The mission of the Department of Pesticide Regulation (DPR) is to protect human health and the environment from risks posed by pesticides and to promote safer means of pest control. DPR programs are oriented to those goals through:

- Evaluating the safety of pesticides before registration, sale and use.
- Monitoring places where pesticides are sold to remove unregistered products from the channels of trade.
- Training of professional pesticide handlers and others who may be exposed to pesticides in the workplace.
- Ensuring that only specially trained and certified workers handle the most toxic pesticides (restricted materials) and requiring site- and time-specific permits for use of these compounds.
- Monitoring of air, water and fresh produce to find out if there are residues of concern.
- Monitoring of pesticide exposure in the workplace and other settings.
- Investigating and tracking pesticide illnesses and injuries.
- Local enforcement to ensure laws and regulations are being obeyed.
- Promoting adoption of pest management strategies that stress pest prevention and the use of nonchemical or least-toxic methods in farm fields, homes, parks, schools and child care centers.

Many of these topics are discussed in other chapters. This chapter focuses on health and safety programs managed by the department’s Worker Health and Safety (WHS) Branch.

**DPR’s Pioneering Worker Safety Program**

With establishment of the WHS Branch in the 1970s, DPR put into place training requirements for pesticide handlers and set up a pesticide illness reporting and investigation system then unique in the nation. California was also the first state to establish a policy on the use of filtered-air enclosed tractor cabs and closed systems for mixing and loading highly toxic liquid pesticides. Enclosed cabs and closed systems are a preferable, engineering alternative to personal protective equipment (such as respirators and special clothing).

**Worker Protection Standard.** In 1993, the U.S. Environmental Protection Agency (U.S. EPA) issued a new federal Worker Protection Standard (WPS), which became final in 1995. This federal regulation was designed to reduce the risk of pesticide poisonings and injuries among pesticide handlers and other agricultural workers exposed to pesticides. The WPS contains requirements for pesticide safety training, notification of pesticide applications, use of personal protective equipment, restricted-entry intervals after pesticide application, decontamination supplies and emergency medical aid. Although the federal standard drew on California’s worker safety program as a model, there were differences between the two. In 1997, after DPR made conforming changes in its regulations, U.S. EPA approved the department’s request for equivalency of California’s pesticide safety program.

In addition to the WPS-equivalent requirements, DPR has several regulatory requirements stricter than those in the federal WPS. For example, the federal WPS applies only to pesticide use in production agriculture. DPR’s worker safety
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"We should permit States to set separate safety standards … Some states, for example, have formulated standards that are more stringent than federal standards and are better designed to protect individual groups of citizens."
— 1996 U.S. Senate analysis of FIFRA amendments

regulations apply to all employees who handle pesticides and all employees exposed to pesticide residue.

**Training.** DPR requires training each year of employees who handle pesticides (for example, mixers, applicators, application equipment mechanics, aerial application flaggers); U.S. EPA requires this training every five years. DPR also requires a written training program that specifies exactly what is included in the handler training. The required curriculum is more extensive than that suggested by U.S. EPA. California training must include information about medical supervision, employee rights, and location of the written hazard communication program. U.S. EPA gives employers a grace period of five days before field workers must be fully trained. DPR requires the full WPS training before allowing a field worker to enter a treated field.

California regulations require that pesticide handler and field-worker training incorporate the Pesticide Safety Information Series (PSIS) handouts produced by the WHS Branch. PSIS leaflets are available for both workers in agricultural and nonagricultural settings. Subjects include hazard communication (worker rights), first aid, medical supervision, pesticide handler safety, pesticide storage and transport, protective equipment and engineering controls, minimal exposure pesticides, and respiratory protection. The leaflets, in English, Spanish and Punjabi, are posted on DPR’s Web site.

**Personal protective equipment (PPE).** DPR is the only state to require the use of closed mixing/loading systems for all toxicity category 1 pesticides. U.S. EPA requires closed systems for a limited number of individual pesticide products. Closed systems place the responsibility on employers to protect workers, which is more effective than requiring employees to wear protective clothing. Where PPE is required, DPR has a more extensive set of requirements. In addition, DPR has adopted a full respiratory protection program equivalent to Cal/OSHA (and federal OSHA). U.S. EPA either requires the use of respiratory protection or, with soil fumigants, has only three elements (training, fit testing and medical evaluation) of DPR’s full respiratory protection program.

**Restricted entry intervals.** DPR has established stricter restricted-entry intervals (REIs) than U.S. EPA for 12 pesticide active ingredients. REIs reduce potential worker exposure to pesticide residues by specifying the period following the application of a pesticide during which unprotected workers should not enter a field.

**Fumigants.** Although beginning in 2010, U.S. EPA required many new mitigation measures on soil fumigant labels, several DPR requirements were stricter, including larger buffer zones and reduced application rates. In addition, pest control businesses conducting fumigations must have a supervisor with a special field fumigation license from DPR.

**Hazard communication.** In 1992, DPR strengthened training mandates with a hazard communication program that requires employers to keep and make available to their employees a written hazard communication program, pesticide use reports, and material safety data sheets (MSDSs). After making changes to conform to the federal WPS, DPR in 1999 began a review of its worker protection program. DPR managers and technical experts met with public interest and farm labor groups, county agricultural commissioners (CACs), state and local public health officials, migrant health clinic directors and agricultural production representatives on improving the notification and hazard communication regulations. Following up on the information gathered, the department studied the effectiveness of warning signs posted around treated fields to tell workers and others when it is safe to reenter. DPR scientists also studied how workers received verbal notification about treated fields, information of the hazards of working with pesticides, and about symptoms of illness.

The studies found problems with notification and hazard communication rules that led the department to make changes and adopt new safety regulations. DPR put regulations into place in 2009 to ensure employees get information about pesticides being used in the fields where they work, before and after an application. The changes were also designed to ensure that safeguards were in place to prevent employees from
entering a treated field during a restricted-entry interval. The rules made several changes, including:

- Requiring pesticide applicators to notify the grower before and after a chemical is used, and re-notify if the scheduled application date changes.
- Requiring the grower to manage his property as if the application could occur any time within a 24-hour window.
- Requiring growers, and any hired contractor notified by the grower of a scheduled application, to assure prior notification for any employees who walk within one-quarter mile of a field to be treated.
- Requiring growers to notify persons who they know will likely enter a field to be treated (other than their employees or contractors) before and after an application.
- Requiring growers and labor contractors to provide uncomplicated directions to where they can find information about the pesticides used where they work, and to provide unimpeded access to these records. (Application information is usually posted at a central location for a farming operation, not in the field where the application was made.)

U.S. EPA requires notice of the pending application but unlike DPR, no re-notice of application changes. In addition, DPR’s hazard communication requirements are stricter by mandating that material safety data sheets (MSDS) be posted for each pesticide applied; U.S. EPA does not have the MSDS requirement. DPR also requires posting of its Pesticide Safety Information Series leaflet on hazard communication.

Outreach. State law was amended in 2003 (Chapter 741, SB 1049) to require DPR to “create a program to conduct outreach and education activities for worker safety … and proper pesticide handling and use … (including) rights and procedures of workers and those potentially exposed to pesticides and how to file confidential complaints.” In response, DPR assigned a bilingual specialist to coordinate outreach aimed at Hispanic workers and communities. This specialist and other WHS and Enforcement Branch staff takes part in safety and health workgroups, staff information booths at safety and health fairs, and make radio and television public service announcements on pesticide safety.

Medical supervision. For more than 30 years, DPR has required that pesticide handlers have blood testing for overexposure to organophosphate and n-methyl carbamate pesticides. Only one other state requires regular testing of handler employees to prevent illness.

Employers are required to arrange with a physician to medically supervise some pesticide applicators by regularly monitoring blood cholinesterase levels. Cholinesterase is an enzyme that helps regulate nerve impulses. Blood cholinesterase levels can be used to show possible overexposure to certain organophosphate and carbamate pesticides. Since 1974, DPR regulations have required employers to provide medical supervision for agricultural employees who regularly handle high-toxicity organophosphate or carbamate insecticides. Overexposure to these compounds can inhibit cholinesterase levels enough to induce serious illness.

Medical supervision is important because it allows physicians to detect excessive exposure before workers become clinically ill. Physicians compare the blood test results with baseline measurements taken before the worker was exposed to cholinesterase-inhibiting pesticides. If excessive exposure is detected, the employer must reexamine the workplace and pesticide handling procedures. If the employee becomes ill or cholinesterase falls below specified levels, the employee must be removed from further exposure until new blood tests show it is safe to work with cholinesterase-inhibiting pesticides again.

Legislation in 2010 (Chapter 369, AB 1963) required that laboratories doing blood tests to determine worker exposure to cholinesterase-inhibiting pesticides report the

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1 Appendix A lists this and other statutes noted in this chapter and shows the related code section it amended or added. Statutes and related code sections deleted or superseded by later legislation have been omitted.
results electronically to DPR. The department manages reporting, keeps a database of the information and shares it with the Office of Environmental Health Hazard Assessment (OEHHA) and the Department of Public Health (DPH).

**Coordination with the County Agricultural Commissioners**

DPR manages the state’s occupational pesticide safety enforcement program with field enforcement carried out by staff from each CAC office. Enforcement and Worker Health and Safety branches provide coordination, oversight and technical and legal support to CACs.

Working under an interagency agreement with DPR, agricultural commissioners perform certain pesticide enforcement activities. This ranges from investigations of pesticide-related illnesses to checking training and storage records of pest control companies. The negotiated work plans with CACs specify that a higher priority be given to such enforcement activities as worker protection inspections, illness investigations, applications of certain high-toxicity pesticides, and agricultural applications of pesticides near parks or schools. Lower priority is given to routine inspections of growers or businesses with no recent violations. (*For more information on enforcement and the role of CACs, see Chapter 7.*) When DPR and CACs put together their annual enforcement work plans, they review pesticide illness statistics to see where extra emphasis may be needed in education or enforcement.

DPR provides technical support for CAC investigators. The department’s scientists—subject experts in their respective fields—are available to assist investigators. WHS and Enforcement Branch scientists have developed a training module on basic investigation procedures. DPR scientists provide this training to CAC every two or three years or on request. Topics include health effects of pesticides, evidence collection (including collection of foliage, clothing or surface residue samples to document environmental exposure), interview techniques, and writing the investigative report.

**Priority Incidents**

Certain incidents are considered “priority” investigations and trigger special handling under a cooperative agreement between DPR, CACs and U.S. EPA. The agreement sets criteria that define a priority incident and establishes reporting requirements and timeframes for the submission of investigation reports on these episodes. Criteria triggering priority investigation status include episodes involving death, serious illness or injury, or illness to five or more persons; aircraft accidents; significant environmental contamination; property loss; and wildlife kills; or episodes occurring at or near California’s state, tribal or international borders.

Counties must report these incidents to DPR by the quickest method. DPR in turn reports priority incidents to U.S. EPA, DPH, DFG and other affected government agencies. Cooperating agencies with relevant expertise may become involved in a priority incident investigation.

**Investigating Pesticide Illnesses and Incidents**

CACs, assisted by DPR, investigate incidents reported in their counties when pesticides harm people or the environment. The primary objective of an investigation is to determine and document the circumstances of the incident, to identify continuing hazards or violations, and gather evidence to support regulatory changes or enforcement action. Investigations are critical to evaluating pesticide use patterns, emerging risks and the effectiveness of the label directions, regulations, and regulatory policies and practices.

Pesticide episodes that may be investigated include:
• Human effects, such as pest control aircraft accidents, pesticide handler accidents, exposure to residues in treated areas (fields, offices, homes), and exposure from drift.
• Property damage or loss resulting from drift, bee kills, domestic animal poisonings, residues that result in the inability to market a crop or animal, or phytotoxic effects because of persistent residues in the soil.
• Environmental effects including contamination or damage to the environment, such as fish or wildlife kills; lake, stream or ground water contamination.
• Illegal residues on crops.

Pesticide incidents come to the attention of the department and CACs in various ways, including complaints by employees or the public, pesticide illness reports from physicians and Poison Control Centers, or news media reports. Information may also come from government agencies, pest control operators, growers and public interest groups. State and county surveillance and compliance monitoring can also bring problems to light. DPR routinely forwards episode reports it receives to the appropriate CAC for investigation unless the episode is outside DPR/CAC jurisdiction or is one where the law places primary responsibility on DPR, such as unregistered, misbranded or adulterated products. DPR and CACs take joint responsibility for investigation of illegal pesticide residues on fresh produce. (See Chapter 9 for information on DPR’s residue monitoring program.)

The commissioner’s office in the county where the incident occurred is the lead investigative agency. CAC staff works in consultation with a technical specialist in the Pesticide Enforcement Branch, who can in turn draw on the expertise of other branches in the department. For example, scientists from the WHS and Medical Toxicology branches can provide support for illness episodes. Environmental Monitoring scientists may assist when incidents involve environmental effects and the Pesticide Registration Branch can provide experts in plant physiology and chemistry when pesticides adversely affect crops, fish and wildlife. In some incidents involving human illness or injury, WHS and Enforcement staff participate directly in the investigation. DPR also works with the State Department of Fish and Game on wildlife investigations and with the U.S. EPA on incidents that cross jurisdictional boundaries between states, or between California and tribal lands or Mexico.

CAC investigators try to find and interview everyone with knowledge of the incident, collect samples when useful, and review relevant records. When appropriate, they ask for authorization from the affected people to get relevant portions of their medical records to include with the investigative reports.

Investigative samples can provide physical evidence to prove violations of pesticide laws, to assess the nature and degree of exposure, or to guide DPR development of mitigation strategies to prevent future incidents. Depending on the incident, investigative samples may include:
• Commodity samples to determine the presence and amount of pesticide residue.
• Foliage to determine the amount of residual pesticides on leaves.
• Material wiped from surfaces to detect contamination or drift onto cars, windows and similar surfaces.
• Air, water or soil.
• Clothing worn by affected workers.
• Dead bees, animals, birds or fish.
• Pesticide mixtures in application equipment.

DPR contracts with the California Department of Food and Agriculture Center for Analytical Chemistry to analyze samples.

When their investigations are complete, CACs send reports to DPR describing their findings. These reports describe the circumstances that may have led to incident and the effects on any exposed individuals. In their role as enforcement agents, CACs also find out whether pesticide users complied with safety requirements. The CAC may file
enforcement actions or ask local prosecutors to do so. DPR attorneys monitor and may help develop case files. DPR may prosecute administrative cases or serve on prosecution teams with county district attorneys or the State Attorney General’s office. *(For information on the types of enforcement actions, see Chapter 7.)* On request, DPR scientists will provide guidance to the CAC during an investigation.

DPR uses investigative reports to evaluate pesticide use patterns and identify broader statewide or national issues. Complete, well-documented investigations establish the basis for taking appropriate enforcement actions and for determining whether an episode was pesticide-related and, if so, what the circumstances and effects were. Considering investigative and other data, DPR may adjust the restricted entry interval following pesticide application, specify buffer zones or other application conditions, or require pesticide handlers to use protective equipment that meets certain standards. Since many incidents result from illegal practices, investigations direct the attention of state and county enforcement staff to significant noncompliance. Sometimes, changes to pesticide labels provide the most suitable mitigation measure. Since the U.S. EPA has exclusive authority to require label changes, DPR cooperates with U.S. EPA to revise instructions for pesticide users throughout the country or, alternatively, for a California-specific label. If an incident results from illegal practices, DPR or CAC staff can take enforcement action to deter future incidents.

**Pesticide Illness Surveillance Program**

Most pesticides are toxic to certain life forms by design. They also have the potential to cause adverse health effects on humans and other nontarget species. Health effects may result from intentional misuse, unintentional exposures or use according to the product label. Given the nature of their contact with pesticides, agricultural and pest control workers are most likely to face exposure to pesticides. The public may be exposed to pesticides in water, soil and air because of misuse or drift from sprayed areas, whether from agricultural fields or in office workplace settings. Consumers may face exposure from home-use pesticides or residues in food or drinking water.

Scientists from DPR’s Pesticide Illness Surveillance Program (PISP) evaluate information gathered by CACs during their illness investigations to develop conclusions about the circumstances of exposure to a pesticide. California has the nation’s most long-standing and comprehensive program to investigate, track and evaluate pesticide illnesses.

DPR collects information on any adverse effect from any component of a pesticide product, including the active ingredients, inert ingredients, impurities and breakdown products. Health effects evaluated include not only classic toxic effects but also illnesses that occur when products act as irritants or allergens, make people ill with their odor, or by causing fires or explosions.

Illness episodes may be use-related or not use-related, occupational or non-occupational. Use-related pesticide exposures result from pre-application, application and post-application activities. Examples are mixing, loading and applying pesticides (including antimicrobials), operating equipment to move fumigated commodities, workers exposed to pesticide residue in fields and offices, exposure to pesticide drift, or cleaning spray equipment.

Occupational, use-related episodes affect people who were at work when they were exposed. They may be pesticide handlers, field workers, office workers, or others exposed to residue or drift from a pesticide application.

Non-occupational, use-related illnesses are those that affect bystanders, for example, residents of homes affected by pesticide drift from nearby fields.

Exposures classified as not use-related are those that result from pesticide activities incidental to other tasks. Examples include pesticide manufacturing, formulating and packaging, commercial transport and storage, emergency response such as fires and spills, or disposal sites. These investigations are under the jurisdiction of the Department of Industrial Relations (DIR). DIR also is responsible for episodes involving inorganic arsenic wood treatments and the use of ethylene oxide. Although
outside DPR/CAC jurisdiction, involvement by the commissioner or DPR may be requested because of their knowledge about pesticide toxicology, effects and hazards.

Records of pesticide-related illnesses and injuries among California workers have been maintained by various state agencies since the beginning of the 20th century, first by DIR and then DPH. In 1972, the Legislature gave the Department of Agriculture primary authority over the safety of pesticide use in the agricultural workplace. In 1988, the regulations were revised to cover other, nonagricultural workplaces where pesticides are used (except for exceptions under DIR jurisdiction). In 1991, with the creation of Cal/EPA, authority for regulating pesticide use was moved to DPR.

Since 1971 (Chapter 1415, Statutes of 1970), California law has required physicians to report all pesticide-related illnesses or injury to the local health authority, usually a county department of health. The law applies to all types of pesticides (for example, insecticides, herbicides, and disinfectants) and to any location (such as farm, home or office). The health officer must send copies of the pesticide illness report to the county agricultural commissioner, OEHHA and DPR. Although DPR receives some illness reports from direct physician reporting, most come through the workers’ compensation program or the California Poison Control System (CPCS).

In California, any employed person may visit a doctor and report that an illness or injury occurred on the job. The physician examines the worker and sends a report to the insurer for payment. Insurers forward the reports in turn to DIR. WHS scientists regularly review workers compensation reports and select for investigation by the agricultural commissioners any report that mentions a pesticide or pesticides in general as a possible cause of injury. DPR staff looks into reports that mention an unspecified chemical if the setting is one in which pesticide use was likely. From 1983 through 1998, review of workers’ compensation reports identified most cases investigated.

In 1999, CPCS began aiding in pesticide illness reporting by offering to report for doctors who call in to consult with one of the poison control centers. Cooperation with CPCS identified hundreds of symptomatic exposures that otherwise would have escaped detection. The 2002 state budget crisis prevented continuation of the contract after federal funding ended. When DPR’s financial footing improved, the department renewed its contract with CPCS in 2006. DPR also continues to work with OEHHA in its efforts to not only provide the health care community with information on pesticide safety but to also increase their awareness of pesticide illness reporting requirements.

Information gathered through investigation can be used to detect whether particular populations are at greater risk or whether there are activities associated with overexposure that can be adjusted to prevent illness. Evaluation by PISP scientists can reveal a pattern of problems associated with a particular pesticide active ingredient or a product formulation. Investigation can discover whether a pesticide made someone ill despite use according to the pesticide label, whether it was because of a violation of label instructions, or whether the label instructions were unclear, confusing or inaccurate. This information can be used to find out if the product was used inappropriately or whether changes are needed in label instructions, product design, or PPE to prevent more illnesses.

As part of DPR’s program to continuously evaluate pesticides in use, scientists regularly consult the illness data to evaluate the effectiveness of DPR’s pesticide safety programs and assess the need for changes. (For more information on continuous evaluation, see Chapter 4.) New regulatory initiatives may spring from analysis of the cumulative database or in direct response to illness episodes. For example, DPR traced a series of field worker illnesses in the 1980s to propargite exposure; in response, DPR extended the restricted entry interval beyond what was on the U.S. EPA-approved product label.

In 1988, a series of illnesses among vineyard workers prompted an in-depth field study by WHS scientists. They found that in late summer, residues of the insecticide methomyl dissipated slower than expected. This prompted DPR to adopt regulations extending the REI from 7 days to 21 days after July 1 each year.

Accidents and injuries involving agricultural chemicals are investigated to see if any violation of law contributed to the mishap. Study of the details of some cases provides suggestions of advisable precautionary labeling or educational measures to avoid such accidents.

— 1954 department annual report
Whenever commercial exploitation follows closely upon discovery of a new agricultural chemical, particular care is required to provide adequate labeling for assurance that the product will be used properly and with satisfaction and that injury will not result from careless or unadvisable handling.
— 1945 department annual report

In 2010, DPR received reports of two workers exposed intermittently to methyl bromide over several months as part of their job inspecting produce in a cold-storage facility. The imported produce had been fumigated earlier at the Port of Los Angeles, as required by U.S. law. After this incident, DPR conducted air monitoring at produce storage facilities and in transport trailers and determined that methyl bromide can off-gas for several days after fumigation and build up to potentially harmful levels in storage or transport. DPR worked with U.S. Department of Agriculture, U.S. EPA, the Los Angeles CAC, cold storage operators, fumigators, Chilean grape growers and import firms to develop new work practices to reduce post-fumigation exposure and prevent worker illness.

WHS has prepared annual summaries and analyses of reported pesticide illnesses since 1973. Annual summaries since 1996 are posted on DPR’s Web site. In 2009, DPR launched a Web-based search engine of the illness database. The California Pesticide Illness Query, or CalPIQ, includes illness and injury data since 1992. Users can seek data based on customized variables, including year and county where the incident occurred, whether the use was in agriculture or not, and specific pesticide by toxicity category, active ingredient or intended use.

WHS physicians and other staff are also available to consult with healthcare providers and local health authorities, often with active illness investigations. In addition, DPR staff is available to consult with the medical community about pesticide-related concerns.

**Exposure Monitoring Studies**

For more than three decades, DPR scientists have conducted unique studies designed to increase knowledge of how workers and others are exposed to pesticides and, in doing so, improve protective measures. The WHS exposure monitoring program designs and conducts studies to characterize exposure to pesticides in the workplace and elsewhere.

Each year, WHS scientists conduct human exposure monitoring studies to provide data for rulemaking and risk assessments (see Chapter 5 for more information on exposure assessment), and to evaluate mitigation measures already in place. Through these studies, scientists continually improve data collection methods to more accurately predict likely exposures. The studies help WHS scientists evaluate the effectiveness of protective clothing, gloves, respirators, engineering controls (for example, closed mixing systems for preparing pesticides for application, enclosed cabs), and other safety equipment in mitigating exposures.

Studies monitor various activities such as mixing, loading and applying pesticides by hand, ground or air, worker reentry into treated fields, and structural fumigations. Studies may also be used to evaluate the effectiveness of equipment in exposure reduction. In each situation, the goal is to identify factors influencing the degree of exposure, as well as to measure exposure.

Various methods are used to develop data. Clothing worn by workers performing routine tasks is collected and analyzed to determine residue levels and estimate the amount of dermal exposure. This information identifies factors affecting transfer of a pesticide from foliage to work clothing or skin, or determines the effect of various application methods on worker exposure. In addition, urine and blood samples may be collected and analyzed for biological indicators of exposure. Studies involving human subjects require formal protocols approved by an independent review board.

DPR scientists also collect data on the amount of pesticide residue deposited on plants following various application methods and rates. These data allow scientists to characterize residue decay rates that may differ under varying environmental conditions. This information may be critical in determining potential worker exposures and is used in developing techniques for avoiding illness and injury.

Besides evaluating the effectiveness of mitigation strategies, exposure monitoring studies may be used directly for regulatory purposes. Setting reentry intervals,
Determining needed protective gear, and developing safe handling practices rely on accurate information about pesticide behavior in the field.

DPR scientists review pesticide exposure protocols for studies conducted in California that involve human subjects. As part of the Human Subjects Protocol Review process, DPR scientists provide feedback on the protocol to the study’s principal investigator and make recommendations to WHS managers whether or not to approve the protocol. Prior to making a recommendation for approval, DPR scientists ensure the protocol meets DPR’s scientific and ethical standards.

Reducing Pesticide Exposure

DPR scientists develop mitigation (exposure reduction) strategies when health risk assessments suggest overexposures may occur when a pesticide is used as labeled. These may include potentially harmful exposures in air, the workplace, the home, and in food and water. Scientists in the WHS and Environmental Monitoring branches review technical and scientific data, pesticide illness data and registered product labeling to assess public health and worker impacts of pesticide use.

WHS scientists conduct field studies to monitor pesticide exposure to workers performing routine tasks to find out if extra protective measures are needed. DPR bases mitigation proposals on scientific data, field implementation, enforceability and risk management guidance. (See Chapter 5 for information on exposure assessment and Chapter 6 for information on risk management.)

DPR may put mitigation strategies into place as permit conditions, which are protective use practices a CAC may require before issuing a permit to use a restricted material. DPR may also put risk reduction measures into statewide regulations or ask registrants to revise product labeling. (U.S. EPA must approve label changes.) If a product is not yet registered, DPR may place conditions on registration, such as restricting use to where there are no exposure concerns.

Once exposure reduction strategies are in place, WHS and Environmental Monitoring scientists coordinate their implementation with other DPR branches, registrants, agricultural organizations and other stakeholders. Staff from WHS and Enforcement branches staff train CAC staff when new mitigation measures are introduced in the field. WHS staff meets with growers and applicators to observe applications made using the mitigation measures, to discuss any problems the measures may cause, and to check that the measures are effective. WHS staff also develops outreach materials for farmworkers and pesticide applicators and prepares health and safety recommendations for reevaluations managed by Registration Branch.

WHS industrial hygienists evaluate pesticide products and labeling and recommend control methods when needed to ensure acceptable protection for pesticide users and others who may be exposed. Their evaluation includes review of labels and hazard communication literature (such as MSDSs), application work-site evaluations and on-site monitoring. They provide recommendations on engineering and administrative controls, heat stress, PPE and airborne monitoring methods. WHS industrial hygienists evaluate equipment and workplaces after accidents in agricultural settings to help discover how incidents occurred and collaborate with other organizations to develop preventive measures. Industrial hygienists also provide PPE training to pesticide handlers and government enforcement staff, and train emergency responders who deal with pesticide exposure events.

Dilution of a product to the point where the poison insignia is not required does not permit an economic poison to be designated as nonpoisonous, safe, or harmless. If the diluted product is still effective against a pest it may be potentially injurious to human beings, and designations such as “nonpoisonous” may encourage carelessness in handling the material.

— 1944 department annual report