



California's pesticide use reporting program is recognized as the most comprehensive in the world. In 1990, California became the first state to require full reporting of agricultural pesticide use in response to demands for more realistic and comprehensive pesticide use data. Under the program, all agricultural pesticide use must be reported monthly to county agricultural commissioners, who in turn, report the data to DPR.

Pesticide Use Reporting

California has had limited pesticide use reporting since 1934. 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, type of pesticide used, and the strength and amount of the pesticide applied. Before 1954, only statistics on aerial pesticide applications were forwarded to the state for tabulation. In 1954, state regulators asked for reports on ground application acreage but dropped requirements for detailed reporting of pesticides used and commodities treated.

In 1970, state 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 non-restricted. Production agricultural reports had to include the pesticide applied, amount applied, area treated, application method, date and location (section, township and range) of the application, and the crop treated. Reports of other kinds of applications made by pest control operators included pesticide, total amount applied each month, county, site treated, and after 1978 the area or volume treated. 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 1200, AB 2161) gave the Department of Pesticide Regulation (DPR) clear statutory authority to require full reporting of agricultural pesticide use. 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, which began operating in 2011. It helps CACs in issuing restricted materials permits and provides an automated platform for validating and relaying pesticide use reports electronically to DPR. It accepts pesticide use reports electronically from subscriber-based firms and directly via the web.

HOW USE REPORTING WORKS

California's pesticide use reporting program is the most comprehensive of its kind. Each year, DPR collects and processes more than 2.5 million records of pesticide applications, where each record represents one production agricultural application of a pesticide product or a monthly summary of other kinds of applications. California was the first state in the U.S. to require full reporting of all pesticide use in agriculture.

The reporting requirements apply to a range of uses partly due to the California

legal definition of agricultural use. (See Page 77 for information 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 uses and most industrial and institutional uses, including schools and childcare facilities.

Operator and site identification codes

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 use the number obtained by the property operator so they do not have to get operator ID numbers.

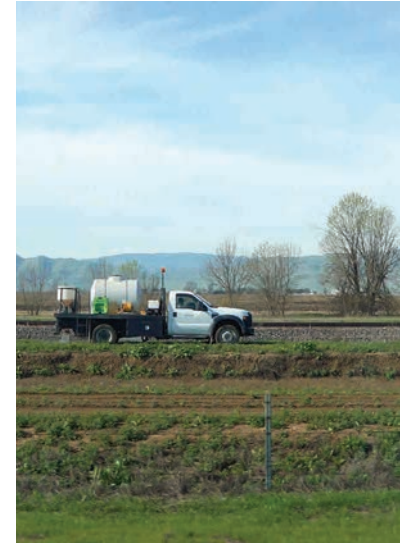
A site identification code must be assigned for each location or field where pesticides will be used for production of an agricultural commodity. This alphanumeric code is also recorded on any restricted material permit the grower gets for the location.

What must be reported

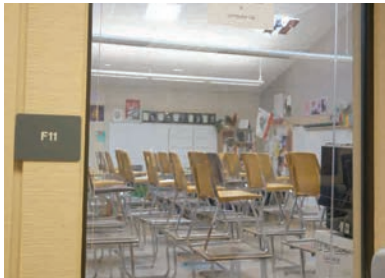
Reports of pesticides not used in production agriculture are reported in monthly summaries that include pesticide product name and manufacturer, the product registration number, amount used, number of applications, the kind of site treated (for example, roadside, structure), the month of application, county, and the OIN or pest control license number.

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.



Herbicide application along a right-of-way in Glenn County.



DPR collects use-reporting data for schools throughout the state.

- 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.)

School pesticide use reports

Since 2002, DPR has collected use information from businesses that apply pesticides at California public K-12 schools and licensed childcare centers (school sites). The Healthy Schools Act was amended in 2014 to expand pesticide use reporting to school district and child care center staff.

The California School Pesticide Use Report, or CSPUR, is a unique database of structural and landscape pesticide use at school sites. Through the use of CSPUR, DPR hopes to assist businesses and school site staff in adopting effective, least-toxic pest management practices. CSPUR, a public resource, allows for outreach programs and policies to be based on real statewide data and provide transparency for anyone interested in pesticide use around children.

School pesticide use reports are due annually on Jan. 30 for the previous year. School-site staffers who apply pesticides are only required to submit a monthly summary to the CAC for restricted use materials. The reporting detail of individual pesticide applications includes:

- Pesticide product name.
- Product registration number.
- Amount used.
- Name and address of school or childcare facility.
- Date and time of application.
- Name and address of business/organization which applied the pesticide.
- County where the pest control was performed.

IMPROVING ACCURACY

More than 50 different validity checks are made against the pesticide-use data, both in CalAgPermits and at DPR. 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. If the pesticide is a restricted material, the computer checks the pesticide reported used to ensure it is listed on the grower's restricted materials permit. 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 found to have errors at DPR 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 1 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

Agricultural and Non-Agricultural Pesticide Use

Many pesticide licensing, sales and use requirements are tied to California's definition of agricultural and non-agricultural 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.

There are some pesticide products labeled for dual-use. That is, they have both agricultural and non-agricultural uses.

Agricultural uses

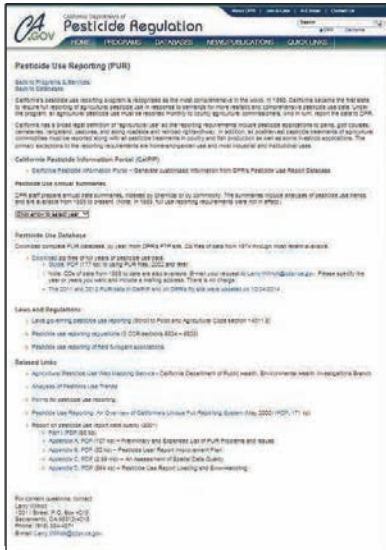
The law (Food and Agricultural Code Section 11408) identifies agricultural uses as:

- **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.

Non-agricultural uses

Non-agricultural uses are 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.
- **Veterinary.** Use according to a written prescription of a licensed veterinarian.



Pesticide Use Report data are posted on DPR's website.

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. This error was corrected by DPR staff when it was discovered).

IMPROVING ACCESS TO THE DATA

Since 1971, DPR has produced annual reports that summarize pesticide use by crop or site treated and active ingredient. These are available as printed reports.

In 1999, DPR made the entire database since 1974 available on CDs and, in the early 2000s, compressed files of the database were posted online for downloading.

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 1 square-mile area.

DPR also began examining trends in pesticide use, analyzing critical crops, pest problems and trends in pounds used, number of applications and acres treated. The pesticide trends from 1991 to 1996 were published as a separate report, but since 1997 the trend analyses were included in the annual reports. The trend analyses examine pesticide trends on specific crops and in specific pesticide categories:

- Reproductive toxins.
- Carcinogens.
- Insecticide organophosphate and carbamate chemicals.
- Chemicals classified by DPR as groundwater contaminants.
- Chemicals listed by DPR as toxic air contaminants.
- Fumigants.
- 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 review publications and conduct 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 formulate 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.

HOW PESTICIDE USE DATA ARE USED

DPR expanded pesticide use reporting based on the value of the data to concerned individuals and others, including government officials, scientists, farmers, legislators and public interest groups. Key areas in which data are useful include risk assessment, worker safety, public health, endangered species, water and air quality, pest management alternatives, local enforcement, and processor and retailer requirements.

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, University of California 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

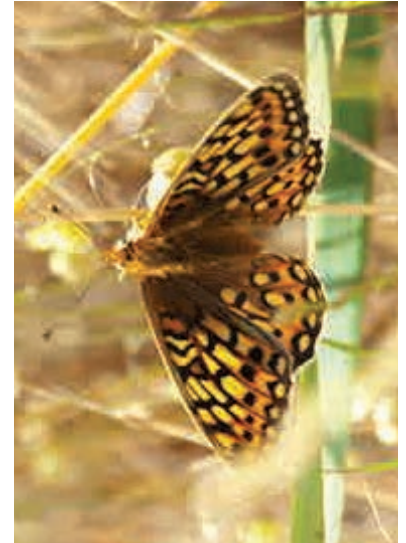
The reporting system provides DPR, the State Department of Public Health and the Office of Environmental Health Hazard Assessment with more complete pesticide use data for evaluating possible human illness clusters in epidemiological studies.

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 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



The callippe silverspot butterfly is an endangered species, found only in grasslands in the San Francisco Bay Area.



Volatile organic compounds (VOCs) contribute to air quality issues throughout much of the San Joaquin Valley.

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. In 1994, 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 create an inventory of VOC emissions using pesticide use reports.

Beginning in 2008, regulations went into effect to reduce emissions of VOCs from fumigant pesticides. Pesticide use reports include details on fumigation methods, which help in calculating 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. DPR uses the pesticide use data to understand patterns and changes in pest management practices.

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.