State actions to evaluate and reduce pesticide-related risks: 10-year review and current progress

The Department of Pesticide Regulation evaluates all pesticides for human health and environmental risks through comprehensive scientific review before a pesticide can be sold or used in California. Following evaluation and registration to allow pesticide use in California, DPR continuously evaluates pesticides for risks and impacts to human health and the environment by monitoring the air, groundwater, and surface water for pesticides, reviewing reported pesticide-related illnesses, conducting comprehensive evaluation of pesticide impacts for all populations (workers, kids, and sensitive groups) and the environment, and overseeing statewide pesticide use enforcement. Enforcement is carried out at the local level by County Agriculture Commissioners.

Data-driven tools to quantify or assess pesticide related risks to people or the environment include:

- **Risk Assessments**: A risk assessment is a scientific process that evaluates the nature and likelihood of adverse pesticidal effects by comprehensively assessing potential exposure pathways and risks to specific populations under defined exposure conditions. DPR maintains broad discretion to initiate a risk assessment at any time based on a variety of factors, including potential risk to public health or the environment, amount of potential emissions, application method, and ambient air concentrations in a community.

- **Reevaluations:** As outlined in California Code of Regulations, Title 3, Section 6220, reevaluation is a specific process for evaluating and mitigating risks that includes scientific and legal requirements, including public notice and a public comment period, and may include a data request(s). Reevaluations are subject to requirements of the California Environmental Quality Act (CEQA). DPR conducts pesticide reevaluations where, after investigating reported episodes or other information, the department determines, based on reported information, that “a pesticide may have caused, or is likely to cause, a significant adverse impact.” In some cases, a risk assessment may be conducted to complete a reevaluation.

Below is a summary of the last decade of progress to protect people and the environment from pesticide risks and impacts

Evaluation and mitigation actions since 2014:

The following pesticide active ingredients have been evaluated by the department and actions taken have addressed risks identified through DPR’s continuous evaluation process or a specific risk assessment or reevaluation.

13 completed active ingredient human health risk assessments:

- 1,3-Dichloropropene (1,3-D)
- AITC
- Carbaryl
- Chloropicrin
- Chlorothalonil
- Chlorpyrifos
- Dicrotophos
- Fipronil
- MITC
- Phosphine
- Propanil
- Propargite
- Sulfuryl fluoride

5 completed reevaluations:

- Chlorpyrifos
- Copper antifouling paints
- Neonicotinoids: clothianidin, dinotefuran, imidacloprid, and thiamethoxam
- Pyrethroids (beta-cyfluthrin, bifenthrin, bioallethrin, cyfluthrin, cypermethrin, d-allethrin, deltamethrin, esfenvalerate, fenpropathrin, gamma-cyhalothrin, imiprothrin, lambda-cyhalothrin, permethrin, phenothrin, prallethrin, resmethrin, (s)-cypermethrin, tau-fluvalinate, tetramethrin, tralomethrin)
- Sulfuryl fluoride

17 completed regulatory actions:

- *Active Ingredients: action*
  - **1,3-D**: Restricted use to protect non-occupational bystanders
  - Brodifacoum, bromadiolone, difenacoum, and difethialone: Designated as restricted materials
  - **Carbaryl:** Expanded the restricted material designation
  - **Carbon monoxide pest control devices:** Added protections for workers, bystanders, and non-target organisms
  - **Chlorpyrifos:** Designated as a restricted material; designated as Toxic Air Contaminant; all product registrations other than granular withdrawn and use no longer allowed in California
  - **Copper-based antifouling paint and coating products**: Capped leach rate
  - **Neonicotinoids**: Restricted agricultural uses to protect pollinators
  - **Organophosphates and carbamates (Types I and II):** Improved Medical Supervision Program for monitoring and reporting of baseline cholinesterase for handlers

- *Other Completed Regulatory Actions*
  - Increased the fine range for administrative civil penalties levied by county agricultural commissioners

- Prohibited use of pesticides near school sites during school hours and required annual notification of anticipated applications
- Improved field fumigation posting requirements for clarity, enforceability, and consistency
- Revised field fumigation methods to lower emissions of Volatile Organic Compounds in Non-Attainment Areas
- Improved filtering facepiece definition for clarity and increased compliance
- Established closed mixing system and personal protective equipment requirements based on tiered mitigation scheme
- Clarified PPE requirements for protective eyewear and hand protection
- Updated notification procedures for pesticide applicators who intend to apply pesticides labeled toxic to bees and for apiary operators
- Updated Groundwater Protection List and Groundwater Protection Areas

9 mitigation measures for pesticide active ingredients effected through label changes, permit conditions or other non-regulatory actions:

- 1,3-D (permit conditions)
- Acephate (label changes)
- Air blast sprayer exposures (focused training and outreach)
- Fenpyroximate (product reformulation)
- Fipronil (label changes to address urban surface water concerns)
- Chloropicrin (permit conditions and label changes)
- Chlorpyrifos (cancellation)
- MITC (permit conditions)
- Sulfuryl fluoride (label changes residential re-entry)

U.S. EPA Actions Impacting California Pesticide Use

DPR monitors actions taken at the federal level to determine if these actions mitigate identified risks associated with pesticides registered in California. Leveraging the efforts of U.S. EPA to mitigate pesticide risks allows DPR to focus resources on addressing other priority pesticide risks.

Since 2014, risks associated with the following pesticides have been mitigated at the federal level:

- Amitraz
- Azinphos-methyl
- Benomyl
- Carbofuran
- Cyanazine
- Cycloate
- DCPA (Chlorthal-dimethyl or Dacthal)
- N,N-Diethyl-meta-toluamide (DEET)
- Diquat dibromide
- Endosulfan
- EPTC

- Ethoprop
- Ethyl parathion
- Fenoxaprop-ethyl
- Hydramethylnon
- Methamidophos
- Methidathion
- Methyl bromide
- Methyl iodide
- Methyl parathion
- Mevinphos
- MITC
- Molinate
- Ortho-phenylphenol and sodium ortho-phenylphenate
- Pentachlorophenol
- Propetamphos
- Propoxur
- Sulfuryl fluoride
- Thiabendazole

DPR evaluation and mitigation actions in progress:

The following risk assessments and reevaluations are currently in progress at DPR as of November 2024.

7 active ingredient human health risk assessments in progress:

- Acetamiprid
- Clothianidin
- Chlorothalonil
- Dinotefuran
- Imidacloprid
- Linuron
- Thiamethoxam

6 reevaluations in progress:

- Chloropicrin
- Cyfluthrin
- Diphacinone
- Non-agricultural uses of neonicotinoids (acetamiprid, clothianidin, dinotefuran, imidacloprid, and thiamethoxam)
- Paraquat
- Second-Generation Anticoagulant Rodenticides (SGARs: brodifacoum, bromadiolone, difenacoum, and difethialone)

4 regulatory actions in progress:

- 1,3-D (occupational bystanders) and 1,3-D (occupational handlers)
- Decontamination station and eye wash (ag and non-ag eye exposures)

- Rodenticides (brodifacoum, diphacinone, bromadiolone, difenacoum, and difethialone)
- Updating criteria for groundwater protection list

5 active mitigation developments (including focused monitoring) for pesticide active ingredients:

- Carbaryl (occupational)
- Fipronil
- Phosphine
- Propanil
- Propargite