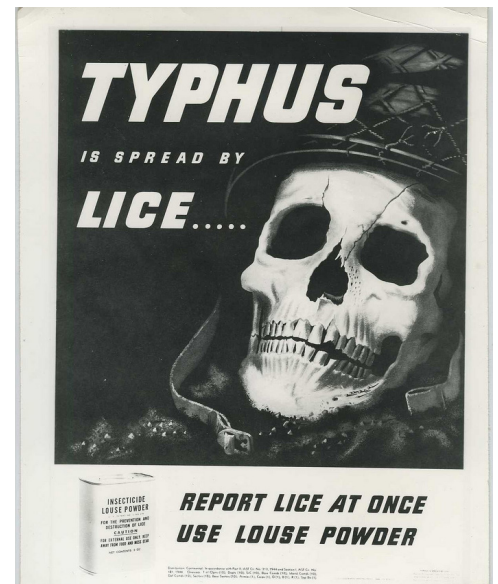
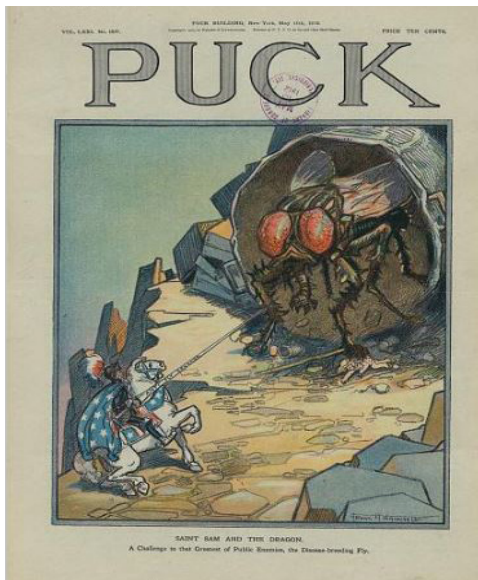


# California Department of Pesticide Regulation



## *A Brief History of Pesticide Regulation*

February 2017





# Beginnings...



**1200 B.C.**

Egyptians use hemlock and aconite for pest control.

**1000 B.C.**

Homer describes how Odysseus “fumigated the hall, house and court with burning sulfur to control pests.” Pliny the Elder records pest control practices of the past three centuries.

**100 A.D.**

Romans use hellebore to kill rodents and insects.

**800 A.D.**

Chinese mix arsenic with water to control insects.

**1493**

Philippus Aureolus Theophrastus Bombastus von Hohenheimborn is born. Later taking the name Paracelsus, the Swiss-German philosopher, physician and alchemist becomes the “father” of modern toxicology. Among his observations: “The right dose differentiates a poison from a remedy.”

**1649**

Rotenone, extracted from many types of plants, is used as a pesticide.

**1669**

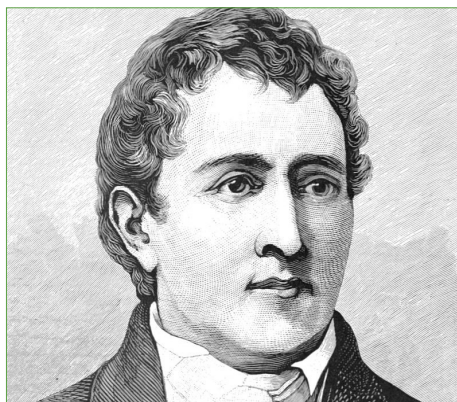
Arsenic is added to honey to create ant bait. It’s regarded as the first stomach poison.

**1690**

Tobacco is used to control pear insects. (Considered the first contact poison).

**1773**

Tobacco (nicotine) is heated to control insects. It’s the first fumigant.



**1775**

Swedish chemist Carl Scheele develops Paris green, an arsenic-based paint pigment. The highly toxic substance was later widely used to kill rats in Paris’ sewers, giving it its name.



**1800**

First recorded use of “Persian louse power”— pyrethrum.



**1858**

Pyrethrum first used in the United States. “Pyrethrum Soap” was patented in 1884 by Austrian inventor Johann Zacherl, who made a fortune selling chrysanthemum-based insecticides.

**1882**

Lime and copper sulfate are used to control downy mildew on grapes.

**1890**

Mercury dust used as a seed treatment.

# Century of development...

**1901**

California legislators pass the state’s first pesticide law, “An Act to prevent fraud in the sale of Paris green used as an insecticide.” It required dealers to submit product samples to the University of California agricultural experiment station with documentation describing brand name, pounds in each package, name and address of manufacturer, and percentage of Paris green.

**1910**

Congress passes the Federal Insecticide Act, a labeling law focused on protecting consumers from ineffective pesticides and deceptive labeling.

**1911**

California enacts the Insecticide and Fungicide Act, which parallels the federal law. A decade later, it is supplanted by the Economic Poison Act.



### 1912

p-dichlorobenzene used as a moth fumigant.

### 1919

The Legislature creates the California Department of Agriculture (CDA) and gives it duties previously handled by several state boards and commissioners, including those overseeing horticulture, dairy farms, viticulture, cattle protection, produce marketing, and weights and measures.

### 1921

- California Economic Poison Act becomes law.
- State legislation brought county horticultural commissioners (later called county agricultural commissioners) under CDA's "supervision and control." Commissioners had no statutory role in overseeing pesticide use. Their assigned duties included "protection of [agriculture and preventing] the introduction of insects and diseases, or animals, injurious to fruit, fruit trees, vines, bushes or vegetables." Another duty was ensuring that fruits and vegetables met minimum quality and labeling standards.

### 1925

An appellate court upholds CDA's authority to deny or cancel registration of pesticides from a manufacturer "attempting to sell fraudulent or worthless insecticides," overturning a lower court that had declared the 1921 Economic Poison Act unconstitutional (*Gregory v. Hecke*).

### 1926

Responding to public concern over arsenic residues, CDA begins analyzing fresh fruits and vegetables for pesticides. This was the origin of California's extensive pesticide-residue monitoring program for fresh fruits and vegetables.

### 1927

- Chemical Spray Residue Act passes, making it illegal to pack, ship or sell fruits or vegetables with harmful pesticide residues.



### 1929

- n-butyl carbitol thiocyanate is first used commercially as a contact insecticide.
- An amendment to the Economic Poisons Act gives the CDA authority to require "practical demonstration as may be necessary" to determine that pesticide products are effective and that they are not "generally detrimental or seriously injurious to vegetation."

### 1931

First organic sulfur fungicide introduced.

### 1932

In France, methyl bromide first used.

### 1934

- The Economic Poison Act is amended to require pesticides be labeled with "name and percentage of every ingredient ... intended for use on or sold for application to any food crop in such a way as to leave a residue declared deleterious to health." Deleterious residues were defined as residues of arsenic, fluorine, and lead, the only chemicals for which the federal government had tolerances established.
- California started early pesticide use data collection for aerial applicators. It stopped in 1956-57.

### 1935

- Number of pesticide products registered in California: 3,500.
- Department given authority to adopt regulations, but enforcement authority remains at county level.



### 1936

Pentachlorophenol is introduced as a wood preservative.

### 1938

First organophosphate insecticide, TEPP, introduced.



### 1939

Swiss chemist Paul Hermann Müller discovered the insecticidal action of DDT. The first cyclodine insecticide, it was used in the second half of World War II to control malaria and typhus among civilians and troops.



## 1942

First hormone (phenoxy) herbicide 2,4-D created.

## 1945

- Number of pesticide products registered in California: about 7,000.
- Chlordane introduced.
- 2,4,5-T herbicide.

## 1947

- Toxaphene is created. By the 1970s, it becomes the most-heavily used insecticide in U.S. history.
- The Federal Insecticide, Rodenticide, and Fungicide Act becomes law.



## 1949

- Allethrin, the first synthetic pyrethroid, is introduced
- The Spray Residue Act is amended to expand the definition of potentially harmful spray residues to encompass "any pesticide or constituent thereof which on produce is harmful to human health in quantities greater than a maximum amount or permissible tolerances established by rules and regulations of the director."

## 1954

- Congress amends the Food, Drug, and Cosmetic Act (FDCA) to prohibit registration of any food-use pesticide that left residues unless the FDA issued a tolerance that sanctioned "safe" residue levels.
- Pesticide use reporting in the state is strengthened when state regulators ask for reports on ground-application acreage.

## 1956

Number of pesticide products registered in California: about 12,000.

## 1957

U.S. Forest Service and Department of Agriculture prohibit spraying of DDT in protective strips around aquatic areas on lands under its jurisdiction.

## 1958

- Atrazine and paraquat are introduced.
- Cranberries become the first U.S. crop to be embargoed due to excessive residues of aminotriazole.
- USDA began to phase out its use of DDT in the federal-state control programs for gypsy moth and spruce budworm.
- An amendment to the FDCA, commonly referred to as the Delaney Clause, prohibits the use of any food additive shown to cause cancer in humans or experimental animals. Pesticide residue concentrations in processed foods at levels higher than those found in the raw agricultural commodity (e.g., whole tomatoes) were considered food additives and were thereby subject to the provisions of the Delaney Clause. However, pesticides that did not concentrate in processed foods were not considered additives and thus were not subject to the Delaney Clause.

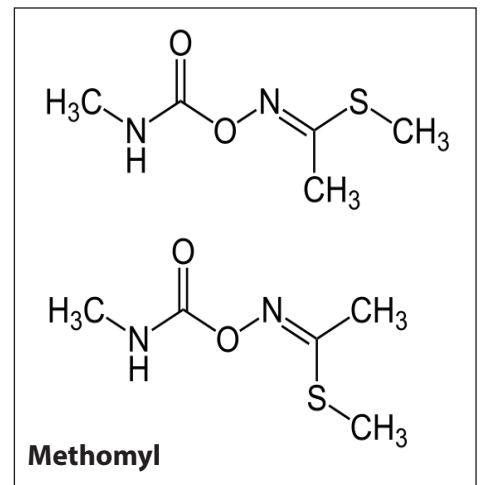
## 1960

Trefam and bacillus thuringiensis are introduced.



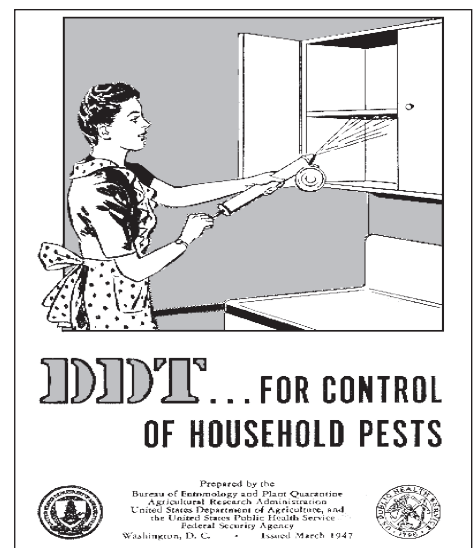
## 1962

*Silent Spring* by Rachel Carson published.



## 1966-67

- Systemics carboxin, methomyl and benomyl introduced.
- California state legislation in 1967 gives the agriculture department clear authority to require registration and oversee the use of adjuvants, like emulsifiers, spreaders, wetting agents and other efficacy enhancers.



## 1969

- Arizona moratorium on DDT.
- The Committee on Persistent Pesticides, Division of Biology and Agriculture, National Research Council, to the Agriculture Department, as well as the Mrak Commission, recommend phasing out DDT over a limited period of time.
- Congress passes the National Environmental Policy Act (NEPA), which requires federal agencies to consider environmental matters before undertaking new actions.



**1970**

- Congress creates the U.S. Environmental Protection Agency (U.S. EPA) to bring cohesion to expanding federal environmental programs. Both the USDA pesticide registration functions and U.S. Food and Drug Administration's tolerance-setting authority were transferred to U.S. EPA.
- The California Environmental Quality Act (CEQA), passed. It requires state and local agencies to follow a protocol of analysis and public disclosure of environmental impacts of proposed projects.
- Pesticide use reporting by farmers and pest control operators starts, per 1969 legislation.



**1971**

- California adopts the nation's first worker reentry intervals (REIs) for 16 organophosphate chemicals commonly used in vineyards and orchards. The REIs protect farmworkers entering areas following pesticide applications.

**1972**

- Agricultural use of DDT is banned in the U.S.
- Congress overhauls FIFRA to strengthen enforcement and shift its emphasis from labeling and efficacy to protection of health and the environment. U.S. EPA was given exclusive authority over product labeling (preempting states from requiring their own label language). The law established national standards for certifying restricted-pesticide applicators. It also prohibited states from registering pesticides not registered federally.
- The CDA's name is changed to the California Department of Food and Agriculture (CDFA) and the "Agricultural Code" to "Food and Agricultural Code." The changes recognized a broader mandate not only to promote and protect agriculture but also protect public health, safety and welfare.
- A fee on pesticide sales is enacted (set then at \$0.008 per dollar of pesticide sales) to help support the CDFA's pesticide regulatory program.
- State legislation gave the CDFA primary responsibility for ensuring "the safe use of pesticides and for safe working conditions for farmworkers, pest control applicators, and other persons handling, storing or applying pesticides, or working in and about pesticide-treated areas." CDFA was directed to adopt regulations to carry out the mandate, including rules on pesticide handling, pesticide storage, protective clothing, worker entry into treated fields and field posting. The legislation makes enforcement of the rules the joint responsibility of CDFA and the state's county agricultural commissioners (CACs).

**1974**

Following California's 1971 lead, the U.S. Environmental Protection Agency establishes worker reentry intervals.

**1975**

First insect growth regulator, methoprene, registered in the U.S.



**1978**

- State Assembly Bill 3765 requires the CDFA to establish rules and regulations that could be certified by the Secretary of the Resources Agency as the functional equivalent of an Environmental Impact Report or negative declaration. This certification means the agency managing the program does not have to prepare an EIR or negative declaration on each activity it approves. However, certified programs must provide other substitute documents to ensure an environmental review and provide for consultation with other agencies, and public notice and comment.
- First applicators certified.
- First pheromone registered, gossyplure.

**1979**

- The CDFA pesticide regulatory program was certified by the California Resources Agency as functionally equivalent to the EIR requirements of CEQA. Any substantial changes in the certified regulatory program must be submitted to the Secretary of the Resources Agency for review. The Secretary has the authority to decide if the change alters the program so that it no longer meets the qualification for certification.
- Herbicide 2,4,5-T (Silvex) is banned.

**1981**

Superfund law passed.



**1983**

California Toxic Air Contaminant Act (Assembly Bill 1807) is passed. It gives state agencies clear authority to control airborne toxins.

**1984**

- California Birth Defect Prevention Act (Senate Bill 950) is passed. It requires the state to collect chronic health effects studies on all pesticides.
- The Legislature passes Food & Agricultural Code (Section 11501.1) establishing that state law preempts local city or county regulation in response to a California Supreme Court decision that found that the Legislature had not yet provided that preemption.

**1985**

California Pesticide Contamination Prevention Act (Assembly Bill 2021) passes. It focuses on mitigating the effects of pesticides in ground water and requires the agriculture department to set up a database of wells sampled for pesticides, to collect data on the physical properties of pesticides that might lead to ground water contamination, and to control the use of and monitor for these pesticides.

**1986**

- California Safe Drinking Water Act, Prop. 65, is passed by voters.
- Hazard Communication Standard created by OSHA.
- U.S. Emergency Planning and Community Right-to-Know Act passed.

**1989**

The Food Safety Act of 1989 gives the CDFA, and later the Department of Pesticide Regulation, clear statutory authority to require full reporting of agricultural pesticide use.

**1990**

Regulations for full use reporting adopted.

**1991**

CalEPA is formed. The CDFA's pesticide programs are transferred to the Department of Pesticide Regulation (DPR).

**1992**

U.S. Environmental Protection Agency issues a new federal Worker Protection Standard (WPS), which became final in 1995. This federal regulation was designed to reduce the risk of pesticide poisonings and injuries among pesticide handlers and other agricultural workers exposed to pesticides. The federal standard drew on California's worker safety program as a model, there were differences between the two. In 1997, after DPR made conforming changes in its regulations, U.S. EPA approved the department's request for equivalency of California's pesticide safety program.

**1993**

The Legislature passes Assembly Bill 770 to ensure that all people or businesses that were the first sellers of agricultural pesticides into California – whether a pesticide registrant, broker or dealer – pay the required assessment on their sales. The bill also created a new license category for agricultural pesticide brokers, requiring them to have a DPR license to conduct business with or within California.

**1994**

DPR creates its IPM Innovator Award program which emphasizes sharing successful production strategies that favor least hazardous pest control (Integrated Pest Management). As of 2015, 149 IPM Innovator Awards had been given out. In 2016, the award was renamed the IPM Achievement Award.

**1996**

- The federal Food Quality Protection Act passes. It removes pesticide use from the Delaney Clause.
- California legislation clarifies but does not significantly alter the Department of Pesticide Regulation's preemption authority. The legislation requires the department to notify any local agency that proposes an ordinance governing the sale, use or handling of pesticides whenever the department determines state law preempts the ordinance.
- DPR establishes its "Innovations in Pest Management" program of small grants. In its first year, DPR awards more than \$600,000 in small grants to projects to encourage nontraditional, least-toxic solutions to agricultural and urban pest problems.

**1997**

DPR creates its IPM Alliance Grant Program. It helps fund projects that increase implementation and adoption of Integrated Pest Management practices.

## 2000

- State Senate Bill 1970 gives DPR authority to levy civil penalties for serious pesticide use violations or those committed in multiple jurisdictions.
- The state's Healthy Schools Act is adopted. It mandates a role for DPR to work with schools to implement integrated pest management (IPM), that encourages effective pest control with less risk of harm to people and the environment. The HSA required DPR to develop a model program guidebook, resource information, and training program. In 2007, amendments to the HSA expanded DPR's responsibility to include working with daycare centers.

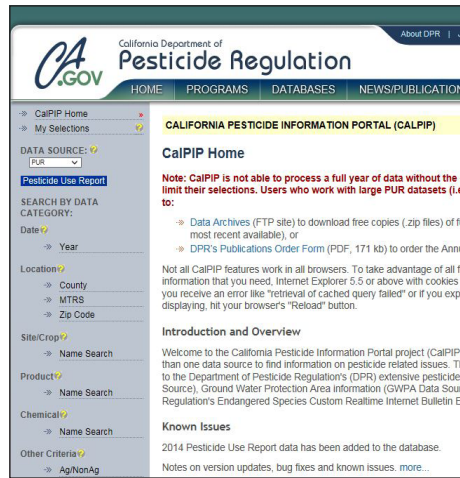


## 2001

DPR adopts regulations placing restrictions on use of the field fumigant methyl bromide to protect pesticide workers and those near applications.

## 2002

- State Assembly Bill 947 increases the fines DPR and County Agricultural Commissioners can impose to \$5,000 per violation.
- DPR suspends its grant programs due to state budget constraints. DPR had given out \$7.2 million in Innovation and Alliance grants previously.



## 2003

- DPR becomes almost entirely funded by special funds instead of the state general fund.
- DPR launches the Web-based California Pesticide Information Portal—CalPIP— which provides access to pesticide use data that must be reported by agricultural and structural applicators.

## 2005

- State Senate Bill 391 becomes law, allowing DPR and CACs to impose penalties for each person exposed as a result of a violation.
- Assembly Bill 1011 expands broker licensing to include first sellers of nonagricultural pesticides.
- DPR introduces an online tool that gives pesticide users and county agricultural commissioners customized information to protect California's 300-plus endangered and threatened species. The Pesticide Regulation Endangered Species Custom Real-time Internet Bulletin Engine (PRESCRIBE) allows users to check for use-limitations intended to protect sensitive species.

## 2006

The law passed in 2000 giving DPR authority to levy civil penalties for serious pesticide use violations or those committed in multiple jurisdictions automatically expires (sunsets).

## 2007

The state Legislature reinstates Alliance Grant funding. By 2015, DPR had awarded another \$3.4 million in Alliance Grants.

## 2008

DPR adopts regulations that restrict fumigation methods in areas of the state most impacted by poor air quality.



## 2009

DPR introduces a Web-based search engine of DPR's database of pesticide-related illnesses and injuries. California Pesticide Illness Query (CalPIQ) includes illness and injury data since 1992.



## 2010

DPR adopts regulations to limit the risks to workers and bystanders from methyl bromide use that includes a limit on the amount that could be used monthly in any township.





## 2011

- California counties begin using a new standardized permitting system called CalAgPermits.
- DPR begins testing air for pesticides at monitoring stations in Ripon, Shafter and Salinas. By 2017, the Air Monitoring Network grew to eight stations, monitored by DPR and the state Air Resources Board.



## 2012

- DPR adopts regulations to control emissions by placing restrictions on certain nonfumigant pesticides in the San Joaquin Valley during the months when air quality is typically worst.
- DPR adopts regulations that identify 17 pyrethroid pesticides with a high potential to contaminate surface water used in outdoor nonagricultural (structural, residential, institutional, and industrial) settings and that require users to take steps to minimize the potential for such contamination.
- The state Legislature expands DPR's grant program to include funding for research projects that develop effective alternatives to fumigants and other pesticides that pose undue risks to public health and the environment and encourages collaborations with the industry to identify realistic solutions to the emerging impacts of regulations especially to the use of fumigants in the field. As of 2016, DPR had awarded \$4.26 million in research grants.



## 2014

- DPR adopts regulations to limit the use of certain rodenticides (second generation anticoagulants) that create a hazard to wildlife who prey on the target rodents impacted by the product.
- Further amendments to the Healthy Schools Act required any person applying pesticides at a school-site to be trained annually. DPR was tasked to develop courses to meet this requirement.
- DPR hosts a "Soil Symposium" bringing together California's most innovative farming operations, scientific experts and creative biopesticide firms.



## 2015

- DPR develops measures restricting the use of the field fumigant chloropicrin to protect the public.
- DPR improves regulations requiring specific types of protective equipment be used by workers using pesticides. The regulations include requiring protective eyewear and gloves that meet nationally recognized standards.
- DPR and the California Agricultural Commissioners and Sealers Association begin development of the computerized California Pesticide Enforcement Activities Tracking System (CalPEATS), which will standardize pesticide enforcement activities throughout California.
- Added regulations adopted to better protect workers mixing pesticides.
- DPR hosts 'Bee Aware' symposium on pollinator protection for farmers and beekeepers.



## 2016

- DPR begins providing on-line IPM training modules for school and daycare employees, volunteers, and contractors.
- DPR introduces proposed regulations that would limit many types of agricultural pesticide applications near schools at certain times and distances.
- Number of registered pesticides: 13,600.

Photo credits: Austrian National Library, California Department of Food and Agriculture, DPR staff, Library of Congress, Louvre Museum, Musée des Beaux-Arts, University of California, UCANR, U.S. National Archives.

Helpful links: A Guide to Pesticide Regulation, 2017 Update: <http://www.cdpr.ca.gov/docs/pressrls/dprguide.htm>