



2007-08

PROGRESS REPORT

CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION



*bring home the green*

DPR's leadership team (the photo was taken in the redwood grove that graces the courtyard of the Cal/EPA headquarters building), from left to right:

**Tobi Jones**

*Assistant Director*

**Chris Reardon**

*Director of Legislation*

**Paul Gosselin**

*Chief Deputy Director*

**Joanne Payan**

*Assistant Director*

**Mark Rentz**

*Deputy Director*

**Mary-Ann Warmerdam**

*Director*

**Jerry Campbell**

*Assistant Director*



The Department of Pesticide Regulation's 350 employees (among State government's 200,000-plus workers) have the responsibility of ensuring the safe use of pesticides, and encouraging the use of less risky ways of fighting pests. This publication, our biennial Progress Report, reviews the accomplishments of the team assembled at DPR. In the pages that follow, you will meet a few DPR employees. They are emblematic of DPR's dedicated staff and its leadership team.

As Margaret Meade once said: "Never doubt that a small group of thoughtful, committed people can change the world. Indeed, it is the only thing that ever has." We believe that at DPR, 350 people are changing our world for the better, a little bit at a time.

# *Bring it home*

Under Governor Schwarzenegger, the Department of Pesticide Regulation has entered an exciting new era. Our budget is stable. Programs for the regulated community and public are improving and changing to meet the needs of the 21st Century. Enforcement is more proactive and consistent. We continue to work closely with our partners, the County Agricultural Commissioners, to fine-tune the best pesticide regulatory system in the nation.

Even against this backdrop of progress, there are always opportunities for improvement. Air and water quality issues are more urgent than ever. Our farmers face new pest problems here and intense competition from abroad. Least-toxic pest management becomes more complex and critical as the boundaries blur between agriculture and residential neighborhoods.

Several months ago, in a newspaper commentary, I introduced the phrase, “Bring home the green.” My point is that we can no longer assume that challenges involving the environment, economy and social equity are separate issues, or someone else’s problem. California’s manicured urban landscapes and farms may seem to have little in common, yet both affect our air and water quality, depending on how we tend our yards and crops. A robust economy and a safe environment are more closely related now than ever. And every community, large and small, deserves a fair share of California’s eco-wealth. In other words, we must create the same balance that characterizes any healthy, sustainable ecosystem.

“Eco” traces its roots to the Greek word “oikos.” In ancient times, it was the basic unit of society – what we think of today as home or household. But the Greeks had a much broader view of their personal environment. In addition to relatives, oikos involved friends, neighbors, and business. It was the model of a self-sustaining lifestyle.

Now we seek to put that ancient wisdom into a context that fits the complexities of the 21st century. “Bringing home the green” means building a more sustainable society – a society that affords to all its members clean air and water, safe and nutritious food, and economic opportunity to create a better life for themselves and their children.

“Bringing home the green” also means that the first step toward achieving these lofty goals begins with day-to-day decisions on the farm, in our neighborhoods, and on our doorsteps. As Mother Teresa said, “We cannot do great things in this life; we can only do small things with great love.”



Mary-Ann Warmerdam  
*DPR Director*

# About DPR

*DPR's mission is to protect human health and the environment by regulating pesticide sales and use, and by fostering reduced-risk pest management.*

Pesticides play a unique role in environmental protection. Contradicting the usual preventive approach, pesticides are toxic by design and deliberately released into nature. This paradox is explained by the fact that, when used properly, both natural and synthetic pesticides protect people and their environment from pests – animal, plant or microbial – that threaten human health and the balance of nature. Indeed, nature created the first chemical pesticides, produced by some plants and animals to repel their natural enemies.

Over time, people observed, adapted, and improved on natural pest management. Like most human endeavors, the beneficial use of pesticides depends on information and sound judgment. Scientific knowledge of pesticides continually evolves and improves. California's approach is based on a strong scientific foundation and has built the most comprehensive pesticide regulation program in the nation. Our task is to ensure that pesticides are used safely. Our standards are uncompromising, as is our commitment to protect people and the environment.

California has regulated pesticides for more than a century. Its citizens – through their gubernatorial administrations and Legislature – have established a comprehensive body of law to control every aspect of pesticide

sales and use, and to assure the state's pesticide regulators also have the tools to assess the impacts of that use.

The first pesticide-related law was passed in this state in 1901, and since the 1960s, a whole body of modern, increasingly science-based pesticide law and regulation has come into being. The Department of Pesticide Regulation (DPR) is not only the premier state agency for pesticide regulation in the U.S., but has built a reputation of world-class science and regulatory decisionmaking that makes it the acknowledged peer of the U.S. Environmental Protection Agency and Health Canada.

DPR's mission is to protect human health and the environment by regulating pesticide sales and use and by fostering reduced-risk pest management. In the 2006-07 fiscal year, DPR's budget was \$66 million, funded by regulatory fees. DPR has about 350 employees, including more than 120 toxicologists, environmental and technical specialists, and other highly trained scientists.

About \$18 million of our budget is designated to support local pesticide enforcement by the County Agricultural Commissioners. Under DPR oversight, the Commissioners and the approximately 400 biologists that work for them serve as the local

enforcement agents for pesticide laws and regulations in the state's 58 counties.

Among other duties, County Agricultural Commissioners are responsible for issuing the site- and time-specific permits required of those who wish to use restricted pesticides in agriculture. (Restricted materials are those pesticides that have a higher potential to have an adverse impact on health or the environment.) No other state has a permitting system for use of highly hazardous pesticides, and few states have effective mechanisms for local enforcement of pesticide laws.

DPR monitors the use of pesticides – from the farm field to the grocery shelf – to assure the safety of workers and consumers. Our program includes:

- Evaluation and registration of pesticide products before they can be sold or used in California.

- Statewide licensing of commercial applicators, dealers, consultants, and other pesticide professionals.
- Evaluation of health impacts of pesticides through illness surveillance and risk assessment.
- Environmental monitoring of air, water, and soil.
- Residue testing of fresh produce.

As a final step, DPR continually reevaluates the health and environmental impacts of the pesticides it regulates, stressing risk reduction and, whenever possible, encouraging less use of pesticides in favor of more natural pest controls. We support development and adoption of pest management practices designed to prevent buildup of pest populations and reduce or eliminate harmful environmental and health impacts of pesticides.

## *What is a pesticide?*

“Pesticide” is an umbrella term that includes many kinds of chemicals, natural and synthetic. A pesticide is any substance intended to control, destroy, repel, or attract a pest. Any living organism that causes damage, economic loss, transmits or produces disease may be the target pest.

Some common pesticides include:

- Insecticides
- Herbicides
- Rodenticides
- Molluscicides
- Repellents
- Disinfectants and sanitizers
- Fungicides



# Prevention

*“Whether it’s on the farm or in a residential neighborhood, each one of us can contribute to a more sustainable environment. Nature-friendly pest management benefits everyone.”*

**MARY-ANN WARMERDAM**  
DPR DIRECTOR

## **BRING HOME THE GREEN**

“Bring Home the Green” is the theme of a DPR initiative focused on encouraging urban residents to use integrated pest management (IPM). IPM stresses natural, preventive, and least-toxic solutions to weed, insect, rodent and other pest problems.

Few people would intentionally dump pesticides into creeks and streams. But urban pesticide runoff – which can happen when it rains or when people over-water their lawns and gardens – has polluted many urban waterways. Accidental contact with pesticides can also harm children and pets.

To advance the concept of IPM as a common-sense alternative to conventional pesticide-based pest control, DPR helped fund a project by the University of California Statewide IPM Program and the UC Cooperative Extension in San Diego to deploy computer kiosks in eight urban areas. A Master Gardener staffs each kiosk, which can be located in retail stores, at fairs and other public events. Interactive touch screens let consumers ask questions and print out information. Scripts for the kiosks were written by UC IPM experts with the goal of increasing awareness of how inappropriate pesticide use can lead to water pollution.

Under a federal grant, DPR is also working with UC’s IPM program to develop two online training courses for employees of retailers that sell pesticides. Employees can print out information and ask for additional material. They are also quizzed on how much they have learned. The courses focus on IPM, proper pest identification, how to select the right pesticide for the problem, and pesticide safety.

## **ADVANCING SCHOOL IPM**

DPR’s School IPM program continues to rack up accomplishments. Since it was launched in 2001 with the passage of the Healthy Schools Act, DPR has conducted 19 training sessions from San Diego to Eureka. DPR will have another four sessions in 2007. The emphasis will continue to be hands-on training in structural and landscape IPM for school district IPM coordinators. More than 600 school staff have been trained. The 569 school districts they come from (out of California’s 991 districts) include about 8,000 schools.

DPR’s third survey of the state’s schools showed a significant increase in adoption of IPM policies and practices. Two-thirds of districts now comply with all four main requirements of the Healthy Schools Act. In 2004, 59 percent of districts had a written policy

*We work with growers and urban pest managers to make alternative, least-toxic systems accessible to everyone.*

**NAN GORDER**



*Nan Gorder*

**Pest Management and  
Licensing Branch**

As supervisor in the Pest Management Analysis and Planning Program, Nan Gorder (with DPR since 1990) leads a team of scientists that support growers and urban pest managers as they seek creative solutions to complex biological and regulatory problems. The sometimes competing demands of air quality, water quality and human health can often be addressed first through practices that prevent pests from getting established. Answers can be found by listening carefully and supporting those whose livelihood depends on the crops they grow, as well as by applying scientific findings and the most advanced technologies.

requiring use of least-toxic methods of pest control, compared with 44 percent two years before. Fifty-five percent of schools kept records of pest sightings (an important part of an IPM program), up from 17 percent in 2002.

Schools showed marked improvements in ant management. When DPR did its first survey in 2001, the most often used approaches to ant management were ant baits (37 percent of districts) and insecticidal sprays (32 percent). In 2004, the most common methods of ant management were sanitation (80 percent) and ant baits (69 percent), two practices consistent with IPM. Between 2001 and 2004, use of insecticidal sprays to control insects dropped dramatically, while use of baits, soapy water sprays, caulking and improved sanitation increased each year of the survey, signaling a measurable shift toward use of IPM.

DPR's fourth survey went out to about 1,000 public school district IPM coordinators in April 2007. We are

tracking changes in IPM policies and practices, specifically ant and weed management. Results (expected in 2008) will help us identify resources schools may need to make it easier for them to use IPM to manage pests.

School IPM outreach also included:

- Developing a wall calendar that highlights preventive practices, pest monitoring and other IPM activities suitable for each month. DPR sent one to all California school districts to help them record their IPM activities.
- Producing a poster that reminds teachers not to use pesticides in classrooms and lists ways to prevent pests. DPR sent copies to school IPM coordinators statewide.
- Adding a handout on mice and rats to DPR's Pest Information Series, which already included handouts on ant and cockroach pest management.



## *Rewarding Innovators*

Since its inception in 1994, DPR has presented more than 100 IPM Innovator awards. IPM – integrated pest management – promotes natural pest solutions to build a healthier environment that sustains itself with less chemical intervention. Recipients represent a range of business and community interests, including farms and other businesses, community groups, schools, and advocacy organizations. They have forged new ground in IPM and all have actively and unselfishly shared their successful ideas with others.

### **WINNERS IN 2005 AND 2006 WERE:**

- University of California Cooperative Extension Small Farm Program, Fresno County.
- Ecology Action of Santa Cruz.
- Lahontan Golf Club, Truckee.
- Lodi Rules for Sustainable Winegrowing of San Joaquin County.
- Natural Resources Conservation Service in Butte, Glenn, Sutter, and Yuba counties.
- The Pear Doctor, Inc., Lake County.
- Ty Parkinson, Bill Chandler and members of the Stone Fruit Pest Management Alliance, Fresno County.
- Agricultural Advisors, Sutter County.
- California Rice Commission, Sacramento.
- Hudson Vineyards, Napa.
- Integrated Prune Farming Practices, Butte County.
- Mesa Vineyard Management, San Luis Obispo County.
- Napa Valley Grapegrowers, Napa.
- Santa Clara County Government.
- The Nature Conservancy, Butte County.
- Vetsch Farms, Kern County.

- Collaborating with UC's IPM program to produce four interactive DVDs for school district training workshops. Three DVDs target district IPM coordinators and discuss IPM approaches for ants, weeds, and cockroaches. The fourth explains to school administrators the importance, cost-effectiveness, and long-term benefits of a school IPM program.
- Creating an online list of pesticides banned in schools with the 2005 passage of Assembly Bill 405. The law banned school use of canceled or suspended pesticides and those given conditional or interim registration by DPR. DPR updates the list quarterly.
- Developing an online summary of 2006 legislation extending the posting, notification and use reporting requirements of the Healthy Schools Act to private child day care facilities, and making IPM the preferred pest management strategy. We posted online samples of the annual notice and registry forms, and a template of signs. We also produced 14,000 handouts in English and Spanish to distribute to child day care operators.

## TRAINING FOR PREVENTION

Making sure that people and businesses that apply pesticides professionally are well-trained and know how to use pesticides responsibly is one of DPR's core missions, a key to preventing pesticide problems.

DPR is charged with licensing and certifying individuals and businesses that apply, sell, or recommend pesticides in California. DPR works cooperatively with the University of California and with stakeholders in developing study guides and examination materials.

To keep that program current, our licensing unit:

- Updated the laws and regulations exam. All license applicants must take this exam. With the many rule changes in the last decade, updating the exam was critical. We are now working with UC to revise the accompanying study guide.
- Revised the private applicator certificate study guide and exams. This study guide replaced one that was more than 10 years old. Developed for DPR by UC, it is now available in English and Spanish. After the certification examination

was revised, we also developed a new exam to recertify private applicators that choose to take a test rather than renew their certification through continuing education.

- Developed a new aerial applicator exam. Although the number of aerial applicators ('crop dusters') is decreasing, their responsibilities have increased in a state where urban areas are ever closer to farmland. The exam and study guide for these licensees was more than 20 years old and did not reflect many changes in law and technology. A panel of experts was assembled and asked to pool their expertise to develop an exam and study guide for DPR that reflected the knowledge and expectations required of aerial applicators. U.S. EPA is now looking at using the California study guide as a national model.
- Put in place regulations that require government employees who make recommendations for pesticide use on turf and similar outdoor areas be licensed with DPR as pest control advisers. Licensing ensures that these employees have professional education in pesticide use, important when they are recommending

what pest management methods to use on public lands, such as parks, cemeteries, roadsides, and golf courses.

Our licensing program is also developing a new study guide, exam and license category for maintenance gardeners, who typically mow lawns, do general yard cleanup, and take care of ornamental plants and turf. They apply pesticides only occasionally. Maintenance gardeners typically do not have (or need) the knowledge of pesticides required for DPR's landscape maintenance license, which is intended for people whose primary business is pest management, not gardening.

However, the law requires that anyone applying pesticides for hire – even incidentally – must be licensed. Ensuring pesticide applicators are trained and licensed is critical to safe use. DPR is working with UC on a new study guide and exam that reflects the lesser knowledge requirements for occasional pesticide use. Once the exam and study guide are ready – in the next year or two – we will set up a new license subcategory for maintenance gardeners.

## URBAN PEST MANAGEMENT WORKING GROUP

In early 2007, DPR formed a group to address pesticide problems associated with pesticide use in the State's rapidly expanding urban areas, including pesticide runoff into creeks and streams. The Department's Pest Management Advisory Committee recommended forming this special study group to focus on urban pesticide use. It includes leaders in urban pest management, water quality experts, and representatives from government, academia, industry and environmental groups. They are working on creative recommendations on how DPR can leverage its resources to solve urban pesticide use problems.



## *Polo Moreno*

### **Pest Management and Licensing Branch**

A marine biologist by education and training, Polo's 18 years with DPR have all been with our Endangered Species Project, which he now helps manage. DPR's program to protect endangered species tailors pesticide use controls for the state's unique microhabitats, cropping patterns and land use, based on accurate habitat maps. California is second only to Hawaii in number of endangered species. Polo works with farmers, pest control advisers, wildlife experts, and others to develop measures to protect endangered species from pesticides, putting into place use limits that allow needed pest control while providing protection to endangered species.

*We deal with real-world scenarios and help farmers and urban pest managers make good decisions on what to spray, and when and where, so species are not harmed.*

### **POLO MORENO**

We are also creating a license subcategory for people applying fumigants (like metam sodium and methyl bromide) on agricultural land. New regulations expected to be in place by the end of 2007 will require that fumigants be applied only by licensed pest control businesses employing a qualified person with specific training in field fumigation. UC is working on an examination and study guide for this new license subcategory.

### **INNOVATION IN AG**

Thirty-one San Joaquin Valley fruit growers and their pest control advisers are working with the California Tree Fruit Agreement, U.S. EPA, DPR and UC's Kearney Agricultural Center to test and promote new reduced-risk methods and technology in the age-old war against crop-destroying pests.

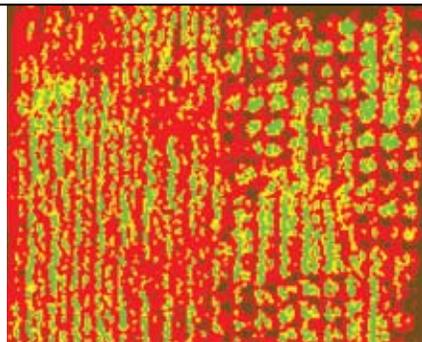
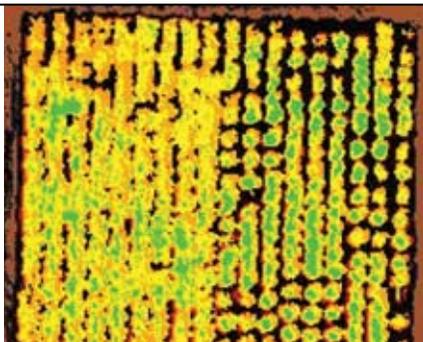
U.S. EPA funds this four-year project. Its goal is to reduce by 20 percent the use of five pesticides by peach and nectarine growers. The five pesticides are broad-spectrum insecticides that kill both good and bad bugs. Some of these compounds have been found in rivers and streams at levels toxic to water organisms. DPR detected two of the pesticides – diazinon and chlorpyrifos – consistently throughout a

year of air monitoring which we did at three schools in the Fresno county community of Parlier.

A core component of the stone fruit project is UC's new *Seasonal Guide to Environmentally Responsible Pest Management Practices in Peaches and Nectarines*, a handbook on proven alternative practices, focusing on:

- Treating for pests based on monitoring the extent of problems.
- Tolerating pests below economic thresholds.
- Using cultural or biological controls whenever possible to prevent increases in pest populations.
- Using effective, less-toxic pesticides whenever possible.
- Avoiding broad-spectrum pesticides.

The stone fruit project is also testing technology to reduce pesticide use. In 2006, DPR bought a target-sensing "smart sprayer" for UC Kearney that Parlier-area farmers can use without cost. Researchers documented that using the sprayer – which shuts off application between plants – can decrease pesticide use from 15 to 45 percent. DPR will continue this program for another three years.



In cooperation with U.S. EPA, DPR is funding a remote sensing project to test how well new aerial photography detects the early stages of a pest infestation. This is when an IPM approach is most effective, using an environmentally friendly pest management strategy to keep pest populations below a level that causes economic damage.

“Multispectral imaging” uses a special camera to cut one photograph into 4 broad color bands representing different parts of the electromagnetic spectrum. The photos measure the electronic magnetic energy reflected from the crop. Plant health is a major factor that dictates the amount of energy reflected. Multispectral images from the air can detect crop stress – such as pest infestations – and diagnose its cause.

This project is in its early stages. We are testing the technology in peach orchards in Fresno County. After the images are taken, pest specialists go into the fields to verify that the images are correct. Once perfected, the technology can provide farmers with details on crop condition that can be programmed into variable-rate equipment. For example, a tractor equipped with a special computer and

locator equipment can be driven through a field and it will automatically apply pesticides only where needed, based on conditions seen in the imagery.

Another Kearney Ag Center project funded by DPR focuses on a new grape pest, the vine mealybug. Organophosphates used to combat this pest can contaminate waterways, get into surrounding air, and cause worker illnesses. The two-year project will test less-toxic pesticides as well as using imported natural enemies and mating disruption.

### **PROTECTING ENDANGERED SPECIES**

Endangered species must be protected from harm that can be caused by pesticides. This is not only the law, but also makes good sense. DPR helps farmers and other pesticide users do this by recommending ways that needed pest control can be done and endangered species protected at the same time.

An important part of DPR’s endangered species protection project is how we use computer-based geographic information systems, or GIS for short. GIS helps us pinpoint habitats of

endangered and threatened species. DPR works closely with growers, pesticide applicators, County Agricultural Commissioners, wildlife experts, and other local groups to develop workable pest control methods to protect endangered species.

DPR has developed maps where these species make their homes near agriculture. Our online tool called PRESCRIBE allows pesticide users to find out quickly if there are endangered species in their areas of operation. The database provides use restrictions or alternative methods of application, depending on the pesticide. In 2006, DPR designed, printed and distributed more than 40,000 bookmarks in English and Spanish on how to use PRESCRIBE.

DPR also publishes field identification cards and other educational materials to help pesticide users identify endangered species and their habitats. DPR recently translated the field identification cards and instructional materials into Spanish. We distribute training materials at continuing education seminars and they are also available on our Web site, [www.cdpr.ca.gov](http://www.cdpr.ca.gov), click “Endangered Species.”



*DPR is funding research into a special kind of aerial photography to detect pest problems. The multispectral photo, far left, shows an orchard relatively free of red areas that designate mite infestation. The next photo, a month later, shows expanding mite populations. A researcher later checks photo accuracy by examining infested trees.*

# Enforcement

*“Law-abiding businesses support strong, consistent enforcement by DPR because this prevents violators from gaining an unfair advantage in the market.”*

**MARY-ANN WARMERDAM**  
DPR DIRECTOR

The goal of California’s pesticide laws is to protect people and the environment from harm that could be caused by unsafe pesticide use. To help pesticide users follow the law and use pesticides safely, DPR uses many tools, including compliance help, inspections, and enforcement.

California is the only state that has a local pesticide enforcement network. County Agricultural Commissioners in California’s 58 counties enforce pesticide laws, under DPR oversight and supported by county and state funding.

## **STRENGTHENING ENFORCEMENT**

As residential development moves increasingly into agricultural areas, pesticide enforcement becomes more challenging. Most pesticide users are conscientious and obey the rules, but a few violators can threaten California’s reputation as a world leader in agriculture and pesticide regulation. Carelessness or accidents involving pesticides can have serious consequences. There have been a few incidents when pesticides drifted onto workers or into rural communities, sickening many people. Harmful pesticide drift is illegal, and the public must be protected.

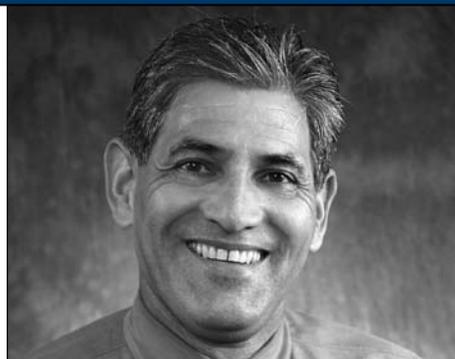
From DPR Director Mary-Ann Warmerdam’s perspective, pesticide enforcement, while not broken, needed

strengthening. Building on Cal/EPA’s goal of improving environmental enforcement, a pesticide Enforcement Response Policy was developed jointly by DPR and the Agricultural Commissioners in 2005. The goal was to help counties set priorities and make enforcement response more consistent. An informal DPR survey of pesticide enforcement actions found that between 2004 and 2005, proposed fines nearly doubled.

In October 2005, Governor Schwarzenegger directed DPR to adopt the policy as a regulation, which carries the weight of law. The new rules went into effect in late 2006. Like the earlier policy, they follow the common-sense idea that violators should be punished, and the most serious violations should draw the most serious penalties. Enforcement works best when those responsible for enforcing the law use tools suited for the job. Enforcement actions include warning letters, fines imposed by the Commissioner or a court, or action that suspends or cancels a violator’s license to do business. Fines can be as low as \$50 and as high as tens of thousands of dollars, keyed to the seriousness of the offense. The regulations also encourage Agricultural Commissioners to give district attorneys the opportunity to file civil or criminal prosecution in serious cases.

*I like working with the CACs, all striving to do the same thing – protecting people and the environment, making sure workers are protected, providing food safe to eat.*

**AL LOMELI**



*Al Lomeli*

**Pesticide Enforcement Branch**

Al has worked in pesticide regulation for 29 years, 19 years with DPR and before that for the Fresno County Agricultural Commissioner (CAC). In California, county agricultural commissioners are responsible for local enforcement, under our oversight. Since 1995, Al has been supervisor of our Central Regional Office in Fresno, one of three DPR regional offices. He and his staff conduct joint inspections with their CAC counterparts to help evaluate how CAC offices are enforcing pesticide laws. They also work with the CACs to target areas that need improvement to strengthen local enforcement programs. Regional staff also help the CACs develop annual work plans designed to strengthen local enforcement. The work plans have clearly stated goals and performance measures, balancing DPR's statewide enforcement priorities with local conditions unique to each county.

With policy now having the force of regulations, some counties have seen a 10-fold increase in penalties. In two years, DPR plans to evaluate the impact of the new rules to see if there are areas where improvement is needed, either by amending the regulation or revising procedures.

**GAINING COMPLIANCE WITH PESTICIDE LAWS**

To be effective, strong enforcement must be accompanied by better inspections and compliance assistance. In 2006, DPR published a guide for employers to help them navigate the complex web of pesticide law and regulation. The guide can be downloaded from DPR's Web site and is available from many Agricultural Commissioners' offices.

The Department also printed thousands of wallet cards to help employers and employees interpret the codes on pesticide labels that signify what

protective equipment pesticide users must wear.

DPR is also funding a pilot project in Kern County designed to improve protections to workers and others from pesticide drift. Kern County is setting up a system to notify operators of bordering properties when restricted materials are to be used. This project complements a grower-sponsored effort ("Spray Safe") aimed at reducing drift incidents by strengthening farmer-to-farmer communication when pesticides are scheduled for application.

**THE CAC CONNECTION: I-87PESTLINE**

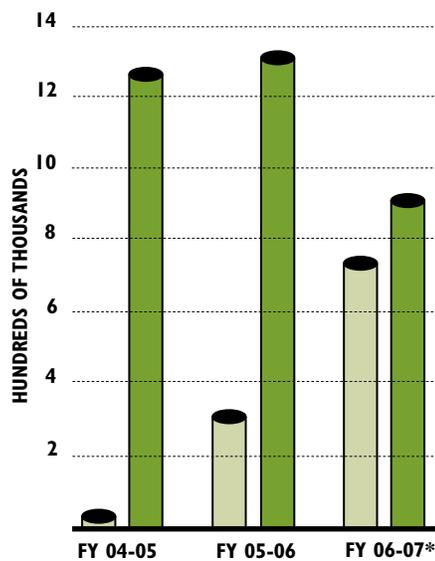
In late 2006, DPR launched an automated, toll-free line that provides the phone number of the County Agricultural Commissioner and then offers to transfer the caller there. The recorded line, in English and Spanish, is designed to encourage timely filing of

*DPR's new toll-free number helps callers connect to their County Agricultural Commissioner, a key to timely investigation of pesticide complaints.*

**Pesticide Complaint ?**  
**I-87PestLine**  
INFORMATION LINE   
**1-877-378-5463**

**¿Queja del pesticida?**  
**I-87PestLine**  
LÍNEA DE INFORMACIÓN   
**1-877-378-5463**

## AUDITS BOOST MILL PAYMENTS



### MILL COLLECTED FROM AUDITS CIVIL PENALTIES

Mill fee collections after auditors turned their attention to unlicensed pesticide sellers and companies that had never before reported pesticide sales. The dark green bar represents past-due mill fees paid by companies after their audits, light green the associated civil penalties.  
(\*FY 06-07 – through March 2007)

pesticide complaints, a key to successful investigations.

“Our goal is to help people with pesticide problems as quickly as possible,” said DPR Director Mary-Ann Warmerdam. “The 1-87PestLine is an important innovation that will help us and our local partners, the County Agricultural Commissioners, enforce pesticide laws and protect the public. Despite our earlier outreach, many people seem to be unaware of how to report pesticide problems, or whom to call.”

Over the next two years, 1-87-PestLine will be listed in new telephone directories in the government pages under “Pesticide,” to make it easier to find.

### HELPING COUNTIES IMPROVE ENFORCEMENT

DPR oversees the work of the County Agricultural Commissioners, who enforce pesticide laws locally. DPR’s regional office staff help Agricultural Commissioners develop annual work plans which detail each county’s priorities in improving enforcement, compliance, and permitting. (By mid-2007, DPR will post the work plans on our Web site.)

DPR staff also evaluate county enforcement efforts and work with counties

where improvements are needed. DPR’s evaluations used to be something of a “widget count,” simply totaling inspections, for example, without regard to what the inspection was for. We now use objective-based performance measures, which examine how well counties are targeting local problems and patterns of continuing violations.

### MAKING POLICIES CLEARER

DPR traditionally communicated policies and procedures to Agricultural Commissioners in formal guidance letters. However, with hundreds of such letters issued over many years, searching for specific topics was difficult, as was knowing when a policy had been superseded by a newer one.

So we are consolidating policies and standards into eight manuals that will be the single source of guidance, available online and updated regularly. Three are completed: *Investigative Procedures, Laws and Regulations*, and *Restricted Materials and Permitting*. Nearly done are *Inspection Procedures, Enforcement Guidelines*, and *Hearing Officer Sourcebook*. Staff is working on an overview of the regulatory program, and a final volume, *Guidelines on Interpreting Laws and Regulations*.

### CAL/EPA ENFORCEMENT INITIATIVE

Cal/EPA and its boards, departments, and offices have been working for more than two years on a project to foster compliance with environmental laws and regulations.

Other goals of the Agency-wide enforcement initiative include:

- Targeting resources to the areas of highest environmental risk and high noncompliance.
- Improving consistency in statewide enforcement response.
- Ensuring clear and enforceable rules that are fairly enforced.
- Measuring enforcement and environmental results.

## COUNTY AGRICULTURAL COMMISSIONER PROFILE

### *Frank Carl*

Sacramento County Agricultural Commissioner Frank Carl strolls from his home to a park at the edge of the Carmichael community and points toward a small orange grove. "I'm sure that many people who live around here wonder what orange trees are doing in the park," he observes.

Not so many years ago, they would have wondered what a park was doing in the middle of the orange groves.

Carl, 57, has been a County Agriculture Commissioner for 17 years. He grew up in Grass Valley and graduated from California State University, Chico, before joining Yuba County as a pest detection surveyor. Then he went on to Merced and Yolo, where he served as deputy commissioner, before taking the top job in Sacramento County.

How has pest management changed? "It's a lot more technical in some respects, particularly when it comes to considering buffer zones for a pesticide spray application or fumigation," he says. "Our regulations today are much more refined – they're based on actual measurements and science, rather than the seat-of-the-pants assessments that we used to make in the field."

Carl also credits pest control advisers for helping growers adopt more sophisticated pest management techniques. "They've really helped us as far as encouraging IPM (integrated pest management)."

On the urban side, Carl believes pesticide concerns haven't changed as much as people think. "Even 30 years ago, we had calls from folks out in rural areas who didn't appreciate it when their roses were hurt by spraying from a neighbor farm." It's not that suburbanites are so much more environmentally sensitive today, says Carl. "There's just more of them...the percentage of complaints is probably about the same."

Ag-urban friction is now a permanent part of the landscape – in places where farming still has a foot-hold. "Who would have thought that all of Los Angeles could be paved over," says Carl, "when for many years, it was the No. 1 agricultural county in the state."



*“Our regulations today are much more refined, based on actual measurements and science.”*

**FRANK CARL  
SACRAMENTO COUNTY  
AGRICULTURAL COMMISSIONER**





## Paul Curtis

### Product Compliance Branch

Paul, with DPR since 1993, is an auditor whose job is to help make sure companies register their products with DPR as required by law and pay the mill fee on their pesticide sales, a fee that helps support California's regulatory program. A major focus of his branch since early 2006 has been to unravel and understand the complex retail purchasing networks used by the "big box" stores. He and his colleagues – who in earlier years had focused more on the agricultural chemical industry – have found that many home-and-garden pesticide retailers had not paid the mill fee or were selling some unregistered products. Bringing them into compliance levels the playing field for all pesticide sellers.

*Most companies are cooperative, once they know the rules. Other companies know the rules and when I visit for an audit, their body language tells me they've done something wrong. It's an auditor's job to find out what.*

**PAUL CURTIS**

### PROMOTING SAFE PRODUCTS AND AN EQUITABLE MARKETPLACE

To make sure pesticides are safe to use in California, they must be evaluated not only by U.S. EPA but also by DPR scientists before being allowed on the market here. To ensure pesticides have California registration, specialists from DPR's Product Compliance and Pesticide Enforcement branches conduct about 600 inspections a year wherever pesticides are sold. This includes plant nurseries, home-and-garden centers, agricultural chemical dealers, pool and spa centers, and industrial, institutional, restaurant, and hospital suppliers. When staff uncovers sales of unregistered products, sellers must pay any money and interest owed, and they are subject to civil penalties.

The same goes for sellers who fail to pay the fee levied on pesticide sales. The 2.1-cent fee on each dollar of sales supports pesticide enforcement, health and safety, and other DPR programs. To ensure law-abiding businesses are protected from unfair competitors, DPR must make sure firms selling pesticides pay their fair share of this fee.

DPR relies on pesticide sellers to report sales accurately and pay the fee on the

first sale in California. There are about 11,000 brand-name pesticide products registered in California, sold by about 1,300 registrants (companies that make pesticides), 450 dealers, and 100 brokers.

In 2004, DPR formed the Product Compliance Branch to consolidate product enforcement activities. Increased inspection and audits by the new branch found more than \$30 million in unreported sales. The resulting payments and penalties from dealers and retailers, along with higher petroleum costs (which push up pesticide product prices), helped increase mill fee payments to \$46.2 million in 2005-06, compared with about \$41.6 million the previous year.

The Product Compliance Branch audits pesticide registrants, dealers and brokers, and others selling pesticide products into or within California. Audits recently targeted structural pest control franchises, retail drug, pet supply, and hardware chains, the dental and medical supplies industry, and "big box" retailers.

Auditors found significant gaps in reporting of certain types of pesticide transactions, including Internet sales of industrial, institutional, and consumer-



use pesticides, sales by intermediate brokers, and sales through the distribution centers of nationwide retailers. Auditors discovered that shortcomings in state law led to underreporting of pesticide sales and underpayment of fees.

As a result, DPR sponsored legislation (Assembly Bill 1011, Matthews) that in 2006 expanded DPR's broker licensing requirements to cover not only sales of agricultural products but also pesticides sold for use in residential, industrial, and institutional settings. Newly licensed pesticide brokers, now aware of their legal obligations, joined registrants (mainly pesticide manufacturers), pest control dealers, and agricultural pesticide brokers in reporting pesticide sales and paying the mill assessment on those sales.

In mid-2006, budget increases proposed by the Governor and approved by the Legislature allowed DPR to more than double its auditing staff, from three to seven. This restored cuts made more than five years before and provided staff to help identify and track brokers and large retailers who are selling and distributing pesticides into California.

## *Getting better at what we do*

The Governor's budget for 2007-08 proposes enhancing DPR's capabilities to prevent adverse effects from pesticides and strengthen programs to encourage compliance with pesticide laws. This will help DPR meet challenges to improve California air and water quality, and protect workers and others from harm that can be caused by pesticides.

### **RESTORING PESTICIDE POLLUTION PREVENTION GRANTS**

The budget proposes two critical programs to prevent pesticide impacts, with a particular emphasis on people. First, the new \$780,000 grant program would advance reduced-risk pest management solutions in agricultural and urban settings. (DPR grant funding has not been available since the Pesticide Alliance Grant Program was eliminated in 2003.) Second, the budget provides for extending the Healthy Schools Act to private child day care facilities. Adding one position and \$149,000 will allow DPR to revise existing outreach materials and training to promote the adoption of integrated pest management in day care settings.

### **PREVENTING HARM TO PEOPLE**

To fully protect the most vulnerable people in California, and to achieve DPR's goal of zero major illness incidents, we must make sure our rules reflect the latest developments in health and safety. A \$634,000 budget item proposes five positions to address pesticide risks to air quality and to workers. This will help DPR develop risk reduction safety measures, adopt statewide rules, improve worker and physician outreach, and take pesticide product registration actions. Reducing farmworker illnesses, long a priority of California's pesticide regulatory program, has also taken on urgency with new environmental justice concerns. The worker outreach program will address worker safety, including providing information on employee rights to file confidential complaints about pesticide exposure, and how to do so.

### **ENCOURAGING BETTER COMPLIANCE**

Gaining compliance with pesticide rules is a critical underpinning of our capacity to protect people and reduce illness incidents. In the past two years, DPR has significantly strengthened pesticide enforcement, including implementing regulations that make enforcement response more consistent by ensuring the most serious violations draw the most serious penalties. Local enforcement is carried out by Agricultural Commissioners in each of California's 58 counties, with oversight, guidance and training from DPR liaison staff. A \$667,000 budget item would add six positions so DPR could enhance this program.

# Health

Just as the goal of every safety-minded factory is zero accidents, the goal of every pesticide regulatory program is zero illnesses. At DPR, we recognize that accidents and mistakes will happen. But working toward zero illnesses means we ensure that potentially harmful materials have suitable controls, and we encourage everyone to use pesticides responsibly and only when needed.

## ASSESSING THE HEALTH RISK OF PESTICIDES

The first step in making sure pesticides are used safely is to find out what the limits of safe use are. DPR scientists are among the world's best in evaluating the risk posed by pesticides and in developing ways to ensure those risks are minimized. In 2005 and 2006, DPR toxicologists completed 14 risk assessments and they are now working on 21 more.

Fumigant pesticides, used mainly to treat soil before planting, are more likely to drift and cause problems for workers and those living near application sites. It makes sense to study them as a group because measures to control these gaseous products are similar. To make most efficient use of our resources, we are working with the U.S. Environmental Protection Agency on risk assessments on these compounds, including methyl bromide,

sulfuryl fluoride, 1,3-dichloropropene, dazomet, iodomethane, chloropicrin, and MITC.

## STUDYING PESTICIDE EXPOSURE

You can't determine how to protect people from pesticides unless you know how much they are exposed to. Each year, scientists from DPR's Worker Health and Safety Branch collect data on pesticide exposure, to more accurately predict likely pesticide exposures and find out whether the measures we develop to reduce risk are effective. No other pesticide regulatory program in the U.S. does these studies.

In 2005 and 2006, DPR scientists studied worker exposure to pesticide products that produce phosphine, a toxic gas used to kill insects and rodents in stored grain and dried fruit. Another study focused on exposure to workers using conventional spray nozzles compared with workers using newer technology.

Our scientists also studied the exposure of workers who move irrigation equipment and who scout fields for pest problems, a study continuing into 2007. (Because of their short time in the field and limited exposure, these workers are exempt from many rules that restrict entry into fields after pesticide applications.)

## PREVENTING ILLNESSES

Workers who apply pesticides or who enter treated fields face the greatest risk, and their protection has been a DPR priority for decades. Preventing pesticide illnesses takes a multipronged approach. We must have good information – based on the best science – on what harm a pesticide can do, in what situations. Then we must make sure people who use pesticides are properly trained and know what to do should accidents occur.

DPR's worker safety program has a history of firsts (and served as a model for federal worker standards), but we don't rest on our past accomplishments. For example, our technical experts have been evaluating several years of data on pesticide illnesses to find out whether current control measures for MITC, chloropicrin, and phosphine-generating products are effective.

Scientific staff also looked at illnesses after pesticides were applied to buildings such as offices or homes, to find out if there were common causes. Our analysis showed that training of workers who apply pesticides to buildings should be improved. We also found that existing rules could be better enforced, to make sure people are not present when pesticides are applied and that tenants and office workers are informed about pesticide applications.

*Having a program in place to monitor pesticide exposures means that we can respond promptly to emergent problems and maintain a high level of safety.*

**MICHEL ORIEL**



*Michel Oriel*

**Worker Health and Safety Branch**

DPR's program to collect and evaluate pesticide illness data is recognized as a model for the nation and as a world leader. In identifying causes of illness and exposure, evaluations by Michel and her colleagues help improve measures to protect people from harm that can be caused by pesticide exposure. Michel (who came to DPR seven years ago after working in private industry) also analyzes trends in pesticide illnesses. For example, for a recent project she evaluated 10 years of data on illnesses caused by the fumigant chloropicrin. For this, she examined the effects of factors such as weather, distance from treated fields, methods of application, and methods of fumigant containment.

Scientists are also studying illness information and other data to find out if product labeling and use controls are adequate to protect people who use handheld equipment to apply pesticides. (Handheld equipment, used in agricultural, industrial, residential and structural settings, includes backpack sprayers, hand wands, and spray bottles.)

Many pesticides require the use of personal protective equipment, like gloves, respirator, and special clothing. Each year, there are illnesses because workers do not wear this equipment or the equipment fails. We are also looking at our illness data over the past decade to see if we can find common causes that we can correct.

Because many workers are from Mexico and may cross the border to get medical treatment, we are working with Mexican health authorities to help set up a cross-border program for reporting pesticide-related illnesses.

### **IMPROVING PESTICIDE ILLNESS REPORTING**

The law requires that any doctor who treats a patient with a possible pesticide illness must report that illness to the county health officer.

However, many doctors fail to follow through, either because they do not know of the reporting requirement or do not know the wide universe of chemicals that are considered pesticides. (Not only are insecticides, herbicides and fungicides pesticides, but also disinfectants, cleaners and sanitizers used widely in residential and institutional settings.)

DPR works continually to improve reporting of pesticide illnesses. With prompt notification of an illness, County Agricultural Commissioners can do better investigations. (Agricultural Commissioners investigate all pesticide illnesses reported in their counties.)





## Andy Rubin

### Medical Toxicology Branch

Andy is one of about 35 DPR toxicologists who conduct in depth evaluations of the possible health risks of pesticides. Over many months of intensive work, they review dozens or even hundreds of health based studies in order to produce detailed 300 page risk characterization documents that ask (and answer) questions like, "Under current use conditions in California, at what level of human exposure to a given pesticide can we reasonably ensure the absence of adverse health effects? What exposure routes (oral, dermal, inhalation, etc.) and exposure times (acute, subchronic, chronic, lifetime) are the most toxicologically relevant to California use patterns?" The work DPR scientists do helps make California safer for workers and the public.

*Through scientific analysis of the toxicology and exposure databases, we establish health standards designed to protect California workers and the public.*

### ANDY RUBIN

In a pilot project in the late 1990s, DPR contracted with the California Poison Control Center system to file reports for doctors. The project was a success and we learned of many illnesses that would have otherwise gone unreported (especially those caused by nonoccupational use of home-use pesticides). The State's fiscal crisis in 2001 meant the end of that pilot project. However, stable funding in 2006 prompted DPR to renew its arrangement with the Poison Control Centers. Under a three-year contract, the centers can electronically report pesticide illnesses they receive to county health officers and County Agricultural Commissioners.

### BETTER RESPONSE TO ODOR COMPLAINTS

Illnesses related to odor and illnesses that affect communities near farms received special attention in 2005 with an update of the handbook Agricultural Commissioners use to investigate pesticide-related illnesses. The new manual provides guidance in developing plans for doing illness investigations and in writing clear and complete accounts to record investigation results. It also incorporates a

protocol for investigating episodes in which pesticides affect large numbers of people living near a pesticide application.

Another improvement is documentation of DPR's policy on complaints or illnesses related to odor. The policy recognizes that if a person smells a pesticide, it is an indicator of exposure. Exposure to pesticides does not necessarily mean the application was done wrong and the pesticide was applied incorrectly. That must be determined by the investigation. If a violation is found, it can result in enforcement action against the applicator, including fines and other penalties. If the application was done according to the label and caused odor problems, DPR can explore the need for added controls to eliminate odor problems.

### WORKING WITH WORKERS ON PESTICIDE SAFETY

Our Worker Health and Safety Branch technical experts are improving leaflets designed to help employees work safely with pesticides. They are developing a new handout that will give workers more detailed and useful information on how they might be exposed to pesti-



cides, and how to recognize symptoms of pesticide-related illnesses. Recent worker surveys and input from worker focus groups guided the changes. This leaflet will become an integral part of the pesticide safety training field-workers go through regularly.

In 2007, DPR plans to propose new rules to so employees can get more information about pesticides being used in the fields in which they work. The regulations will provide agricultural workers with protection that goes beyond state or federal guidelines. The rules culminate several years of investigation and analysis by DPR's health and safety experts, who also consulted with industry and worker advocates. The rules to be proposed will:

- Require pesticide applicators to notify the grower before and after a chemical is used, and re-notify if the scheduled application date changes.
- Require the grower to manage his property as if the application could occur anytime within a 24-hour time window.
- Require hired contractors and growers to assure prior notification for any employees who walk within one-quarter mile of a treated field.

## *Shift toward lower-risk pesticides*

Under California law, all agricultural pesticide use must be reported to the State, along with commercial applications by pest control businesses to homes and other structures. DPR statistics for 2005 show 195 million pounds reported applied, compared to 180 million pounds the year before. There was less use of many of the more toxic compounds, and more pounds of reduced-risk pesticides used. Half the overall increase in pesticide use was in sulfur, a natural compound both organic and conventional growers apply to combat powdery mildew, a plant disease.

### **OTHER KEY CHANGES FROM 2004 TO 2005**

- Pounds of reduced-risk pesticides increased by 650,000 pounds applied (61 percent) and by 2.5 million acres treated (40 percent).
- Pounds of all the higher risk pesticide categories decreased, except for toxic air contaminants.
- Acres treated with carcinogens and organophosphates increased, mostly because of increased use of the fungicides mancozeb and maneb and the insecticide chlorpyrifos.
- Pounds of chemicals categorized as toxic air contaminants remained nearly the same as in 2005, while cumulative acres treated increased by 7 percent.
- Fumigant chemicals decreased in pounds applied (2 percent) and in cumulative acres treated (14 percent). Fumigants are gaseous pesticides used in agriculture mainly to treat soil before planting.
- Chemicals classified as reproductive toxins decreased in pounds applied (9 percent) and in cumulative acres treated (3.6 percent). Pounds of insecticide organophosphate and carbamate chemicals, which include compounds of high regulatory concern, continued to decline as they have for nearly every year since 1995.

# Air

*“We are committed to reducing emissions from pesticide use because there is no acceptable alternative to providing clean air for all Californians.”*

**PAUL GOSSELIN**  
DPR CHIEF DEPUTY DIRECTOR

Protecting the air we breathe is one of DPR's highest priorities. We focus not only on preventing health problems that can be caused by pesticide air toxins, but also on reducing pesticide emissions that contribute to air pollution. Many active as well as inert ingredients in pesticide products are volatile organic compounds (VOCs) that contribute to forming ground-level ozone, a major air pollutant in California. (See box, page 24, “What is a VOC?”)

DPR tracks VOC emissions from agricultural and structural pesticide products, and implements measures to reduce them. (Reducing VOC emissions from consumer products is the role of the Air Resources Board.) DPR produces an annual inventory estimating pesticide VOC emissions. To make it more accurate, in 2005 DPR required registrants (companies that make pesticides) to develop data on the VOC content of nearly 800 products. In 2006, DPR moved to cancel nearly 100 products whose registrants failed to provide the data. Most manufacturers responded by sending the information, and others withdrew their products from the market.

DPR used the data to estimate pesticide VOC emissions for 2004. This emission inventory (completed in 2006) showed trends similar to previous years, with

DPR achieving required reductions in pesticide emissions in two of the five geographic areas of concern. In the three remaining areas (San Joaquin Valley, Southeast Desert, Ventura), fumigants and emulsifiable concentrates are the major pesticide VOC sources.

## **AIR QUALITY INITIATIVE**

Moving to set a national benchmark for controlling pesticides in air, DPR in 2006 launched a major initiative to improve California's air quality.

Our goal is twofold: reduce air toxins and smog-producing emissions from pesticides.

Thousands of different pesticide products are used at farms, homes and businesses throughout the state, so the challenge of developing control strategies for pesticides in air is formidable.

California has a head start over the rest of the country. Other states are just beginning to identify the pesticide products that contribute most to air quality problems. In collaboration with the ARB, DPR finished that work years ago. We are now taking on the harder task of reducing those emissions without unnecessary hardship to the industries that rely on the chemicals.

*The job is difficult, challenging, and turning my hair gray, but I enjoy it because I work with great scientists and great friends.*

**RANDY SEGAWA**



*Randy Segawa*

**Environmental Monitoring Branch**

Randy, like many DPR employees, has been with the Department almost all his professional career (in Randy's case, 26 years). He supervises our air and ground water programs, with a focus on monitoring and mitigation of health and environmental impacts. These programs provide scientific support for key DPR regulatory areas, including fumigants, drift, environmental justice, and pesticides in drinking water. Randy leads a DPR team developing regulations to reduce volatile organic compounds from fumigants and was project manager for DPR's Environmental Justice Project in the Fresno County community of Parlier.

DPR's air quality initiative focuses on:

- Reformulating high-emission products.
- Reducing fumigant emissions.
- Developing strategic pest management partnerships.
- Promoting cleaner technologies.

**REFORMULATING HIGH-EMISSION PRODUCTS**

In non-fumigant pesticides, solvents used to formulate the product are the primary source of VOCs. In 2005, DPR required registrants to present plans to reformulate more than 700 non-fumigant products (chiefly emulsifiable concentrates) that contain VOC solvents. These liquid products contribute about 35 percent of the pesticide VOCs in the San Joaquin Valley. By mid-2007, DPR expects to have completed its VOC reformulation review and start the regulatory clock on removing any remaining high-VOC products from the market.

**REGULATIONS TO REDUCE FUMIGANT EMISSIONS**

Fumigant pesticides (like methyl bromide and metam-sodium) are applied to or injected into soil. These

gaseous compounds represent about one-fourth of the pounds of pesticides used in agriculture and contribute more than half of the VOCs emitted by pesticide applications.

Fumigant pesticides cannot be reformulated to reduce VOCs because the gaseous active ingredient is itself the volatile compound. So the focus is on reducing how often or how much is applied, or requiring low-emission application methods. By the end of 2007, DPR will put into effect regulations more strictly controlling fumigant use, strengthening what are already the toughest fumigant rules in the country.

**STRATEGIC PARTNERSHIPS WITH INDUSTRY**

Many California agricultural organizations are already working to reduce VOC emissions. DPR is working with these and other progressive industry groups to develop alternatives to problematic pesticides.

For example, the California Fresh Carrot Advisory Board is funding research aimed at reducing fumigant use. Fumigants protect carrots from damaging diseases and nematodes. Research targets include alternative fumigation methods and carrot varieties resistant to disease and nematodes.

Another industry leader is the California Strawberry Commission, recognized by U.S. EPA for funding more than \$10 million in research on reducing methyl bromide emissions and use, more than any other agricultural group in the world. The Commission has shared research results internationally with other industries.

### CLEANER TECHNOLOGIES

In precision agriculture, information management tools and other new technologies are used to assess and understand variations within a planted field. Farming practices can then be adjusted to take into account the real needs of the crop. DPR is promoting these new, environmental friendly technologies, such as:

- Equipment designed to improve application efficiency and reduce waste.
- Variable-rate technologies that adjust the rate of application according to variations in field conditions.
- Remote sensing and mapping technologies that can reduce pesticide use by guiding variable-rate application.

For example, in 2006, DPR helped fund use of several target-sensing “smart sprayers” that turn off application nozzles between plants. With guidance from university scientists, this technology is being used to find the best way to use it to reduce VOC emissions, drift, and pesticide use.

Another VOC research project, led by the University of California with added resources from DPR, the U.S. Department of Agriculture (USDA) and the Strawberry Commission, is focusing on how fumigation methods can be modified to reduce VOC emissions. DPR also provides technical advice and oversight for several VOC research projects being funded by the ARB and USDA.

DPR is funding research into insecticides with low-VOC potential. For example, UC Kearney Agricultural Center is evaluating the effectiveness of about 75 alternative pesticides in cotton, alfalfa and dry beans.

In May 2007, DPR and other organizations sponsored a pesticide VOC research symposium to coordinate research activities and discuss research needs. Topics included emission inventory research, reducing emissions

from fumigants and from emulsifiable concentrates, pest management practices and technology that reduces VOC emissions, and economics.

### REDUCING AIR TOXINS

Under the Toxic Air Contaminant (TAC) program, DPR evaluates pesticides in air and, in cooperation with scientific reviewers, determines potential risks. If we identify a pesticide as a TAC, we work with air districts and others to decide if stricter use controls are needed.

In 2005, DPR completed a risk assessment for the insecticide methidathion. The TAC Scientific Review Panel approved the methidathion document in early 2007, and DPR is listing methidathion as a toxic air contaminant. In 2006, DPR completed the risk assessment for the fumigant sulfuryl fluoride and in May 2007, we listed it as a toxic air contaminant. Next we will be evaluating the need for added controls.

The ARB conducts pesticide monitoring to help DPR evaluate potential TACs. The monitoring also helps determine the need for or effectiveness of measures to reduce potential risks posed by these pesticides. In 2005 and 2006, the ARB monitored for acro-

### WHAT IS A VOC?

VOCs, or volatile organic compounds, contribute to the formation of smog. VOCs come from various sources, including vehicle emissions. Many pesticide active and inert ingredients are VOCs. The federal Clean Air Act requires California to track and reduce VOCs by specified amounts in areas of the state with the dirtiest air, including the San Joaquin Valley.

lein, 1,3-dichloropropene, and methyl bromide and, in 2006, for sodium tetrathiocarbonate. Results will help us decide if we should continue with the next steps in evaluating and controlling them as toxic air contaminants.

### ADDED CONTROLS FOR MITC

In 2006, DPR began developing risk reduction measures for methyl isothiocyanate (MITC), already listed as a TAC. MITC is a breakdown product of several pesticides used to fumigate soil before planting of crops. The most widely used compounds are metam-sodium and metam-potassium.

MITC can pose a significant health hazard and has caused several illness incidents. DPR worked with other agencies to develop new ways to reduce risks from short-term exposures that might occur near applications with pesticides that emit MITC. DPR is holding workshops in mid-2007 to get public comment to help fine-tune the restrictions.

DPR plans statewide regulations for MITC-generating pesticides in 2008. But to get control measures in place by fall 2007, DPR will issue them first as permit conditions. MITC-generating

pesticides are restricted materials and require a permit from the County Agricultural Commissioner (CAC) before they can be used. For certain restricted materials, DPR develops control measures that CACs can add to permits. DPR will send suggested MITC permit conditions to CACs for permits that will be issued for the fall and winter of 2007. The new controls will focus on the most widely used application methods.

### COMMUNITY AIR MONITORING

In more than two decades of air monitoring, DPR had never concentrated its resources on sampling for many pesticides, in a single community, for a year. We did that in 2006 with a pilot project in Parlier, a farming community southeast of Fresno. Our full report, to be released by early 2008, will detail the findings and risk evaluation. Key points:

- With the ARB, DPR monitored 40 pesticides and breakdown products over 12 months. DPR took samples at three sites, three days a week. The ARB monitored every six days at one site. All monitoring was at Parlier schools.

- Of the 23 pesticides or breakdown products detected, 17 are assumed to be present because of their use as pesticides. (Some chemicals used as pesticides also have major non-pesticidal sources, such as vehicle exhaust.)
- DPR used screening levels to assist in preliminary review of detections. Only the insecticide diazinon exceeded its screening level.
- Chlorpyrifos was detected in many samples. None was above the screening level.
- Because of the findings, DPR added diazinon to its list of pesticides given high priority for risk assessment. In addition, chlorpyrifos, already undergoing risk assessment, was placed on a more accelerated track.
- No pesticides were detected over the subchronic screening levels. Several pesticides were detected multiple days at multiple sites.

DPR is evaluating the feasibility of conducting more projects of this type or setting up a monitoring network in communities throughout the Central Valley.



# Water

DPR's surface water program identifies pesticides that may pollute rivers and other waterways and finds ways to prevent future contamination. Simply canceling all uses of a detected pesticide can have unintended effects. People often turn to other pesticides that can cause the same or other problems. For example, several years ago, because of health concerns and environmental effects, the federal government banned the home and urban uses of two insecticides, chlorpyrifos and diazinon. Consumers and structural pest control applicators started using products containing pyrethroids, which resulted in new environmental concerns.

## **PYRETHROID REEVALUATION**

DPR's approach is to find where and how pesticides get into water and then create strategies to solve the problem. For example, after studies showed troublesome pyrethroid residues in creek and stream sediment, DPR placed all pyrethroid products into reevaluation in 2006. (See "What is reevaluation?" in box, right.)

Pyrethroids, a class of insecticides originally from chrysanthemum flowers, are used in both agricultural and urban settings. In urban areas, their uses include pet care, structural pest control, lawn and garden maintenance,

and indoor insect sprays and foggers. Pyrethroids are relatively nontoxic to people and terrestrial animals. However, runoff into creeks and streams – where they collect in sediment – can be toxic to aquatic life.

In 2006, DPR ordered about 120 makers of more than 600 pyrethroid products to provide information to help DPR assess the effect their products have on the environment. No other pesticide regulatory agency in the country has ever tried to evaluate an entire class of pesticide products. DPR is working with other experts at the State and Regional Water Boards, water treatment plants, and storm water agencies to find out how pyrethroids move away from where they are applied. That will give us a solid, science-based foundation for developing solutions to the problem.

## **UPDATE: DIAZINON AND CHLORPYRIFOS**

Meanwhile, DPR is working with registrants of diazinon and chlorpyrifos products to keep these pesticides out of surface water. DPR placed these organophosphate (OP) insecticides, widely used in agriculture, into reevaluation in 2002 and 2003. In response, registrants changed label application instructions and will

monitor rivers and streams to prove the changes they made can solve contamination problems.

To encourage growers to use less-toxic insecticides, DPR is also working with Central Valley growers on alternative pest management methods for stone fruit and grapevines.

## **NEW DORMANT SPRAY RULES**

To tackle the problem of OPs from another direction, DPR put rules into place in August 2006 to control insecticide sprays during the dormant season. During winter, pesticides are applied to dormant tree and vine crops to kill overwintering pests and diseases. But many pesticides used as dormant sprays (including OPs and pyrethroids) cause problems when drift occurs or when rainfall washes residues into rivers and streams. The new rules restrict the use of most dormant insecticides when residues can run off into water.

## **COPPER CONTAMINATION IN BOAT HARBORS**

DPR is taking on another problem in the State's waterways: copper contamination, mainly from "antifouling" paints used to keep algae and other marine life from attaching to boat

*I like working for DPR and Cal/EPA. Reducing our ecological footprint and encouraging pesticide users to do the same is something I enjoy.*

**DENISE WEBSTER**



*Denise Webster*

**Pesticide Registration Branch**

Denise, with DPR since 1999, is now our Reevaluation Coordinator. Reevaluation is a tool DPR uses to find out whether specific pesticides are harming human health or the environment. DPR requires pesticide makers to provide data for our scientists to discover what impacts, if any, the products are having on human health or the environment. If we find significant harm, the next step is to determine how to prevent it. To do this, we need solid, scientific data. Coordinating reevaluation means acting as liaison to make sure pesticide makers understand the information DPR requires. She also helps pesticide makers work together to develop the data DPR needs.

hulls. For example, in some areas of San Diego Bay, copper has been detected at levels that can be toxic to aquatic organisms. Studies showed that antifouling paints contributed most of this copper contamination.

To find out if contamination associated with antifouling paints is a statewide problem, the State Water Board is funding water sampling by DPR at 23 salt and freshwater marinas throughout the State. The results, due in mid-2007, will decide our next steps.

### **PREVENTING GROUND WATER CONTAMINATION**

DPR scientists are monitoring ground water to check on the effectiveness of new controls that went into effect in 2004. The rules limit the use of certain pesticides in areas classified as vulnerable to ground water contamination. DPR scientists made new rules possible when they developed computer model-

ing that identified vulnerable areas of the state. They created the model using almost 20 years of DPR well monitoring data, along with soil data and climate information. The new rules moved DPR's ground water program from a reactive to a preventive approach.

DPR is also taking part in an inter-agency task force led by the State Water Board that is working to improve ground water monitoring and assessment. Participation simplifies the exchange of technical information between the two agencies. This has helped better focus joint efforts to develop new or improve existing methods of testing for pesticides in ground water.

Water Board staff have also tapped into DPR's ground water database to help the water agency identify areas that may be vulnerable to contamination from chemicals other than pesticides.

### **WHAT IS REEVALUATION?**

The Department uses reevaluation to require pesticide makers to provide the data DPR scientists need to find out why pesticides are causing problems – whether the problems are related to human health or environmental harm. Then, working with the companies, we can develop effective solutions that target the problematic uses.

# Transparency

DPR is committed to working openly with the people we serve, to make our operations and decisionmaking understandable to everyone affected. We value transparency, cooperation, service, accountability, and public involvement.

Good public participation results in decisions that are fair, equitable, efficient and meet the needs of those affected by them. It also helps to build good relationships with the people we serve, which is vital to our ability to respond to their needs and concerns in both the short and long term.

## **ENVIRONMENTAL JUSTICE PILOT PROJECT**

DPR's air monitoring project in the Fresno County community of Parlier shows how public involvement can forge links between government and the communities it serves.

The Parlier project is one of several pilot projects in Cal/EPA's Environmental Justice (EJ) Action Plan. (Environmental justice is the fair treatment of people of all races, cultures, and incomes with respect to how we develop, adopt, carry out and enforce our laws, regulations, and policies.)

From January to December 2006, DPR and the Air Resources Board analyzed

air in Parlier for traces of pesticides. DPR scientists are evaluating the data to determine the exposure and risk from individual as well as multiple pesticides. DPR and ARB will also evaluate other air pollutants, including vehicle emissions. DPR released interim results over the course of the project, and we expect our full report by early 2008.

If DPR finds that pesticide exposures are a health risk, the next step is to reduce those risks. Our options range from restricting the use of certain pesticides to awarding grants to promote less-toxic alternatives.

## **PUBLIC PARTICIPATION STRENGTHENS PROJECT**

The Parlier project differs from previous DPR air monitoring studies. We had never monitored in a single community for an entire year. Second, we had never made public participation an integral part of an air monitoring study.

In Parlier, DPR created an advisory group of local environmental and EJ advocates, farmers, and other community leaders. Beginning in mid-2005, they met to give us their perspective on the project. Their guidance helped us select monitoring sites, pesticides to monitor, and most efficient use of resources. At their recommendation, we held a community workshop in Parlier in January 2006 where our scientists

answered questions about the project. DPR continues to meet periodically with the advisory group as we evaluate the data we collected, and the group will help us plan a second workshop in early 2008 to go over the findings with the community.

## **SHARING PEST MANAGEMENT SUCCESSES**

Our technical experts are studying pest management practices in the Parlier area to help develop, evaluate, and promote lower-risk alternatives for Parlier's major crops – grapes, stone fruit, and citrus.

In the fall of 2007, we expect to release a detailed analysis of how progressive Parlier-area growers are dealing with pest problems, and propose ways to share the innovative approaches they are taking with other farmers.

The contacts staff made for the pest management assessment, and the information we gathered, became the foundation for providing more technical and financial support to conservation-minded growers. For example, DPR is funding research at UC's Kearney Agricultural Center in Parlier, aimed at finding less-toxic alternatives for managing vine mealybug, a damaging new grape pest. Partnership overtures to the federal Natural Resources Conservation Service paved the way

*As an IT manager, I lead a team of talented professionals who deliver high-quality service and support to our internal and external customers. At DPR, I do what I love and get paid for it!*

**CATHY COWAN**



*Cathy Cowan*

**Information Technology  
Branch**

Like many at DPR, Cathy brings a wide range of knowledge and expertise to her job. With an advanced degree in stream biology/aquatic entomology and after 10 years as a university researcher, she started at DPR in 1993 as a scientist in the exposure monitoring program. Her duties were at first split between scientific research and computer support but then moved more into information technology. She now supervises DPR's network operations and desktop support teams. Her scientific background gives her a unique insight into the IT needs of DPR a department where decisions must be based on the best science putting our databases and other information to work not only for staff but making it available and usable for outside researchers and the public.

for financial support for farmers using approved conservation practices in the San Joaquin Valley, starting with the 2007 growing season.

**SHARING WHAT WE DO**

“Sharing out what we do and how we do it, reaching out to people we didn’t reach before,” as DPR Director Mary-Ann Warmerdam puts it, DPR:

- Scheduled several regulatory hearings outside Sacramento, at times and places convenient to local residents, with simultaneous translation into Spanish. We conducted workshops in Sacramento, Oxnard, and Parlier on our air quality initiative.
- Held a dialogue session in spring 2006 on pesticide registration fees as well as a workshop for more than 150 registrants to review changes in the registration process.

- Changed our Web site to make it easier to comment on rulemaking and other pending decisions.
- Assigned the Pest Management Advisory Committee (whose membership is drawn from industry, academia, government, and public interest organizations) a broader role in advising DPR on policy formation and program development. For example, recognizing the increasing urbanization of California, DPR Director Mary-Ann Warmerdam has charged the PMAC with identifying opportunities for DPR to expand its role in non-agricultural pest management.
- In response to criticism that we drafted an EJ strategy and workplan with inadequate public input, we started over, establishing a stakeholder group to increase public participation in developing new plans. In 2006 and 2007, the group held



DPR held a community fair in Parlier to kick off our air monitoring project. We also invited two dozen local agencies to talk about jobs, education, safety and health. These children – among 300 attendees – got to meet their local firefighters.

ten public meetings to hammer out recommendations. Building on their work, DPR will complete working drafts and then hold workshops around the State to widen opportunities for public participation.

- Translated major publications and key rulemaking notices into Spanish. We also translated handouts on protecting workers and families from West Nile virus into Spanish, Vietnamese and Chinese, and distributed them through the California Department of Health Services to local health departments throughout the state.
- Opened how we select pesticides for risk assessment to public comment, and posted more than two dozen completed risk assessments online.  
  
We are also making risk management more transparent and open to public comment. (Risk management is how we decide whether an assessed risk presents a public health concern and, if so, what can be done to reduce the risk.) DPR will have workshops in mid-2007 to get public input on proposed risk reduction measures for MITC-emitting fumigants.
- Will publish, in mid-2007, guides to public participation and what to do in a pesticide emergency. To be available in English and Spanish, the guides will explain how pesticide use is regulated, how to file a complaint, and how to help DPR make better rules.

## *Reforming Registration*

DPR's Registration Reform Initiative shows how government can get better at what it does, embodying Governor's Schwarzenegger's call to "Reform, Rebuild, and Act."

In improving how we register pesticides (that is, license them for sale and use), we had four objectives:

- Shorten how long we take to decide whether to register a product.
- Cut unnecessary workload and costs for both DPR and for companies applying for registration by recognizing improved federal pesticide policies and procedures and by focusing on what is important to California.
- Dispense with activities unrelated to protecting public health and the environment.
- Promote the introduction of lower-risk pesticides.

### **FOUR OBJECTIVES ACCOMPLISHED**

It took some time and much effort, but now we can brag: "4-for-4."

Before a pesticide can be sold or used in California, it must be registered with both U.S. EPA and DPR. We require California registration to make sure pesticides sold in California are effective and won't pose unacceptable risks to people or the environment.

In the past, from California's perspective, U.S. EPA wasn't doing a good enough job overseeing product registration. In response, the State set up a parallel program to more closely review and evaluate applications for registration before pesticides could be used in this State. However, over the past decade, improvements at U.S. EPA prompted DPR to streamline its registration processes to remove duplication with our federal counterparts.

We increased our collaboration with U.S. EPA, exchanging information and data reviews to maximize staff resources and highlight areas of expertise. For example, DPR does dietary risk assessments for U.S. EPA and reviews residue data for specialty crops that are important to California agriculture.

### **REPEALING DATA OWNERSHIP LAWS**

The 2005 repeal of California's data ownership laws also streamlined registration by reducing the number of products requiring scientific evaluation and the time they spend in evaluation. The legislation (AB 1011, Matthews) changed State law to allow DPR to rely on its evaluations of previously submitted data when reviewing new applications for registration. The legislation did not change or reduce California's strict data requirements, designed to protect health and the environment. The new law also allowed concurrent review with U.S. EPA of new active ingredient applications.

*Editor: Veda Federighi*

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**Arnold Schwarzenegger**, *Governor*

**Linda S. Adams**  
*Secretary for Environmental Protection*

**Mary-Ann Warmerdam**, *Director*  
*Department of Pesticide Regulation*

*June 2007*

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