2001

Protecting People and the Environment

CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION

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A year of hope and heartache

THERE'S AN OLD SAYING THAT GOES SOMETHING LIKE THIS: You can't control what the world hands you, but you can decide how you're going to deal with it. That philosophy certainly proved fitting in 2001.

The California Department of Pesticide Regulation (DPR) began the year on a high note. We celebrated the 100th anniversary of pesticide law in California as we marked progress on a wide range of initiatives supported by the Davis Administration. Our new Pest Management and Licensing Branch shifted into high gear with efforts to encourage reduced-risk pest management in schools, homes, and on the farm. Our Registration Branch stepped up work with the U.S. Environmental Protection Agency to bring "softer" pesticides to market faster.

Meanwhile, the Worker Health and Safety Branch staff was completing an extensive review of compliance with our rules to protect field workers, and our scientists in the Medical Toxicology Branch moved ahead on risk assessments for fumigants and other high-priority pesticides.

The Environmental Monitoring Branch prepared to launch a new, preventive approach to protecting ground water. Our Enforcement Branch completed an assessment of statewide compliance with pesticide laws and regulations, in cooperation with our local partners, the County Agricultural Commissioners. And we began to enhance DPR business services using the latest, most efficient technology. These and other accomplishments also were a tribute to the hard work of our staff and managers, and supportive members of the Legislature.

Then came the tragic events of September 11. DPR and other State agencies immediately mobilized against potential threats of terrorism in California. In cooperation with the FBI, we quickly checked thousands of licensee records to confirm that no known terrorists had credentials to buy highly toxic pesticides — or fly the aircraft used to apply them. DPR staffers also helped with State emergency response efforts. And true to form, our employees went the extra mile. To support New York firefighters, Registration Branch staffers sponsored a raffle that raised more than $3,100 from donors throughout the headquarters of the California Environmental Protection Agency.

As 2001 came to a close, we prepared for more challenges, including a State deficit that will require careful and creative budget planning in 2002. Despite these difficult times, our priorities will remain the same — enforce pesticide laws and regulations, safeguard the health of workers and others exposed to pesticides, and fulfill other responsibilities mandated by the Legislature. Whatever challenges may lie ahead, we'll find a way to deal with them as we continue the work of protecting Californians and our environment.

Paul Helliker

Paul E. Helliker
Director

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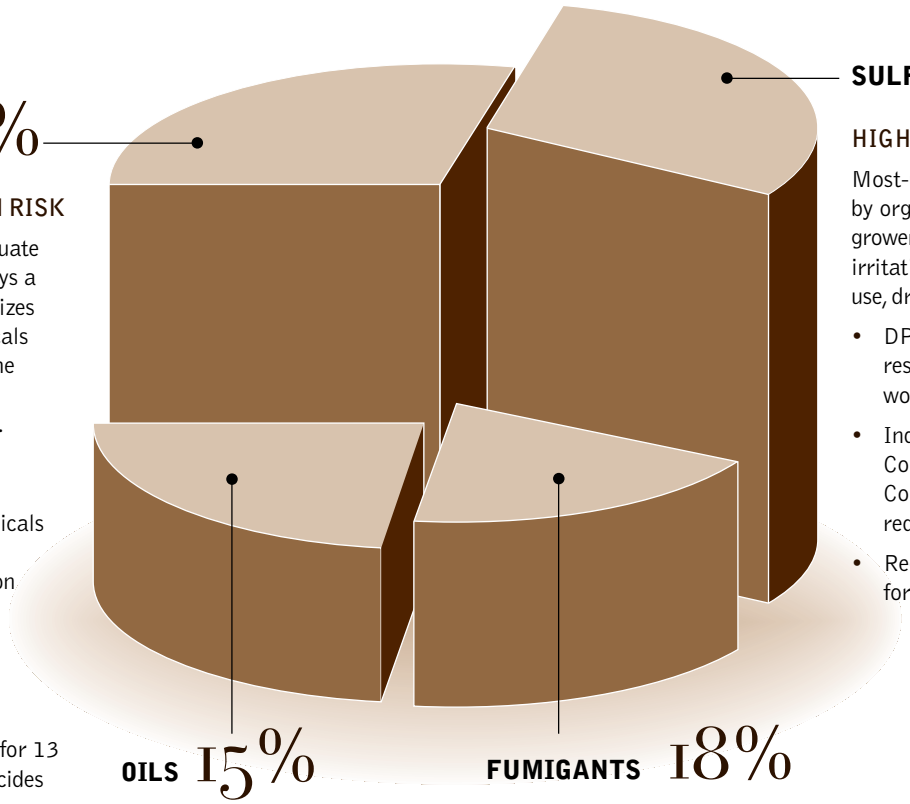
Looking at the big picture

OUT OF ABOUT 900 CHEMICALS USED AS PESTICIDES IN CALIFORNIA, only a handful account for most agricultural applications, as measured in pounds. This pie chart breaks down about 172 million pounds of pesticide applications reported by production agriculture in 2000. Up to two-thirds of this farm pesticide use can be attributed to less than a dozen chemicals.



ALL OTHERS 31%

PRIORITIES BASED ON RISK

DPR sets priorities to evaluate risks. Pounds are not always a risk indicator. DPR scrutinizes toxicity issues, how chemicals interact with people and the environment. Workplace exposures are high priority. Some examples of how we regulate pesticides:

- Most highly toxic chemicals require county permits; some include application limitations.
- 140-plus DPR risk assessments completed to date. (Page 13)
- Registration expedited for 13 new, reduced-risk pesticides in 2001. (Page 8)
- New initiatives in 2002 to prevent ground water contamination. (Page 10)

SULFUR 36%

HIGH USE, ORGANIC

Most-used pesticide, favored by organic, conventional growers. Low toxicity, skin irritation risk to workers, high use, drift potential.

- DPR field entry restrictions help reduce worker injuries.
- Industry task force, DPR, County Agricultural Commissioners working to reduce drift. (Page 15)
- Registrants revising labels for safer use.

OILS 15%

HIGH USE, LOW TOXICITY

Petroleum-based compounds usually used with other pesticides. Low toxicity to humans, low impact on natural pest predators.

- DPR grants show oils help reduce need for more toxic pesticides. (Page 7)
- Oils are part of grower strategy to reduce pesticide runoff.

FUMIGANTS 18%

HIGH USE, HIGHLY TOXIC, HIGHLY REGULATED

Critical weapon against soil pests. Includes methyl bromide, metam-sodium, 1,3-dichloropropene (1,3-D), chloropicrin. Comprehensive DPR focus on health, safety issues. (Page 9)

- DPR grants for alternatives total more than $800,000, plus $1 million for research. (Page 9)
- We're completing risk assessments for 1,3-D, methyl bromide, metam-sodium, working on chloropicrin assessment. (Page 13)
- New methyl bromide regulations effective in 2001; restrictions in place for 1,3-D.
- Air monitoring continues.

Making the grade on pest management

As part of its Children's Environmental Health Initiative, the Davis Administration has invested nearly $1 million for DPR initiatives to encourage safe school pest management. In 2001, we moved ahead with our voluntary school integrated pest management (IPM) program while implementing the Healthy Schools Act (AB 2260, Shelley). That 2000 law codified DPR school IPM efforts and added new recordkeeping and right-to-know requirements when pesticides are used on school property. We also created an informal IPM advisory panel to help develop more effective school IPM programs.

NEW INFORMATION ON THE WEB

We enhanced our existing school IPM Web site in 2001 (www.schoolIPM.info) to help schools meet the right-to-know mandates of the Healthy Schools Act. Schools must provide parents with an annual notification that includes a prospective list of pesticides. And parents may request notification before pesticide applications occur. For these purposes, DPR posted sample letters that schools and parents can download. Our Web site also offers a template for the notification signs that schools must post before and after they make pesticide applications.

The Healthy Schools Act requires that licensed pest control businesses report their pesticide applications on public school property. Use reporting requirements took effect January 1, 2002, and DPR will receive annual reports beginning in 2003.

To implement the law, we developed regulations that cover use reports and recordkeeping requirements. They include a use report form, posted on our Web site. The form also was mailed to licensed pest control businesses statewide.

For parents, teachers, and other interested parties, our Web site also includes reference links. In addition to DPR's own product database, we offer links to the University of California IPM site and a university-sponsored database on the environmental and health effects of pesticides.

MORE SCHOOL IPM DEVELOPMENTS

DPR awarded a $100,000 grant to develop a model school IPM program that could be extended statewide. The School IPM Alliance, coordinated by the Marin County Agricultural Commissioner, co-sponsored the first School IPM Expo in Novato in July 2001. The exposition was hosted by the Novato Unified School District and attracted more than 200 participants from 19 school districts, 18 counties, and six cities. The event featured an array of exhibits and demonstration sessions designed for school administrators, business managers, maintenance and grounds staff, licensed pesticide applicators, and IPM product vendors.

In recent months, our staff has made more than 50 presentations statewide on school IPM and the Healthy Schools Act, and we've offered DPR's assistance to help school districts start their own voluntary IPM programs. Expanding on that effort, we plan to launch a pilot School IPM train-the-trainer session in spring 2002, with six regional training sessions to follow. School district IPM coordinators will be trained in IPM principles and taken on a "hands-on" tour of a school site to observe and learn practical, low risk methods of pest management

In coming months, DPR also will finalize and distribute a model IPM program guidebook for school districts to help them adopt least-hazardous methods. We will periodically update the guide and supporting documentation. In the next year, our outreach will include developing a "frequently asked questions" handout and making additional presentations to school groups around the state. We'll also evaluate our outreach efforts and the effectiveness of school IPM practices in a future survey.

A swarm of honeybees invaded the Sacramento home of DPR Director Paul Helliker in April 2001, giving him a chance to demonstrate IPM as he relocated the swarm into a backyard hive. The Director, clad in beekeeper clothing, talked to several TV news teams. The unusual scene attracted prominent news coverage for IPM.

Our natural winners

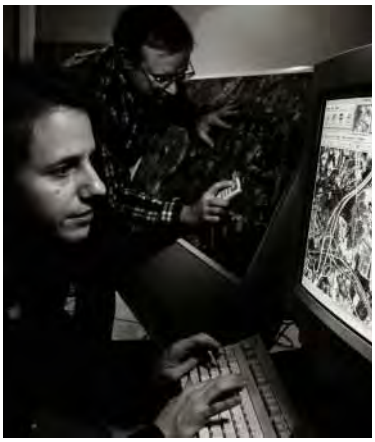
DPR has been giving out IPM Innovator awards since 1994 to honor California organizations that emphasize pest prevention, favor least-hazardous pest control, and share their successful strategies with others. The awards provide rare public recognition to groups and individuals who are quietly revolutionizing pest management through their efforts to reduce pesticide risks.

Our 2001 award winners were an eclectic group, ranging from roadside maintenance crews to San Francisco city gardeners to farm consultants who helped introduce IPM to citrus growers in the Central Valley. Each one of these nine IPM Innovators has made an important contribution to protecting and preserving California's environment: District 1 of the California Department of Transportation, Eureka; the City and County of San Francisco; El Modeno Gardens of Irvine; Ganna Walska Lotusland Foundation of Santa Barbara; Lundberg Family Farms of Richvale; Novato Unified School District; Pest Management Associates of Exeter; Pizza Farm of Madera; and the Sacramento Water Wise Pest Control Program.

Transforming how we do business

DPR WAS ONE OF THE FIRST STATE AGENCIES TO BUILD A WEB SITE, and early on, we realized that meant more than posting brochures and databases online. In 2001, DPR was one of the first California agencies to complete an e-government strategic plan, defining our vision for using electronic services to transform how we do business. Arun Baheti, Governor Davis' Director of eGovernment, said he was "impressed by its quality and thoroughness," and called the plan "a model for other departments."

The plan lays out strategies that will enable us to deliver pesticide program services using cost-effective, useful, and accessible e-government technology. Our goal goes beyond using technology to put data and applications at the fingertips of Web-enabled employees and external stakeholders. Technology is making it possible to improve all our business practices, whether or not they are Internet-based. Our vision is a pesticide program that gives immediate and reliable access to information services so people can conveniently conduct their business with DPR and our local partners, the County Agricultural Commissioners.



ONLINE REGISTRATION FOR PEST CONTROL LICENSEES

DPR and the Commissioners took a modest but important step in November 2001 with the "Online County Registration System for Pest Control Licensees," selected by the State's Government-to-Business Center as one of five pilot projects for the State to demonstrate how the Internet can enhance government services. California pest control businesses, advisers, and pilots are required to register annually with the Agricultural Commissioner in each county where they do business. In this six-county pilot, pest control licensees can go online to complete their registration transactions, except for fee payment. Licensees in other counties can use the system to look up information about their own licenses. More than 12,000 licensees in the state can use this online service (http://www.ebizcenter.ca.gov/default.html).

The system also enables the County Agricultural Commissioners to check license status, review enforcement histories for past violations, and conduct an online dialogue with applicants to make short work of the registration process. The pilot counties are Contra Costa, Los Angeles, Placer, San Francisco, Siskiyou, and Stanislaus.

With our technical input and support, the Agricultural Commissioners are developing a Web-based system so that growers and applicators can go online to file their required reports of agricultural pesticide use. In October 2001, we coordinated the installation of a beta version in Tulare County for in-house testing, and Tulare plans to roll it out to the public in early 2002. More counties will be added as the system is tweaked and improved. A Web-based system that gives pesticide users an easy way to enter their reports directly and electronically is critical to improving the overall quality, timeliness, and efficiency of the pesticide use reporting program.

UPDATING COUNTY PERMIT SYSTEMS

In another joint effort with the County Agricultural Commissioners, we are assisting them in updating their system for issuing and managing the pesticide permits growers must renew each year. The current system is a DOS-based relic of the late 1980s, eons ago in computer-time. A Windows-based Restricted Materials Management System was installed in 10 counties in early 2001 as a pilot project to assess new technologies. The counties, representing a full range of agricultural

practices and geographic regions, are Colusa, Kern, Kings, San Diego, San Joaquin, San Luis Obispo, Shasta, Stanislaus, Tulare and Ventura. Because counties use this database to help record and validate pesticide use reports, we expect the new system to improve the accuracy of use data.

A much bigger project coming online later this year is known as CalPIP — short for California Pesticide Information Portal. CalPIP will give visitors to our Web site easy access to the world's best and most extensive database of pesticide use information. Web surfers will be able to ask the database for use statistics categorized by pesticide name, or by crop, with results available as graphs, tables, or maps (down to an area as small as one square mile). They will also be able to link to sites with more information on potential health and environmental effects.

CalPIP will also let them tie the use data in with our database of labels for the 11,000 or so pesticide products registered in California. This includes such information as the manufacturer, pesticide type (for example, herbicide, insecticide, disinfectant), active ingredient, target pests, sites where the product can be applied (for example, a crop, roadside, or structure), and certain chemical and environmental characteristics.

We're developing a bird's eye view of pesticide use

California already has the world's best system for keeping track of agricultural pesticide use, but that isn't stopping us from trying to make it better.

The County Agricultural Commissioners collect reports on all pesticide use in agriculture. The reports themselves are location-specific, but with 2.5 million reports coming in each year, and with nearly 200,000 different fields or application sites in the state, a better way was needed to record information. Saying that the application occurred on a field one-quarter mile west of the intersection Posthole Road and Noble Plow Drive isn't very instructive.

Enter GIS, short for "geographic information systems." GIS permits geographic- and location-related data to be stored on a computer, spatially referenced to coordinates on the earth. GIS is to geographical analysis what the microscope was to biology, or the telescope to astronomy. GIS allows digital mapping of landscape features such as roads, rivers, land use (including agricultural fields and buildings), sensitive sites (for example, schools and endangered species habitats), and county lines and other political boundaries. Putting maps and other information into digital form provides us a consistent framework for recording, analyzing, and telling you about the location of pesticide use. Without GIS, the location information in electronic pesticide use data is only accurate to one square mile; with GIS, the computer can record it down to a specific agricultural field. This significantly improves the ability of County Agricultural Commissioners and state pesticide regulators to responsibly oversee pesticide use. GIS is also improving our ability to analyze trends in pesticide use, and will make it possible for us to provide much more detailed pesticide use information via our Web site.

By 2001, more than a third of the counties were using GIS to manage pesticide use data. DPR provides project coordination and technical support, but the real work is done by the Commissioners in getting the system running and keeping it up to date. To help smooth the transition, DPR contracted with the Kern County Agricultural Commissioner's Office to develop a standard plan for implementing GIS in any county. Kern uses GIS not only for use reporting, but also for issuing pesticide use permits and for other pesticide-related applications. Eventually, we hope to make the Kern system available to Commissioners' offices throughout the state.

Supporting grassroots innovation

GIVEN THE HARSH ECONOMICS OF AGRICULTURE, most growers seek innovative ways to stay viable. DPR promotes strategies that lessen the risks to people and the environment while strengthening California agriculture's world leadership.

Since 1996, DPR has been immersed in the business of building grassroots support for IPM — integrated pest management — through a wide-ranging grants program. Our grants encourage an array of research and experimentation projects with one goal — to identify workable, least-hazardous pest management solutions. DPR has distributed about $8.4 million for 200 IPM grants to commodity groups, school districts and urban community projects. While pesticide usage depends on many factors, three major commodity groups with extensive grant projects — almonds, wine grapes, and strawberries — saw their cumulative pesticide applications drop by more than seven million pounds in 2000.

Under the Davis Administration, we've reorganized our grant structure to create a more efficient program that speeds up development and adoption of reduced-risk pest management. Smaller-scale proposals may qualify for our Pest Management Grants to fund applied research and demonstration projects. Projects that demonstrate great merit can then expand into statewide Pest Management Alliances. These partnerships between DPR and key industry groups now benefit from a continuing budget appropriation from the Davis Administration and the Legislature, allowing individual Alliances to apply for additional funding over subsequent years and better plan future activities to achieve their full potential.

Several Alliance projects feature side-by-side plantings so conventional techniques can be compared to reduced-risk strategies. The Dried Plum (Prune) Alliance and the Almond Alliance have had notable success using this approach.

SOME CASE STUDIES OF SUCCESS

The Dried Plum Alliance, established in 1998, eliminated winter applications of highly toxic organophosphate insecticides in 33 demonstration orchards that account for 11 percent of California's dried plum acreage. Reduced-risk insecticides and dormant oils replaced the organophosphates in these trials. This Alliance conducted 24 educational meetings to spread the word within the industry. This research and outreach have resulted in potential savings for growers estimated at nearly $1 million annually.

The Almond Pest Management Alliance has used a combination of extensive orchard monitoring, reduced-risk pesticides, and cover crops to reduce grower reliance on organophosphates, while minimizing pest damage. Two years of field trials have shown these alternatives can compete with conventional practices in cost and effectiveness. Growers are getting better at scientific methods that target pests and which allow applications of less-toxic pesticides to be scheduled for peak effectiveness. Less-hazardous pesticides sometimes cost less, and in a tight economy, that becomes another selling point.

California ranks second in U.S. pear production, with nearly 300 growers statewide. Funding from both DPR Grants and Alliance programs encouraged many pear growers to adopt "puffers" to control their most destructive pest, the codling moth. Puffers are devices that dispense a pheromone (scent) similar to that of female codling moths. One puff of pheromone is equal to the smell of 7 to 10 million female codling moths. The scent attracts and confuses male moths, preventing them from mating, thereby reducing pest populations. Using "puffer" mating disruption has replaced up to four applications of organophosphate insecticides annually. Over a three-year period, growers with more than 3,000 acres of pears reduced use of organophosphates by 65 percent in Lake County, 75 percent in the Sacramento region and 87 percent in Mendocino County.

In 2001, DPR awarded approximately $1.4 million for 19 grants and nine Alliances, with emphasis on reducing worker exposure, protecting surface and ground water, and alternatives to high-toxicity pesticides and fumigants.

We also developed a database to track the success of grant projects, and produced a pamphlet to recognize IPM grant success stories and thus encourage new applicants to join our ranks.

We provide more public data than anyone

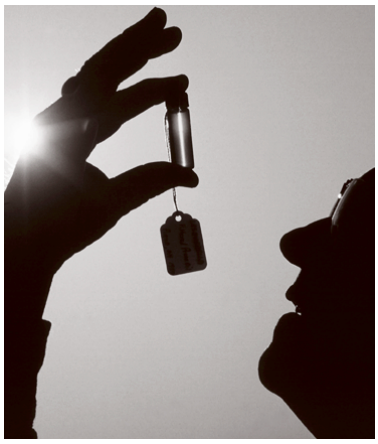
DPR provides the public with more data on pesticide use — and more detailed data — than any other state or federal source. Among other benefits, the data helps us track pesticide use trends and focus our regulatory efforts. Early in 2002, we will finalize use report data for 1999 and 2000, using new error-checking computer software. We also plan to complete a detailed trend analysis of changes in organophosphate use on almonds during the last nine years and examine alternate methods of pest control for overwintering pests.

So far, our analyses show that dormant use of highly toxic pesticides has decreased in recent years. In many cases, growers have turned to "softer" chemicals such as dormant oils and Bacillus thuringiensis (Bt).

Bringing safer pesticides to California

THE DEPARTMENT HAS BEEN REGISTERING PESTICIDES SINCE 1921. In the last few years, we sharpened our focus to speed up approval of products that are more friendly to the environment and safer for the people who use them.

No pesticide can be licensed for use in California without an equivalent registration at the federal level, but we give priority to certain reduced-risk compounds. (These primarily are pesticides that U.S. EPA classifies as reduced risk, as well as microbial and biochemical products.) Our goal is to register these products in California at the same time that they receive federal registration. We make this possible by allowing manufacturers to apply for registration here in tandem with their federal application. Then we "workshare" the evaluation of health data with our U.S. EPA counterparts to determine if a product can be used safely. The Legislature appropriated funds for us to hire additional staff and focus on reduced-risk registrations. In 2001, 13 out of the 30 new active ingredients we registered were reduced risk.



The "worksharing" project is a team effort by DPR, U.S. EPA and IR-4 (a U.S. Department of Agriculture program that focuses on developing and registering pesticides for fruit, nut and vegetable crops). IR-4 provides residue data for crops, and DPR does the scientific reviews that let U.S. EPA establish the allowable residue level on fresh produce that makes it safe for human consumption. For the 12 months ending in June 2001, DPR completed work-ups that accounted for a third of U.S. EPA's workload of IR-4 tolerance requests. This was one factor that helped U.S. EPA to significantly shorten the time it took to register these pesticides — 18 months for reduced-risk pesticides compared with the 31-month average for all other pesticides. Making these reduced-risk pesticides available to farmers is critical for the California economy, since California agriculture is the world leader in the production of these crops. The next step will be for DPR to take on developing dietary risk evaluations for U.S.EPA. Our goal is to further reduce the time needed to register a reduced-risk product.

STREAMLINING THE REGISTRATION PROCESS

We put together a workgroup with key members of industry — the people who bring pesticides to market in California — to exchange ideas for using information technology to improve how we do business. Our goal is to make the registration process and Department priorities and decisions more understandable. Among other things, we're exploring how we can streamline operations with more use of electronic technology to receive and track submissions, obtain information, and make scientific evaluations.

We are also developing better ways to keep our registration "customers" in the loop on the status of the hundreds of registration packages moving through review and evaluation at any one time. In 2002, our Registration Branch will launch a program to automatically notify applicants of their product's current review status. New transactions will automatically trigger e-mail messages to applicants, detailing the status of their submissions.

4 FOR EXCELLENCE!

Four DPR staffers were among a group honored by U.S. EPA's Office of Pesticide Programs at ceremonies in Washington, D.C., in June 2001. Registration Branch Chief Barry Cortez, and Branch staff Jerry Campbell, Roberta Firoved, and Tom Leffingwell were recognized for their contribution to the worksharing project with an Excellence in Teamwork Award.

FUMIGANTS

Reducing the impact of fumigants

Measured in pounds, fumigants account for up to one-fourth of all agricultural pesticide use in California. Farmers use fumigants to control disease, weeds and pests in the soil before planting. Fumigants also are used for structural pest control and to protect stored commodities, such as grain. But these highly toxic gases may pose health and environmental hazards. One major fumigant — methyl bromide — contributes to ozone depletion. U.S. production of methyl bromide has been cut by 50 percent, and most uses will be eliminated in 2005 under federal law and international treaty. DPR and the County Agricultural Commissioners have begun a coordinated effort to assess fumigant hazards, reduce environmental impacts, and promote alternatives.

DPR has distributed more than $1.7 million to support the search for methyl bromide alternatives. We coordinated a $1 million legislative appropriation for university research. And since 1998, we've funded grants worth more than $800,000 for fruit, nut, and vegetable projects.

As the search for alternatives continues, we're completing a fumigant data checklist to assess hazards as we register new fumigants and renew existing products. These data will help us register replacements for methyl bromide while protecting workers, the public, and the environment. We're also working with the County Agricultural Commissioners, commodity groups and fumigant registrants to make sure that our regulatory efforts are based on sound science, reflect real-world conditions, and recognize critical needs.

During 2001, we obtained more air monitoring data for methyl bromide, 1,3-dichloropropene (1,3-D), metam-sodium breakdown products, and chloropicrin. Early in 2002, we will complete a data evaluation to confirm that our fumigant initiatives are working. These include new methyl bromide regulations that set minimum buffer zones; provide additional protection for workers, schoolchildren, and the public; and require advance notification of neighbors before fumigations begin.

REFINING OUR REGULATORY ACTIONS

While health and safety remain our top priorities, we opened a dialogue with industry early in 2001 to ensure that regulatory actions are not needlessly burdensome. That resulted in several positive developments:

- We expedited a technical change to methyl bromide regulations that allowed buffer zones to extend into roadways, making applications more efficient and reducing potential risks for fumigation workers.
- In time for the 2001 use season, we registered new 1,3-D formulations that allow drip irrigation applications, providing good pest management with lower rates of pesticide use.
- We reduced 1,3-D buffer zones from 300 to 100 feet after DPR staff reassessed exposures based on our review of new data.
- We refined calculations used to establish 1,3-D usage caps, which will allow increased allocations of the fumigant within a specific geographic area while maintaining acceptable risk levels.
- We began a general review of the procedures DPR uses to develop fumigant buffer zones.
- We're finalizing a risk assessment for metam-sodium under the Toxic Air Contaminant Program. Although metam-sodium is seen as a major alternative fumigant, permit conditions now vary from county to county. DPR wants to provide more scientific guidance to the County Agricultural Commissioners on issuing permits, while allowing an opportunity for stakeholder views.

Protecting ground and surface water

PESTICIDES CAN COMPROMISE WATER QUALITY and if they do, the problem might be traced to a stream near farming operations, or to an upscale, urban neighborhood. DPR is committed to solving ground and surface water quality problems caused by pesticides, using sound scientific standards and reasonable regulations. Our actions will result from data gathered in years of water quality monitoring and analyses.

SAFEGUARDING VULNERABLE AREAS

In 1985, the Pesticide Contamination Prevention Act gave DPR a mandate to identify pesticides in ground water, and to monitor wells for contamination. To implement the law, we designated pesticide management zones where contamination occurred. Those early efforts helped us understand how, where, and why some areas were more vulnerable to ground water contamination. Using this extensive data and other information, our scientists have created a sophisticated computer model, "CALVUL" (California vulnerable). It identifies soil, climate, and pesticide use combinations that can threaten ground water quality. CALVUL shows us where regulatory action can effectively prevent contamination.

In 2002, CALVUL will help us implement best management practices (and ultimately regulations) to replace a patchwork of pesticide management zones with broader ground water protection areas. While pesticide use may still be allowed in

vulnerable areas, we'll require growers to take specific actions to prevent contamination. County Agricultural Commissioners will work with growers and pesticide applicators to implement the new program.

SURFACE WATER MONITORING

The Davis Administration has earmarked more than $3 million to expand our surface water protection initiatives. We're continuing joint efforts with the State Water Resources Control Board and its regional boards to meet state and federal water standards. The Water Boards will use our data to set pesticide "total maximum daily loads" deemed acceptable in waterways and then we will jointly develop cleanup strategies and timetables.

In 2001, we completed a five-year monitoring program in the Sacramento River watershed for the insecticides chlorpyrifos and diazinon. While levels of contamination did not pose any hazard to humans, our data revealed that water quality standards were exceeded. Some problems have been linked to urban sources such as neighborhoods, parks, and golf courses. In other cases, pesticide spraying in orchards near streams and rivers caused runoff contamination. For several years, we and the County Agricultural Commissioners have worked with farmers and commodity groups to encourage the use of vegetation buffer strips, low-toxicity pesticide oils, and other chemicals less prone to runoff. A good example of local leadership is Glenn County, which created a water quality stewardship program for orchards.

Late in 2001, DPR developed a policy to better describe our regulatory response when pesticides are detected in surface waters. In 2002, DPR and the Commissioners will develop and institute measures to bring pesticide concentrations in the Sacramento River watershed back to acceptable levels. Meanwhile, other surface water quality investigations continue. We set up monitoring programs in Orange and San Diego counties to learn more about the sale and use of pesticides in urban areas. These include studies with the Irvine Ranch Water District to better understand and prevent urban pesticide runoff.

As part of our data-gathering process, we enhanced public access to our Surface Water Database. It consists of more than 6,600 water monitoring samples gathered over a decade. Web surfers can click on a specific sampling site (from a list or map) and the system will retrieve information for all detections and non-detections at that site. The database is already available on CD-ROM. We recently modified the file format to make it usable in common database applications.

Keeping score on the environment

DPR helped create an "environmental scorecard" for Cal/EPA during 2001. For the Environmental Protection Indicators for California (EPIC) project, DPR scientists collected data on a range of environmental issues to assist in identifying trends and gauging our overall progress. We focused primarily on monitoring reports and statistical data for occupational illnesses and injuries, food residue monitoring, and pesticide detections in well water. Other DPR indicators lacked sufficient qualitative or quantitative data for trend analyses, but were included for informational purposes: toxic air and surface water contamination, pesticide use, integrated pest management, and fish and bird kills. EPIC will be updated every two years.

Enforcing the law fairly and firmly

"W*E TRY TO TREAT EACH PROBLEM AS CONSTRUCTIVELY AS POSSIBLE and at the same time enforce the law equally against all offenders*," said a State pesticide regulatory report 65 years ago, and we continue to build on this enforcement philosophy.

Effective enforcement requires a fair, consistent and comprehensive regulatory approach. It must be credible and understandable to those that we regulate and to those we protect, and still be responsive to the needs of the public as well as the regulated community. We encourage local problem-solving — primarily through the County Agricultural Commissioners, who administer the State's pesticide laws locally under DPR supervision. Our ultimate goal is to foster voluntary compliance. If this approach doesn't work, State law provides us strong regulatory tools.

ASSESSING COMPLIANCE IN THE FIELD

In 1999, we began an ongoing process of continuous improvement to the enforcement program. Firm, fair enforcement is essential to ensure equitable treatment of all. In 2001, we restated our environmental justice commitment by making it a major goal in our new Strategic Plan. Environmental justice is becoming integral to how we operate: we are identifying and improving areas of greatest noncompliance, enhancing the effectiveness of inspections and investigations, and following up to ensure that appropriate enforcement actions are taken.

A major step in achieving these objectives was the completion of our first Compliance Assessment Report in October. The report compiled and evaluated county-level assessments of industry compliance with rules governing pesticide handler and field worker safety. The intent was to measure the effectiveness of the statewide enforcement program. DPR staff made hundreds of field visits over four years, observing a wide range of pesticide activities in more than 60 crops and 20 counties reflecting the diversity of California agriculture and geography. Compliance varied among specific industry sectors, employers and counties. We recognized that the individual county assessments were only a snapshot in time but by integrating the various county compliance assessments, we constructed a general overview that examined factors relative to improving the state/county pesticide program.

Among other findings, the report showed that growers had significantly more compliance problems than professional agricultural pest control businesses. However, there were shortcomings in how professional handlers complied with requirements for use of personal protective equipment (for example, respirators and protective clothing). There were also problems in professional handler use of closed pesticide mixing and handling systems designed to protect workers against exposure to highly hazardous liquid pesticides. These and other findings prompted us to revise the priorities DPR sets annually to guide Commissioner enforcement activities. We asked them to focus inspections on problems we identified.

During 2002, we plan to revise field inspection procedures used by Agricultural Commissioners and DPR staff to ensure they comprehensively evaluate all aspects of an employer's pesticide safety practices. Additional training, developed as a result of the compliance assessments, will help Agricultural Commissioners focus their limited resources and ensure more uniform implementation of the Department's enforcement guidelines.

In response to concerns of farm labor representatives and others, DPR scientists from our Worker Health and Safety Branch have been studying ways to improve worker safety. We are looking at three things in particular: field posting, which is

one way workers are informed that pesticides have been applied to a field; notification requirements in general; and the hazard communication rules, which require workers to be informed about the hazards of working with pesticides and symptoms of illness.

In late 2001, our staff completed their evaluation of field posting requirements. As part of this, we also looked at the number of illnesses that occurred when workers reentered treated fields before the required post-application waiting period was over. Our analysis identified irrigation tasks as having a greater potential for pesticide-related illness compared to other fieldworker tasks, and that lack of notification and failure to wear required personal protective equipment were the leading causes of reentry violations. We also found that the rate at which agricultural fines were levied by Commissioners in response to illness episodes involving reentry violations rose steadily, from 20 percent in 1991 through 1994, to 53 percent during 1995 to 1996, to 70 percent in 1997 through 1999.

Our analysis also found that the posting requirements were probably sufficient but that enforcement needed improvement. We and the County Agricultural Commissioners are approaching this in a variety of ways, including doing outreach and training to make sure employers are thoroughly familiar with the posting rules. In addition, county inspections will focus on ensuring treated fields are correctly posted and proper enforcement actions are taken when violations occur. Our staff expects to complete evaluation of the notification and hazard communications requirements in mid-2002.

Answering questions about pesticide risks

Risk assessments are designed to answer questions about a chemical. What is its toxicity? How much exposure occurs from various uses? What is the probability that use will cause harm? Our scientists conduct risk assessments under the umbrella of three legislative mandates: the Toxic Air Contaminant Act of 1983 (which focuses on pesticides in air), the Birth Defect Prevention Act of 1984 (chronic health effects), and the Food Safety Act of 1989 (dietary exposure). Pesticides are selected for risk assessment based on the highest degree of health concerns. If risk assessments show that a pesticide cannot be used safely, we change how it is used or — if necessary — cancel its use.

In the past 15 years, we have completed more than 140 risk assessments. In 2001, DPR scientists completed seven risk assessments that were made available for external peer review: naled (for dermal effects), thiabendazole, MITC, atrazine, chlorpyrifos, and methyl bromide (inhalation and dietary exposure assessments — a single pesticide may undergo multiple risk assessments). In addition, risk assessments for 10 chemicals were in the final stages of review: methamidophos (dietary), acephate (dietary), endosulfan, carbaryl, hydramethylnon, methyl parathion, mancozeb, metam-sodium, chlorothalonil, and azinphos-methyl. Two risk assessments were initiated: ortho-phenylphenol and chloropicrin.

In 2002, we plan to begin risk assessments on cyfluthrin, fipronil, indoxycarb, imidacloprid, simazine, and sulfuryl fluoride.

Three risk assessments are ready for review by the Toxic Air Contaminant Act Scientific Review Panel, after discussion at public workshops. The Panel is also reviewing about two dozen scientific issue papers prepared by DPR and Cal/EPA's Office of Environmental Health Hazard Assessment.

AT THE BORDER

Pesticide problems do not respect international boundaries. We have been working closely with our partners from the Mexican government on a number of initiatives, including the Residue Tracking Project. About 3 percent of the produce imported from Mexico has illegal pesticide residues (compared to 1 percent for domestic produce). DPR enforcement specialists are working with Mexico's Sanidad Vegetal to establish procedures to quickly trace problems and prevent reoccurrences. DPR biologists will also make presentations to Mexican growers, farm managers, and government officials to suggest ways ways to reduce illegal pesticide residues on produce.

Another cross-border project designed to share information and foster cooperation is the U.S./Mexico Pesticide Information Exchange, funded by a U.S. EPA grant. In October 2001, DPR was one of four states hosting inspectors from the Mexican departments of labor and health. We explained DPR's programs and policies, and took our guests on a field tour to observe pesticide applications and see local enforcement in action.

INVESTIGATING PESTICIDE INJURIES

DPR has the nation's most comprehensive program to record, investigate and track pesticide-related illnesses in both agricultural and non-agricultural settings. We get illness reports from physicians, supplemented by staff review of workers' compensation records. County Agricultural Commissioners investigate every case and report the results to us for analysis by our specialists. With the exception of 1999, reports of pesticide-related illnesses and injuries have declined since 1995. The 2000 data summary will be available early in 2002, and summaries for previous years are on our Web site.

Improving illness reporting has been a longtime concern. This past year, we finished a special project in which our scientists reviewed hospital records, death certificates, and poison control center logs for pesticide incidents. When we compared these cases to our illness database, we confirmed that we learn about essentially all episodes in which more than one person is made ill, and a substantial portion of illnesses in agricultural settings. However, residential and intentional exposures are poorly reported. We're addressing this shortcoming by contracting with the California Poison Control System. Their poison information specialists are reporting pesticide illnesses on behalf of consulting physicians. Initial results have been promising.

ENCOURAGING COMPLIANCE, EMPHASIZING SAFETY

Ensuring the safe use of pesticides means making sure people use pesticides properly. This is especially true of those in the business of recommending or applying pesticides. DPR has long had a strict program of licensing and certification for these professionals. In 2001, we issued licenses or license renewals for more than 11,650 individuals and 2,110 businesses. The licensing section of our Web site also expanded significantly. Among other features found there are application forms and examination results, information on continuing education requirements, and lists of persons and businesses with current licenses.

Just added to the site is a downloadable version of the recently updated *Laws and Regulations Study Guide*. DPR contracted with the University of California to revise this essential guide, which had last been updated in 1998. DPR also worked with UC and with stakeholders to develop the *Aquatic Pest Control* manual and the *IPM Manual for Agricultural Pest Control Advisers*. IPM, or integrated pest management, is an environment-friendly approach that combines biological, mechanical, cultural as well as chemical strategies to manage pests. Beginning in January 2003, prospective licensees will have to demonstrate knowledge of IPM principles and techniques to pass the pest control adviser exam.

Having people comply with our rules is our ultimate goal. We are developing a new series of handouts to help pesticide users better understand and follow the rules. Commissioners will distribute the fact sheets to growers who use pesticides and to employers who violate pesticide laws. The handouts summarize problems found in our compliance surveys, and emphasize the correlation between noncompliance and harm to workers, the public, and the environment.

We approached safety concerns from the worker's perspective by revising our hazard communication handouts. These Pesticide Safety Information Series brochures — available on our Web site in both English and Spanish — highlight workplace safety measures, explain where workers can find information on specific

pesticide applications, and provide phone numbers to encourage workers to contact DPR directly when they have questions regarding their rights.

IMPROVING COUNTY ENFORCEMENT

Our Enforcement Branch focuses on setting statewide policies and on evaluating the effectiveness of county programs. We assist the Commissioners in planning their local programs and presenting outreach to agricultural stakeholders. The counties, in turn, use the policies, procedures and training we develop to assure statewide consistency in the administration of their own enforcement programs.

In 2002, we will be examining ways to collectively use and integrate our enforcement tracking database, field inspections database, compliance assessment information and Commissioner effectiveness evaluation reports to identify and set enforcement priorities and to direct staff resources at those areas where it is needed most. We also plan to begin reexamining compliance problems identified in the 2001 Compliance Assessment Report.

Additionally, we are providing resources toward investigation, case preparation and administrative hearing officer support to improve enforcement actions by Commissioners and ultimately strengthen our uniform approach in taking statewide enforcement actions

GETTING A GRIP ON DRIFT

Pesticide drift is a decades-old problem. Advances in science and technology now give us tools to make better decisions. Drift onto adjacent crops can lead to severe crop damage or illegal residues. With more Californians living closer to agri-

Communicating with our stakeholders

In 2001, we restructured two longstanding advisory committees and reestablished one that had been dormant for years. Our goal was to eliminate duplication and improve communications with stakeholders.

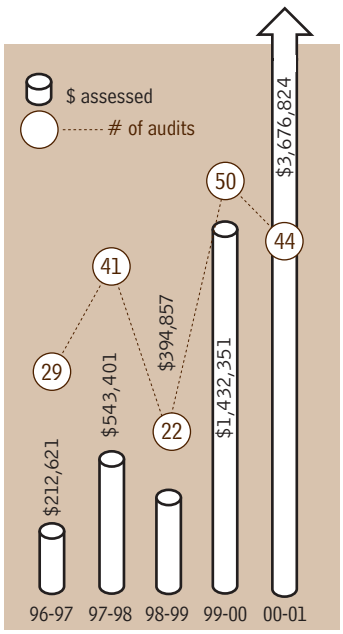
We folded the Pesticide Advisory Committee into our Pesticide Registration and Evaluation Committee (PREC), making the PREC our major interagency advisory group. We also restructured our Pest Management Advisory Committee (PMAC) to broaden its membership and get its input on a wider range of pesticide issues.

We began reviving the Agricultural Pest Control Advisory Committee in the fall of 2001, and expect to complete the appointment of industry and government members early in 2002. This mandated committee will give us input on licensing and certification activities.

We also named 27 members to a new group that will help us prepare a report (due to the Legislature in January 2003) on long-term DPR funding. Members of this PMAC subcommittee will offer the perspective of industry, farm labor, and public interest groups in developing recommendations to ensure the Department has stable funding. The subcommittee was set up under 2001 legislation which reauthorized a pesticide sales fee that provides significant funding for DPR programs.

COLLECTING RECORD UNPAID ASSESSMENTS

Mill assessments — fees on pesticide sales — support DPR regulatory programs. Our Audit Branch checks to see that products are legally registered and mill fees are paid. Audits and assessments have increased in recent years, culminating in a record $3.7 million in fiscal 2000-01. In addition, auditors discovered 48 pesticidal products being sold in California that were in violation of registration requirements.



cultural fields, drift incidents that cause human illness and property damage are more likely to occur. Moreover, drift incidents account for a high proportion of reported pesticide illnesses. At the same time, new research has increased our understanding of drift and techniques to control it. Years of research have revolutionized pesticide application technology. Decisions once based on seat-of-the-pants judgements and a finger to the wind are increasingly based on scientific instruments and precise equations.

DPR has strongly supported the Spray Drift Task Force, an industry initiative to reduce drift incidents through label changes, "best management practices," and extensive outreach and education efforts. We also are working with U.S. EPA in a nationwide effort to adopt uniform drift minimization standards for agricultural crops, forestry, rights-of-way, recreational areas, lawns, and home gardens. In August 2001, DPR hosted a meeting of the National Coalition on Drift Minimization. This group of regulators, educators, pesticide applicators, manufacturers, and others is working to identify and promote regulatory, educational and technological improvements for reducing pesticide spray drift from application sites.

In September 2001, DPR cosponsored the Pesticide Spray Drift Educator's Conference in Sacramento. Regulators, applicators, educators, advisers, agrichemical industry representatives, County Agricultural Commissioners, public interest advocates and other attendees from throughout the world shared information on the latest developments in application equipment and techniques designed to prevent drift. U.S. EPA, the Spray Drift Task Force, and the American Association of Pesticide Safety Educators were additional cosponsors.

Acknowledging the need for reasonable rules that work in the field, and are consistently and strictly enforced, DPR and the County Agricultural Commissioners reviewed current laws and regulations and outlined a series of changes to policies. Simultaneously, U.S. EPA proposed a series of changes to pesticide labels to make drift prevention language clearer, more consistent and more easily enforceable, and to allow flexibility for the use of new application technology. U.S. EPA expects to have the new language in place by October 2003. DPR provided input to ensure the new language suits California conditions and should it be necessary, we may further modify our restrictions to prevent drift.

Monitoring food residues

In 2001, we celebrated the 75th birthday of California's produce monitoring program by inviting the world in. We posted on our Web site results from the nation's oldest and most comprehensive state program to find illegal pesticides in fruits and vegetables. In this benchmark program, DPR routinely tests domestic and imported produce sampled at wholesale and retail outlets, packing sites, and seaports and other points of entry into the State. More than 5,000 samples of more than 75 kinds of fruits and vegetables are tested each year, for more than 200 pesticides and breakdown products. Detectable levels of pesticide residues are compared against a "tolerance," or maximum level of a particular pesticide allowed in a particular commodity at harvest. (The tolerance is set at a level intended to protect consumers, including children.)

Residue data from 1986 through 2000 can now be downloaded in text file format. Narrative overviews outlining trends and significant findings are also available for 1995 through 1997. The 1998-2000 overview will be available in spring of 2002.

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