

Pesticide Use Reporting

California has had limited pesticide use reporting since at least 1950. County agricultural commissioners (CACs) required agricultural pest control operators to send monthly reports. County requirements varied but many included a statement for each application showing the grower's name, location, treatment date, crop, acres or other units treated, target pest, kind of pesticide used, and the strength and amount of the pesticide applied. Only statistics on aerial pesticide applications were forwarded to the state for tabulation. In 1955, state regulators asked for reports on ground application acreage but dropped requirements for detailed reporting of pesticides used and commodities treated.

In 1970, the regulations were amended to require that farmers report all applications of restricted pesticides and that pest control operators report all pesticides used, whether restricted or nonrestricted. Both kinds of reports had to include the pesticide applied, date and location (section, township and range) of the application, and the crop if the application was in agriculture. The reports were filed with the CAC, who forwarded the data to the state where it was entered into a database and summarized in annual publications.

The Food Safety Act of 1989 (Chapter 1200¹, AB 2161) gave the Department of Pesticide Regulation (DPR) clear statutory authority to require full reporting of pesticide use. That year, the department adopted regulations and full use reporting began in 1990.

The first years of full use reporting nearly overwhelmed the department's capacity to process data. Use reports were on paper and staff had to hand-enter data representing more than a million records each year. DPR began almost immediately to search for ways to automate reporting from pesticide users to CACs and, in turn, from the counties to DPR. However, it was difficult to find an approach that suited the diversity of use reporting and differing budget resources among the counties. Starting in 1991, various automated programs were developed and modified by DPR and the CACs. Meanwhile, technological progress and increasing use of the Internet by businesses fed expectations for more Web-based functionality for pesticide use reporting. In the late 2000s, the counties worked together to develop a new standardized system, called CalAgPermits, expected to be in use in all counties by early 2012. It will help CACs in issuing restricted materials permits and provide an automated platform for validating and relaying pesticide use reports electronically to DPR. It will accept pesticide use reports electronically from subscriber-based firms and, in the future, pesticide use reporting directly via the Web.

How Use Reporting Works

California's pesticide use reporting program is the most comprehensive of its kind. DPR yearly collects and processes more than 2.5 million records of pesticide applications. (A single application creates more than one record if there are multiple chemicals applied.) California was the first state to require full reporting of all pesticide use in agriculture.

¹ Appendix A lists this and other statutes noted in this chapter and shows the related code section it amended or added. Statutes and related code sections deleted or superseded by later legislation have been omitted.



The California agricultural chemicals laws are practical and effective. They serve those influenced; and each manufacturer, user, and official is doing his indispensable part.

— 1940 department annual report

Agricultural and Non-Agricultural Pesticide Use

Many pesticide licensing, sales and use requirements are tied to California's definition of agricultural and non-agricultural use pest control. For example, to properly use a pesticide one must fully understand its label and pesticide labels often differentiate between legal agricultural, industrial or institutional uses. Another example is the 1985 Pesticide Contamination Prevention Act that focused on pesticides labeled for agricultural use.

The law (Food and Agricultural Code Section 11408) identifies agricultural use as all use except that specifically identified as non-agricultural use, which is specified as:

- *Home* — Use in or in the immediate environment of a household.
- *Industrial* — Use in or on property necessary to operate factories, processing plants, packinghouses or similar facilities, or use for or in a manufacturing, mining or chemical process. In California, industrial use does not include use on rights-of-way. Post-harvest commodity fumigations at facilities or on trucks, vans or railcars are normally industrial use.
- *Institutional* — Use in or on property necessary to operate buildings such as hospitals, office buildings, libraries, auditoriums or schools. When a licensed structural pest control operator treats these buildings, it is structural use. Landscaping of walkways, parking lots

and other areas bordering these buildings is institutional. Landscaping of larger, more independent areas is not considered institutional.

- *Structural* — Use by licensed structural pest control operators within the scope of their licenses.
 - *Vector control* — Use by certain vector control (mosquito abatement) districts.
 - *Veterinarian* — Use according to a written prescription of a licensed veterinarian.
- Agricultural use of pesticides includes:
- *Production agricultural use* — Any use to produce a plant or animal agricultural product (food, feed, fiber, ornamental or forest) that will be distributed in the channels of trade. (While production agricultural use includes various agricultural products, some requirements – most notably in the worker safety and use reporting – apply only to plant product production.)
 - *Nonproduction agricultural use* includes areas such as watersheds, rights-of-way and landscaped areas (such as golf courses, parks, recreation areas and cemeteries) not covered by the definitions of home and institutional.
- There are some pesticide products labeled for dual-use, that is, they have both agricultural and non-agricultural uses.

The reporting requirements apply to a range of uses partly due to the California legal definition of agricultural use. (See separate article in this chapter on what constitutes agricultural use.) With implementation of full use reporting in 1990, the following pesticide uses are required to be reported to the CAC who, in turn, reports the data to DPR:

- Production of any agricultural commodity except livestock.
- Treatment of postharvest agricultural commodities.
- Landscape maintenance in parks, golf courses, cemeteries, and similar sites defined in California code as agricultural use.
- Roadside and railroad rights-of-way.
- Poultry and fish production.
- Application of a restricted material.
- Application of a pesticide listed in regulation as having the potential to pollute ground water when used outdoors in industrial and institutional settings.
- Application by licensed pest control operators, which includes agricultural and structural applicators and professional landscape gardeners.

The primary exceptions to the use reporting requirements are consumer home-and-garden use and most industrial and institutional uses.

Operator and site identification numbers. An operator identification number (OIN), sometimes called a “grower ID,” is issued by CACs to property operators. The number is needed to report pesticide use and to buy agricultural- or restricted-use pesticides. Pest control professionals do not have to get operator ID numbers. The operator of the property is also not required to get an OIN when a licensed pest control operator buys and applies these pesticides.

A site identification code must be assigned for each location or field where pesticides will be used for production of an agricultural commodity. This alphanumeric code is also recorded on any restricted material permit the grower gets for the location.

What must be reported. Reports of nonagricultural pesticide use are monthly summaries that include pesticide product name and manufacturer, the product registration number, amount used, number of applications, the kind of site treated (for example, roadside, structure), the month of application and county.

Agricultural pesticide use reports also must be sent monthly to the CAC. They are more detailed and include:

- Date and time of application.
- Geographic location including the section, township, range, and base line/meridian.
- Operator identification number.
- Operator name and address.
- Field location and site identification number.
- Commodity, crop or site treated.
- Acres or units planted and treated.
- Whether the application was by air, ground or other means.
- For field fumigations in ozone nonattainment areas, more details on fumigation method (for example, shallow shank injection with a tarp). This is to allow the department to estimate pesticide VOC emissions. (See Chapter 12 for more information on the VOC reduction program.)
- Amount of product applied with its name and U.S. Environmental Protection Agency (U.S. EPA) registration number or, if the product was an adjuvant, its California registration number. (The U.S. EPA does not require registration of adjuvants.)

The term “economic poison” has long been used with regard to materials for the control of pests. However, many of these materials, such as dusting sulfur and petroleum spray oils, are not poisons in the usual sense and the more descriptive term “pesticide” is coming into common use to describe this type of chemical. It includes insecticides, fungicides, miticides, herbicides, rodenticides, bacteriacides, parasiticides, nematocides, molluscacides, and other materials for the control of pests in agriculture, industry, households, and other environments.

— 1950 department annual report



Representations must be restricted to facts.

— 1936 department annual report

Improving Accuracy

The use report data are checked for accuracy at several steps in the process. If the pesticide is a restricted material, after a record has been entered into the county database, the computer compares the pesticides reported used to the grower's restricted materials permit to ensure that it is listed.

As the use reports are loaded into DPR's database, more than 50 different validity checks are made against the data. In particular, the U.S. EPA or California registration number is verified and a check is made to confirm the commodity reported is an acceptable use of the pesticide product. The database contains some products that are no longer registered since continued use of those products is often allowed while existing stocks remain with end-users. Records with errors are returned to the county for resolution.

In the late 1990s, DPR developed a statistical method to detect probable errors in the data fields for the acres treated and the pounds of pesticide used. If a reported rate of use (pounds of pesticide per area treated) is so large it was probably an error, the rate is replaced with an estimated rate equal to the median rate of all applications of the pesticide product on the same crop or site. Since the error could have been in the pounds reported or the area or unit treated, the value that is most unusual is replaced with an estimate. Although less than one percent of the reports are flagged as this type of error, some are so large that if included they would significantly affect total pounds applied of the pesticide. (For example, in 2007 an application of the insecticide imidacloprid was inaccurately reported as 108,000 pounds on one acre of cabbage. The median rate of imidacloprid use in 2007 was 0.05 pounds an acre. These types of errors, while rare, can occur.)

Improving Access to the Data

The annual summary reports present only a fraction of the use reporting database (typically a 450-megabyte file for each year's data). In the late 1990s, DPR took steps to improve public access to the data and present it in a more meaningful context. Summaries of the statewide data indexed by chemical and by commodity, previously available on paper and compact disk, were posted on DPR's Web site. Summaries of use in each of the state's 58 counties, previously available only on request, were also posted online. In 1999, DPR made the entire database since 1974 available on CDs and in the early 2000s, zipped files of the database were posted online for downloading.

DPR also began examining trends in pesticide use, starting with the 1996 data, analyzing critical crops, pest problems and trends in pounds used, number of applications and acres treated. Each year, the pesticide use report summary charts use of pesticides over several years in specific categories:

- Reproductive toxins.
- Carcinogens.
- Insecticide organophosphate and carbamate chemicals.
- Chemicals classified by DPR as ground water contaminants.
- Chemicals listed by DPR as toxic air contaminants.
- Fumigants.
- Oil pesticides derived from petroleum distillation (some may be on the state's Proposition 65 list of chemicals "known to cause cancer" but most serve as alternatives to high-toxicity pesticides).
- Biopesticides (including microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds that are not toxic to the target pest, such as pheromones).

DPR scientists review changes in pesticide use for about a dozen crops selected based on pesticide use or treated acreage. To compile this information, staff reviews publications and conducts phone interviews with pest control advisers, growers,

researchers, commodity association representatives, and University of California (UC) Cooperative Extension farm advisers and specialists. Based on their knowledge of pesticides, California agriculture, pests and pest management practices, staff formulates conclusions about possible reasons for year-to-year changes in pesticide use.

Pesticide use trend analyses can help agencies understand where efforts to promote reduced-risk pest management strategies are succeeding or failing. Information on long-term trends also helps researchers better identify emerging challenges and direct research attention to finding solutions.

In 2003, DPR launched the Web-based California Pesticide Information Portal (CalPIP) database to increase public access to the nation's most extensive source of pesticide use information. CalPIP provides pesticide use statistics, including date, site or crop treated, pounds used, acres treated, pesticide product name, chemical name (active ingredient), application pattern (ground, air or other), county, ZIP code, and location to a one-square-mile area.

How Pesticide Use Data Are Used

DPR expanded pesticide use reporting in response to concerns of individuals and groups, including government officials, scientists, farmers, legislators and public interest groups. Key areas in which data are useful include:

Risk assessment. Without reliable information on how much pesticide is used on a commodity, regulatory agencies doing risk assessments assume all planted crop acreage is treated with many pesticides even though most crops are treated with just a few chemicals. If the assumptions used by regulatory agencies are incorrect, regulators could make judgments on pesticide risk that are too cautious by several orders of magnitude, reducing the credibility of risk management decisions. The use report data, on the other hand, provides actual use data so DPR can more accurately assess risk and as a result make more realistic risk management decisions.

After the passage of the federal Food Quality Protection Act (FQPA) in 1996, complete pesticide use data became even more important to California commodity groups and to U.S. EPA. FQPA contained a new food safety standard against which all pesticide tolerances must be measured. (Tolerances are the amount of pesticide residue allowed by federal law to remain on a harvested crop.) California grows half the nation's fresh produce and FQPA increased interest in the state's pesticide use data, especially for calculating percent of crop treated. DPR can provide recent use data and summaries to commodity groups, UC specialists, U.S. EPA programs and other interested parties as they develop the necessary information for reassessing tolerances and calculating dietary risk from pesticides.

Worker safety. Pest control operators are required to give farmers a written notice after every pesticide application. The notice must include the pesticide applied, location of the application, the date and time the application was completed, and the restricted-entry and preharvest intervals. This notice gives the farmer accurate information to help keep workers from entering fields prematurely and lets the farmer know when a commodity can be harvested.

DPR's Worker Health and Safety Branch uses the data for worker exposure assessment as part of developing the risk characterization of a pesticide. Use data helps scientists estimate typical applications and how often pesticides are used.

Public health. The reporting system provides DPR, the State Department of Public Health and the Office of Environmental Health Hazard Assessment with more complete pesticide use data for evaluating possible human illness clusters in epidemiological studies.

Endangered species. DPR works with CACs to combine site-specific use report data with geographic information system-based data on locations of endangered species. The resulting data help commissioners resolve potential conflicts over pesticide use near or in endangered species habitat. DPR and the commissioners can also examine patterns of pesticide use near habitats to determine the potential effects of proposed



Numerous requests for licenses were made during 1931 for the sale of "Cure Alls," which are claimed will eliminate all insect pests and diseases and provide enough plant food for years.

— 1931 department annual report



Registration ... is not a recommendation of a product, for the department does not endorse any product. Registration is simply a guarantee that the product is under supervision of the department.

— 1933 department annual report

use limits. With location-specific data on pesticide use, controls on use can be better designed to protect endangered species while still allowing needed pest control.

Water quality. California law requires site-specific records to help track pesticide use in areas known to be susceptible to ground water contamination. Pesticide use records can tell DPR whether a contaminated well is physically associated with agricultural practices. These records also provide data to help researchers find out why certain soil types are more prone to ground water contamination.

Use report data are used to refine surface water monitoring strategies and help focus mitigation efforts on specific active ingredients or uses. Pesticide use data can identify high-use watersheds to focus water quality investigations to worst-case situations. The data are also used in after-the-fact investigations where a pesticide is detected and a characterization of upstream use is needed. Pesticide use data is also used to help corroborate the validity of inputs into computer simulations. The data offer investigators the best documentation of sources of nonpoint source pollutants for watershed-level water quality investigations.

Air quality. Many pesticide products contain volatile organic compounds (VOCs) that contribute to forming smog. DPR worked with the state Air Resources Board to develop a plan under the federal Clean Air Act to reduce emissions of all sources of VOCs, including pesticides, in nonattainment areas of the state. DPR's contribution to the plan included its ability to calculate the amount of VOCs contained in pesticides and to inventory the use of those pesticides through use reporting.

Beginning in 2008, regulations went into effect to reduce emissions of VOCs from fumigant pesticides. Pesticide use reports include details on fumigation method, which helps calculate VOC emissions. This information is then compared with targeted emission reduction goals to ensure the state remains in compliance with its commitment to improve air quality.

Pest management alternatives. To decide on use controls or prohibitions, regulators must consider how pesticide users are likely to respond. Substituting one chemical for another may only shift the problem from one area of concern to another. For example, as fewer chemical alternatives are available, resistance to the remaining pesticides is more likely to develop among targeted pests. Or there may be situations when loss of a particular pesticide may result in the use of others that are more toxic to beneficial organisms or the environment. The department uses the pesticide use data to understand patterns and changes in pest management practices. Scientists can use the data to find possible alternatives to pesticides that are subject to regulatory actions and to help determine possible effects of different regulatory actions on pest management.

The data have also been used to support and assess grant projects for DPR's Alliance program. The Alliance Grants are designed to demonstrate and carry out reduced-risk pest management strategies.

Many commodity groups have created crop profiles that include information on pest management practices and available options, both chemical and nonchemical. Pesticide use data is critical to developing recommendations on best management practices and alternatives.

Local enforcement. CACs use pesticide data to help focus enforcement efforts and compliance outreach on areas or sites with the highest pesticide use or most frequent applications. Pesticide use data also helps determine if a product was applied that is not registered for that commodity, especially in residue tolerance investigations. In investigations, pesticide use information can help CACs determine how, when and where pesticides were used and if the requirements for restricted materials permits were followed. Use report data helps in investigating if a product was used in conflict with its label. The data are also used when responding to complaints of crop or environmental damage from drift, or to reports of exposure to an application.

Processor and retailer requirements. Farmers must often provide a record of pesticide use to food processors, produce packers and retailers. Information collected for pesticide use reporting can fulfill that requirement.