize the surface water monitoring prioritization model that was developed in-house and incorporates both reported use and associated toxicity in order to generate relative ranked lists of pesticides and sampling locations. Using this model, the program targets specific analytes and watersheds that have the greatest chance of detections. Currently SWPP is monitoring for 76 pesticides at 34 sampling locations.

The primary site locations are located at the outlets of storm drains, which provide source identification data, and at downstream receiving water locations, which are used to evaluate potential ecological risk. For timing of sampling, staff sampled during the dry season to evaluate base flow conditions, and during storm events to determine the effect of precipitation on chemical transport. Monitoring is split into two regions of the state - Northern California which has monitoring stations in the San Francisco Bay and the Greater Sacramento area, and Southern California with stations in Los Angeles, Orange, and San Diego counties. Currently there are 14 stations in Northern California and 20 stations in the southern part of part of the state.



SWPP uses aquatic life benchmarks set by U.S. EPA as screening criteria to compare observed pesticide concentrations to evaluate potential ecological risk. The minimum benchmark values for several commonly detected pesticides (such as pyrethroids, fiproles, and the neonicotinoid imidacloprid) are extremely low values in the sub part per trillion range. Aquatic life benchmarks are based upon the most sensitive species method. In the case of pyrethroids, this is almost always the amphipod *Hyalella azteca*.

SWPP staff compared the frequency of statewide detections and exceedances of all pesticides with greater than 10% detection frequency for all site types and all event types. A detection does not necessarily indicate a potential risk. A good example is comparing Bifenthrin and 2,4-Dichlorophenoxyacetic acid (2,4-D). Both chemicals have been detected in greater than 70% of all samples. While detected Bifenthrin concentrations exceed benchmark values, no sample has exceeded the 2,4-D benchmark. Almost all exceedances belong to one of three chemistries: pyrethroids, fiproles, or neonicotinoids.

SWPP has observed differences in regional monitoring results. The majority of insecticides are detected at higher frequencies in the Southern California monitoring locations, with a few herbicides detected more frequently in Northern California. This highlights differences in pest pressures between the two regions, which in turn leads to different use patterns. Detections also differ during different event types. As expected, SWPP observes many more detections of almost all pesticides during rain events compared to the dry season, which highlights the importance of storm water runoff in transporting pesticides off site and into waterways. While it is expected that there will be greater concentrations closer to the site of applications, SWPP is still seeing elevated levels for several pyrethroids, fiproles, and imidacloprid within the main stem waterways.

SWPP is currently investigating the efficacy of several mitigation strategies. The first strategy involves the DPR surface water related regulations, which went into effect in 2012 and apply to all professional structural and landscape applications of 17 pyrethroids. Another mitigation milestone was the new labels for fipronil products. DPR worked closely with professional applicators, University of California researchers, and the product registrants to create California use restriction labels for all outdoor use products containing fipronil. In addition to regulatory strategies, DPR is also investigating the effectiveness of structural mitigation strategies under field conditions. The pyrethroid surface water regulations were designed to reduce the mass of products applied by restricting applications made to impervious surfaces and to adjacent turf to a pin stream, crack and crevice, or spot application. The new California use restriction labels for fipronil products were designed with similar goals in mind. In addition to reducing the allowable perimeter bandwidth and finished dilution of the product, DPR negotiated two unique concepts to be incorporated into the new labels. First, there are no allowable applications to the horizontal impervious surfaces, including the driveway and sidewalk. There is also a period of no allowable applications from November 1 through February 28, which corresponds to the general storm season in California.

SWPP is also evaluating the performance of certain structural mitigation strategies under field conditions. These include biochar or activated carbon socks and water quality ponds. Both strategies increase sedimentation and provide sorption sites to remove certain pesticides from the water column. However, the scale of treatment is different. The carbon socks are generally restricted to smaller water streams, while water quality ponds could potentially treat runoff from an entire adjacent neighborhood. Carbon socks are inexpensive and easily transported where needed, while ponds are expensive to build and require setting land aside for their development.

SWPP participates in several avenues of outreach. In the past, staff have attended many different forums sponsored by various stakeholders. Unfortunately, Covid has put a damper on recent outreach efforts, but SWPP is trying to increase engagement with several professional organizations, sister regulatory agencies, and the general public to educate on relevant regulatory actions and application practices, that should lead to lower observed concentrations in California surface waters.

### *Committee Comment*

Tom Ineichen asked if there are any mitigations in regard to agricultural applications or agricultural uses - specifically gardeners, landscape maintenance, and right of way treatments. Robert Budd replied that landscape maintenance gardeners are folded into a lot of the regulations that apply to structural mitigations. Robert provided the example that the pyrethroid surface water regulations include landscape maintenance gardeners, so any application made by a pest control operator for hire which contains any of the 17 pyrethroids mentioned previously would be subject to that regulation. Robert also added that all of the regulations that focus on urban applications would include both structural and landscape.

Ruben Arroyo asked if higher detections in Southern California would have anything to do with the larger populations. Robert Budd replied that there may be several reasons for higher detections in Southern California, including extremely dense population and the warmer climate, which leads to different pest pressures. Robert provided the example that the use of fipronil is almost double in the Southern California region compared to Northern California because the Argentine ant population is a real problem for homeowners there, and fipronil is very effective at mitigating the pest pressure for that species. Ruben also asked if any of the pesticides detected are labeled for or widely available to homeowners, and if DPR takes that into account when planning and conducting outreach. Robert replied that there are professional use products that are specifically labeled for professionals to apply, which contain a higher concentration of these active ingredients. Robert added that for fipronil, there are no homeowner use products, only four professional use products. Robert further added that there are several pyrethroid products available to homeowners in the home box stores, but they are usually at a lower percent active ingredient. In terms of outreach, Robert explained that DPR provides a lot of outreach to the professional applicator organizations, but reaching an audience of home applicators is very challenging – there are 38 million people in the state of California and every one of them can be a potential applicator of products available at the home box stores.

***Public Comment***

Mike Zeiss asked if the use of aquatic life benchmarks adequately ensures that pesticides hazardous to humans are adequately monitored. Robert Budd replied that the aquatic life benchmarks are utilizing a different set of data and all pesticides would go through a separate evaluation from DPR's Human Health Assessment branch that would ensure that these products are used in a way protective for human health. Robert clarified that the active ingredients that SWPP is monitoring are not generally a concern for human health. Robert provided the example that pyrethroids and fipronil, in particular, do not have an associated mammalian toxicity. Robert added that these chemistries were designed specifically to have low mammalian toxicity but because they are designed to have an insecticidal toxicity, they are a concern for aquatic species when they move off target.

Mike Zeiss stated that as part of the prioritization process, the Surface Water program used to conduct some analysis using the online application PURwebGIS, and asked if this app is still used. Robert Budd replied that SWPP does use that application for different purposes, but for these purposes mostly utilizes the prioritization model. Robert explained that the prioritization model has a spatial component, in which specific waterways can be targeted to evaluate their potential priority in terms of transport of chemicals. Robert added that this model helps DPR rank priorities on a county wide scale, or within specific watersheds to evaluate which chemicals are potentially of concern and determine a relative rank of the watersheds in general across the state.

James Nakashima asked if the most recent surface water monitoring revealed any reduction in fipronil levels since the new application regulations were introduced. Robert Budd replied that there has not been a full analysis of the current monitoring data, but fipronil is still being detected during sampling events. Robert added that one of the challenges is to make sure that all of the professional applicators are aware of the new labels and that they are adjusting to the restrictions that are on the California labels, such as the use restriction period and the application site restrictions, which will hopefully result in corresponding reductions in concentrations.

**4. Pesticides Monitoring in California Agricultural Areas – Pedro Lima, DPR**

The goals of the agricultural surface water monitoring project are: to determine the presence and concentrations of select pesticides in agricultural surface waters, such as irrigation ditches at the edges of fields and nearby streams; to determine aquatic toxicity of collected water samples through collaboration with UC Davis and Granite Canyon Labs, comparing rates of specific species to lab controls; to analyze patterns and trends in pesticide concentration over the seasons; to compare observed concentrations to aquatic benchmarks or toxicity thresholds; and finally to evaluate the efficacy of mitigation practices. DPR is mandated by the California FAC 11501 to protect the environment from environmentally harmful pesticides.

Monitoring sites are selected based on the worst-case scenario, meaning DPR is interested in monitoring regions where pesticide use is the highest, areas have multiple seasons or crop

rotations, and runoff potential through irrigation or storm runoff is the greatest. In 2014, DPR adopted a surface water prioritization model that helps determine pesticides or regions to sample based on both aquatic toxicity and pesticide use being high. Monitoring efforts are focused on those areas to cover more of the state with the limited budget. DPR currently has 27 established sampling sites in five high agricultural production regions – Imperial, Santa Maria, Salinas, San Joaquin, and Sacramento Valleys.

The Sacramento and the San Joaquin Valleys are relatively new monitoring regions, starting in 2017. The regions are very dry, which require intense irrigation during summertime to support the crops. Some of the top commodities are rice, grapes, and several types of tree nuts. The Salinas and Santa Maria Valleys have been monitored since the beginning of the Surface Water Monitoring program in 2007. Their proximity to the coast make these areas' climate and fertile soil ideal for cool season crops. DPR has also been monitoring the Imperial Valley since 2007. This area has a desert climate, but is also an intensive agricultural production area utilizing intensive irrigation practices. While some growing operations use modern irrigation practices, such as drip tapes, flood irrigation runoff still contributes to local stream flow. This region has a mild winter and hot summer, which create the need for rotational seasonal crops. Different commodities in different seasons are associated with different pesticide use patterns.

In order to determine which pesticides to screen for in each region, DPR uses the surface water monitoring prioritization model, which utilizes the pesticide use reports and benchmark aquatic toxicity data to rank pesticides at the watershed level. Pesticides are assigned a use score and toxicity score, which are multiplied together to generate the overall score – higher overall scores rank higher in priority, resulting in a positive recommendation for monitoring. In the upcoming season, DPR is monitoring 78 pesticides in the Southern California agricultural areas.

The monitoring schedule is also focused on the worst-case scenario. Staff strategically plan the monitoring events to coincide with the peak pesticide application period as well as the peak period for irrigation, which typically occur in the dry season. There are 13 sampling events in Northern California and seven in Southern California. In 2019, DPR initiated annual storm sampling in the rainy season, between October and March, as a result of potential elevated pesticide detections and concentrations during storm events. Field collection methods include whole water grab samples in both dry and storm events, as well as the use of auto samplers that are programmed to collect samples at set time intervals, characterizing movement and detection of pesticides via runoff throughout the storm event.

As a result of the targeted approach, pesticide detection frequency is different at each one of the regions. The most frequently detected pesticides by active ingredient in the central coast and Imperial Valley areas in 2021 include insecticides, fungicides and herbicides. Note that high detections are an outcome of widespread use, offsite movement, and very low detection limits, so frequent detections alone are not bad. The risk characterization gives a more complete picture of the significance of those detections. One tool that sheds light on the significance of detections is the aquatic risk screening done by comparing the detection frequency to the U.S. EPA benchmark exceedance levels. The top pesticides with aquatic life benchmark exceedance and

frequency are imidacloprid with 96%, bifenthrin with 74%, and permethrin with 49%. The imidacloprid benchmark was significantly lowered in 2017 and there are continued debates about the toxicity thresholds of imidacloprid in general. With different commodities grown in Northern California – such as rice, nuts, and citrus – different pesticide use patterns are associated, resulting in different monitoring results from those of Southern California. As a result, aquatic life benchmark exceedance is 32% for bifenthrin and lower for the other insecticides and herbicides.

Surface Water agricultural monitoring activities are statewide in scope, pesticide based rather than commodity specific, focused on the worst-case scenario, and adaptive to changing needs based on the surface water monitoring prioritization model and other factors such as on-the-ground observation and historical knowledge. Samples are collected to determine pesticide presence, concentration of pesticides in water and sediment, and aquatic toxicity. Long term analyses are conducted to characterize agricultural pesticide trends and the results are used to assess the efficacy of mitigation measures and to protect surface waters in California.

The agricultural monitoring project is a collaborative effort between different agencies and stakeholders including the Central Coast Regional Water Quality Control Board, the Aquatic Health Program Laboratory from UC Davis, the Granite Canyon Marine Pollution Studies Laboratory from UC Davis, Central Coast Water Quality Preservation Inc., the Coastal San Luis Resource Conservation District and the California Department of Food and Agriculture. DPR also utilizes external contracts to assess the efficacy of mitigation measures and protect surface water. Staff were recently involved in the design of CalBMP, a web-based interface tool to help guide agriculture professionals in designing and evaluating management practices. Staff also work in collaboration with the UC extension and UC Davis Granite Canyon Marine Pollution Studies Lab to evaluate the efficacy of mitigation practices such as vegetated ditches, biochar, and sedimentation ponds. Vegetated ditches can slow down the flow and capture pesticides, through particle settling and plant sorption.

DPR staff use outreach to engage stakeholders to better understand pesticide use practices. Staff attend meetings to share data on water quality with stakeholders to reduce pesticide runoff and impacts to surface waters. Recent outreach efforts include a UC Entomology seminar, environmental justice workshops, California Agricultural Aircraft Association, and the California Soil and Plant Meeting. DPR is always looking to increase outreach activities.

#### ***Committee Comment***

None to report.

#### ***Public Comment***

Mike Zeiss asked why SWPP uses the UC Davis Granite Canyon lab when the Air Monitoring program and food safety program both use CDFA labs. Pedro Lima replied that SWPP uses the UC Davis Granite Canyon Lab for toxicity testing and the CDFA lab for pesticide analyses.

Mike Zeiss asked what analysis or modeling the Environmental Monitoring Branch carries out to identify a connection between pesticide detections in surface water in one year and detections in groundwater in the later years. Anson Main replied that the environmental monitoring programs work closely with each other but are structured differently in terms of overall mandates and would look at this information separately. Anson added that some of the pesticides that impact or can potentially impact surface water may not necessarily impact groundwater in the same way, due to various physical chemical properties that may or may not indicate potential for leaching and contamination of groundwater. Nan Singhasemanon added that it may take pesticides many years to appear in groundwater if they do have the chemical properties and use patterns to actually migrate into the groundwater aquifers. Nan clarified that modeling could help determine whether this migration is happening, but the modeling doesn't necessarily need to rely on surface water monitoring data to understand if there will be movement or not.

John Bottorff asked if DPR has data on violations, fines assessed and collected, and repeat offenders; how regulations are enforced; and whether there are metrics showing the effectiveness of the enforcement efforts. Anson Main replied that such data would exist, but would fall under the purview of the Enforcement branch, rather than the Surface Water program. For more information on DPR's [Enforcement Branch](#) and actions, please visit [cdpr.ca.gov/docs/mill/actions/enfact.htm](http://cdpr.ca.gov/docs/mill/actions/enfact.htm)

John Bottorff asked if the slides from this presentation are available. Brittanie Clendenin replied that slides from the meeting are available by emailing [PRECcomments@cdpr.ca.gov](mailto:PRECcomments@cdpr.ca.gov)

##### **5. Agenda Items for Next Meeting**

The next meeting is scheduled for May 19, 2023 at 10:00 a.m. This meeting will be held virtually on the Zoom platform and broadcast live on the [CalEPA webcast page](#). [video.calepa.ca.gov/](http://video.calepa.ca.gov/)

##### **6. Adjourn**