SUMMARY OF RESULTS FROM THE CALIFORNIA PESTICIDE ILLNESS SURVEILLANCE PROGRAM - 2012 –

HS-1896

California Environmental Protection Agency
Department of Pesticide Regulation
Worker Health and Safety Branch
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Executive Summary

This report provides a summary of illnesses identified by the Pesticide Illness Surveillance Program (PISP) of the California Department of Pesticide Regulation (DPR) in 2012. DPR identified 1,418 cases potentially involving health effects from pesticide exposure. The 1,418 cases represent a 4% decrease from the 1,473 cases identified in 2011, and a 27% increase from the 1,114 cases identified in 2010. The number of cases identified remains within the range of cases in prior years (1992 – 2011).

DPR epidemiologists concluded that pesticide exposure had been at least a possible contributing factor to 992 (70%) of the 1,418 cases. Agricultural use of pesticides was the source of exposure in 245 (25%) of the 992 cases, while 75% (741 cases) were associated with non-agricultural use. Six of the 992 pesticide-associated cases could not be characterized as agricultural or non-agricultural due to unclear circumstances.

PISP data reflects that 146 field workers were injured by pesticide exposure over 26 separate episodes in 2012. This is fairly consistent with the previous year, in which 137 field workers were injured in 28 separate episodes. In 2012, the largest number of field workers injured in a single episode was 42, which coincidentally occurred twice. In 2011, the largest number of field workers injured in a single episode was 14. Despite these larger episodes, the total number of multi-person field worker episodes decreased 31% from 13 multi-person episodes in 2011 to 9 in 2012.

Twenty illnesses evaluated as definitely, probably, or possibly associated with pesticide exposure occurred in schools, two of which involved children. These 20 cases reflect a 67% increase from 2011 data, which included 12 school-related illness cases, and a 54% decrease from the 44 cases in 2010 data. None of the pesticide illnesses reported in schools in 2012 involved agricultural use pesticides; the majority (75%) of the 2012 cases involved exposure to antimicrobial pesticides or pool adjuvants.

Background, Sources, and Purpose of Illness Surveillance

DPR administers the California pesticide safety program, widely regarded as the most stringent in the nation. Mandatory reporting of pesticide[1] illnesses has been part of the program since 1971. Illness reports are collected, evaluated, and analyzed by program staff. PISP is the oldest and largest program of its kind in the nation; its epidemiologists provide data to regulators, advocates, industry, and others.

Under the California Health and Safety Code Section 105200, physicians are required to report any suspected case of pesticide-related illness or injury by telephone to the Local Health Officer

[1] "Pesticide" is used to describe any substance which is intended to prevent, destroy, repel, or mitigate any pest. Pests may be insects, fungi, weeds, rodents, nematodes, algae, viruses, or bacteria that may infest or be detrimental to vegetation, man, animals, or households, or any agricultural or non-agricultural environment. Therefore, pesticides include herbicides, fungicides, insecticides, rodenticides, and disinfectants, as well as insect growth regulators. In California, adjuvants are also subject to the regulations that control pesticides. Adjuvants are substances added to enhance the efficacy of a pesticide, and include emulsifiers, spreaders, water modifiers, and wetting and dispersing agents.

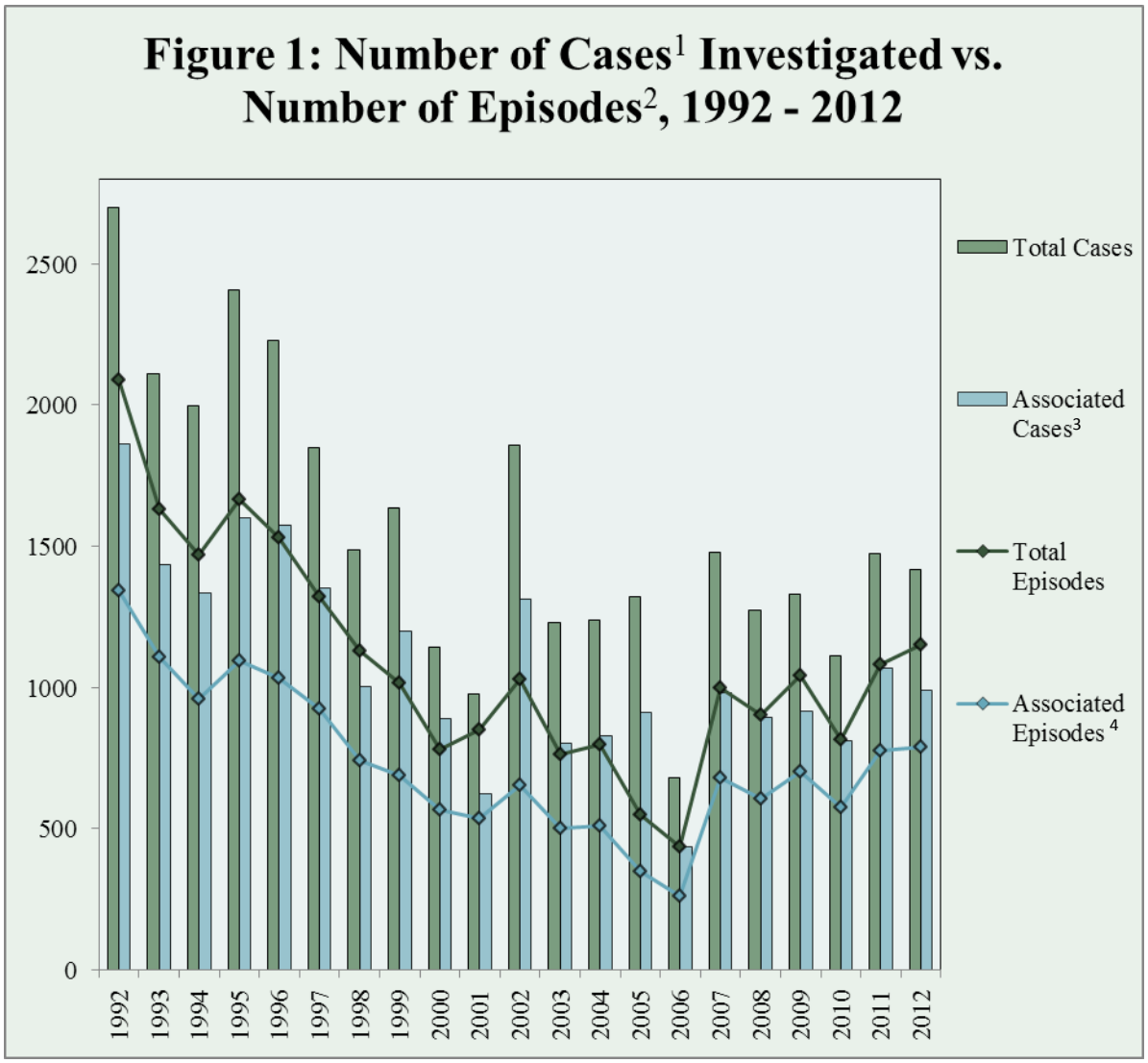
within 24 hours of examining the patient. The law requires health officers to inform the county agricultural commissioner (CAC) and to complete a pesticide illness report (PIR), which is sent to the Office of Environmental Health Hazard Assessment (OEHHA), the Department of Industrial Relations (DIR), and DPR. This reporting pathway identifies only a minority of the cases identified. DPR strives to ensure that PISP captures the majority of illness incidents. To identify unreported pesticide illness cases, DPR has a memorandum of understanding with the Occupational Health Branch of the California Department of Public Health (CDPH-OHB), under which PISP epidemiologists review copies of the Doctor's First Report of Occupational Illness and Injury (DFROII). These are documents associated with workers' compensation claims that physicians are required to forward to DIR and are subsequently shared with CDPH-OHB. PISP epidemiologists select for investigation any DFROII that mentions a pesticide as a possible cause of injury, or involves a situation in which pesticide use is likely. Another significant source of pesticide illness reports is the California Poison Control System (CPCS), which began assisting with pesticide illness reporting in 1999. (Budgetary constraints prevented complete CPCS participation from 2003-2006.) When a medical professional contacts CPCS and there is suspicion that a pesticide may have caused an illness, CPCS offers to report on behalf of the medical provider and then submits a pesticide incident report to DPR. Through our contract with CPCS, PISP continues to identify hundreds of symptomatic exposures that may otherwise escape detection.

County agricultural commissioners investigate suspected pesticide illnesses that occur in their jurisdictions, whether or not they involve agriculture. DPR provides instructions, training and technical support for investigators. The instructions include directions for when and how to collect samples to document unintended exposure or contamination of persons and/or the environment. As part of the technical support, DPR contracts with the California Department of Food and Agriculture Center of Analytical Chemistry to analyze the samples. When investigations are complete, CACs send reports to DPR describing their findings. These reports describe the circumstances that may have led to pesticide exposure and the consequences to the exposed individuals. DPR epidemiologists evaluate medical reports and all information the CACs gather in the investigative process. They abstract and encode basic descriptors of the event, then undertake a complex synthesis of all available evidence to assess the likelihood that pesticide exposure caused the illness. Standards for the determination are described in the PISP program brochure, "Preventing Pesticide Illness," which can be viewed or downloaded from DPR's web site at http://www.cdpr.ca.gov/docs/whs/pisp/brochure.pdf.

DPR maintains its surveillance of human health effects of pesticide exposure in order to evaluate the circumstances of pesticide exposures that result in illness. DPR epidemiologists regularly consult the PISP database to evaluate the effectiveness of DPR's pesticide safety regulatory programs and assess need for changes. If illness reports indicate excessive risk, DPR may implement additional restrictions on pesticide use by providing CACs with California-specific recommendations for restricted material permit conditions or by changing regulations. If an illness incident results from illegal practices, state and county enforcement staff take appropriate action to educate pesticide users and promote appropriate pesticide use.

2012 Numeric Results

In 2012, 1,418 cases were identified that potentially involved health effects from pesticide exposure. This represents a 4% decrease from 1,473 cases identified in 2011, and a 27% increase from 1,114 cases identified in 2010 (Figure 1). Though a slight decrease was seen from the number of 2011 cases, the number of cases identified remains within a typical range.



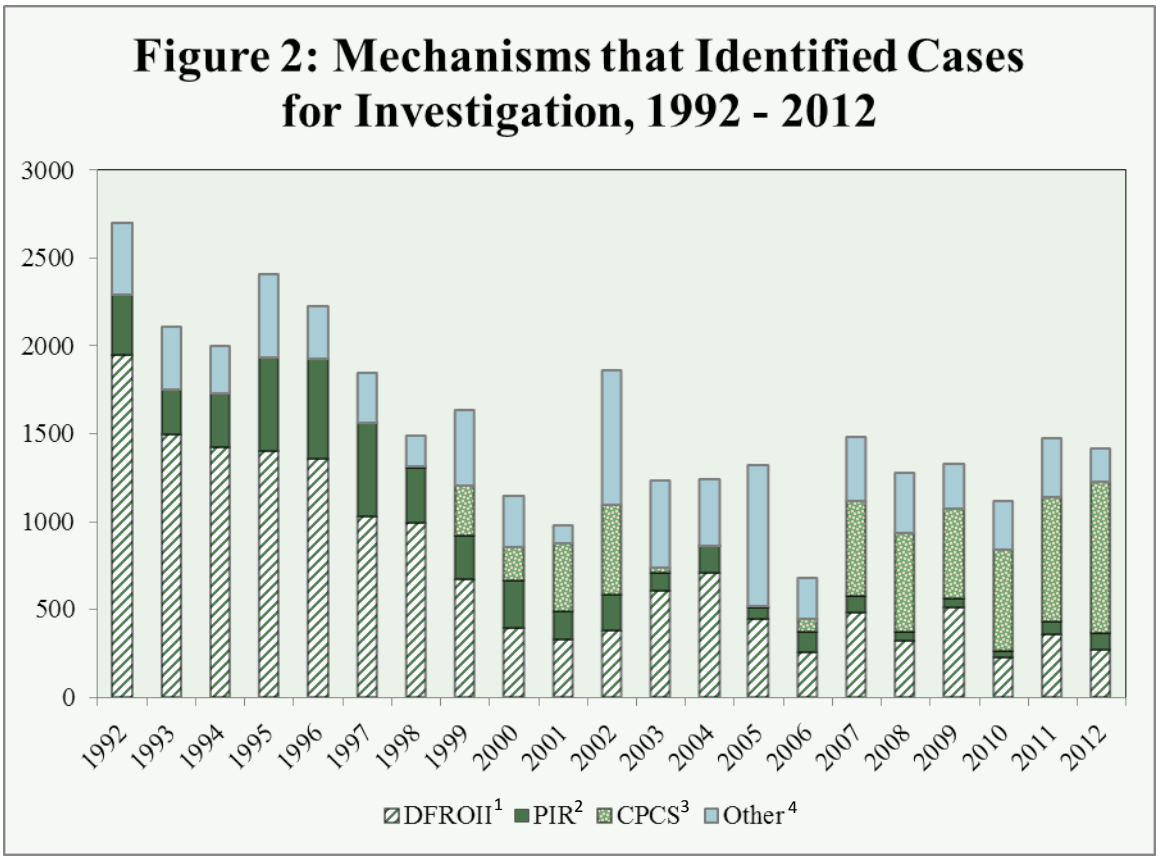
1. A *case* is the Pesticide Illness Surveillance Program representation of a person whose health problems may relate to pesticide exposure.
2. An *episode* is an event in which a single source appears to have exposed one or more people (cases) to pesticides.
3. *Associated cases* are those evaluated as definitely, probably, or possibly related to pesticide exposure. A definite relationship indicates a high degree of correlation between the pattern of exposure and resulting symptomatology. The relationship requires both physical evidence of exposure and medical evidence of consequent ill health to support the conclusions. A probable relationship indicates a relatively high degree of correlation between the pattern of

exposure and resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable. A possible relationship indicates that health effects correspond generally to the reported exposure, but evidence is not available to support a relationship.

4. *Associated episodes* are those in which at least one case was evaluated as associated.

Figure 2 demonstrates the variation in numbers of cases identified by the different sources of initiating documents. The source document proportions for 2012 are similar to those of recent years.

The California Poison Control System remained a major source of case identification in 2012. CPCS reporting accounted for 61% of 2012 cases. Of the 1,418 cases identified in 2012, CPCS reports totaled 862, an increase from 711 in 2011. DFR reports contributed 274 (19%) illness cases, a decrease from 360 (24%) in 2011. Other reporting sources, such as county complaints, media reports, or multi-person episodes led to 191 (13%) cases. Direct physician reporting to Local Health Officers accounted for 91 (6%) of all identified cases.

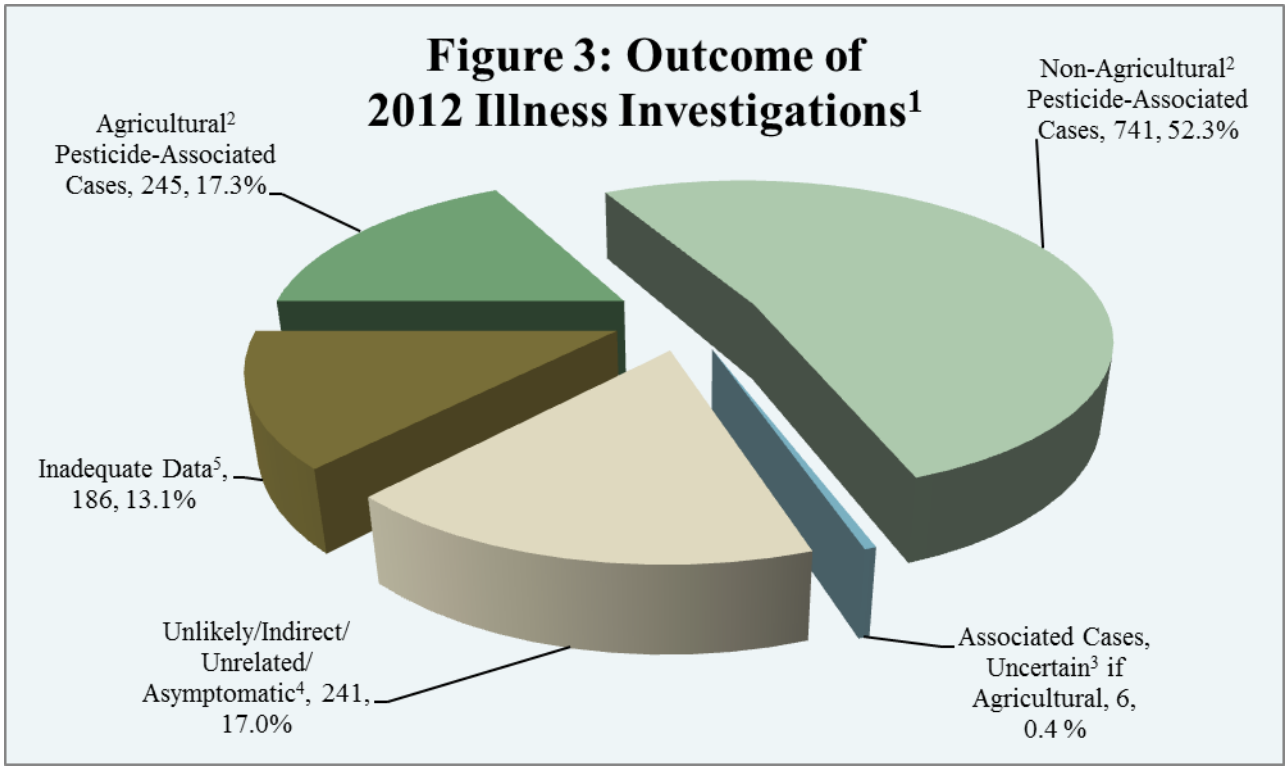


1. *DFROII* – Doctor's First Report of Occupational Illnesses and Injury (Workers' Compensation document).
2. *PIR* – Pesticide Illness Report (physician reporting to Local Health Officers in compliance with Health and Safety Code Section 105200).
3. *CPCS* – California Poison Control System (facilitated physician reporting). CPCS began assisting with pesticide illness reporting in 1999. Budgetary constraints prevented complete CPCS participation from 2003-2006.

4. *Other* – All other methods of case identification, including citizen complaints, contacts by emergency responders, and news reports.

DPR epidemiologists found pesticide exposure to be at least a possible contributing factor in 992 (70%) of the 1,418 cases identified. The percent of associated cases were similar to that of 2011, with 72% of 1,473 cases associated with pesticide exposure. PISP defines the term "associated" as cases evaluated as definitely, probably, or possibly related to pesticide exposure.

Of the 992 pesticide-associated cases, 245 (25%) were attributed to pesticides used for agricultural purposes (Figure 3). "Agricultural" is defined as involving pesticides intended to contribute to production of an agricultural commodity, including livestock. This corresponds to the regulatory definition of "production agriculture." Use or intended use in non-production agriculture is designated as "non-agricultural." Structural, sanitation, or home garden situations, as well as pesticide manufacture, transport, storage, and disposal are also considered "non-agricultural." Another 741 associated cases (75%) occurred under circumstances considered non-agricultural. Six of the 992 pesticide-associated cases could not be characterized as agricultural or non-agricultural due to unclear circumstances. These uncharacterized cases constituted less than 1% of the associated cases. Evidence indicated that pesticide exposure did not cause or contribute to ill health in 241 (17%) of the 1,418 cases evaluated. Insufficient information prevented evaluation of 185 cases (13%).



1. Total cases = 1,418
2. *Agricultural* and *Non-Agricultural* refer to the intended use of the pesticides definitely, probably, or possibly related to human health effects.

3. *Associated Cases, Uncertain if Agricultural* refers to cases in which little or no information relating to the intended use of the pesticide was available, such as when victims could not be located or refused to be interviewed.
4. *Unlikely/Indirect/Unrelated/Asymptomatic* refers to cases in which the weight of the evidence was against pesticide causation. This occurs when exposed people did not develop symptoms, or if symptoms were not caused or were unlikely to have been caused by pesticide exposure.
5. *Inadequate* means that there was not enough data reported to determine if pesticides contributed to ill health.

Table 1 shows the numbers of cases evaluated at each level of relationship. Among the 992 pesticide-associated cases, evidence established a definite relationship to pesticide exposure for 119 (12%), a probable relationship for 591 (60%), and a possible relationship for 282 (28%) (Table 1).

Table 1: Relationship Evaluation of 2012 Illness Investigations

	Relation to Agriculture			
Relationship	Agricultural[1]	Non-Agricultural[2]	Unknown or Not Applicable[3]	**Total**
Definite[4]	18	101	0	119
Probable[5]	149	439	3	591
Possible[6]	78	201	3	282
Pesticide-Associated Subtotal	**245**	**741**	**6**	**992**
Unlikely[7]	12	36	0	48
Indirect[8]	1	5	0	6
Asymptomatic[9]	46	14	0	60
Unrelated[10]	0	0	127	127
Not Applicable[11]	18	141	26	185
Overall Total	**322**	**937**	**159**	**1,418**

1. *Agricultural* cases are those that implicate exposure to pesticides intended to contribute to the production of agricultural commodities.
2. *Non-agricultural* cases include all those in which the pesticide was not intended to contribute to production of agricultural commodities.
3. Agricultural designation is not applicable to cases unrelated to pesticide exposure.
4. A *definite* relationship indicates a high degree of correlation between the pattern of exposure and resulting symptomatology. The relationship requires both physical evidence of exposure and medical evidence of consequent ill health to support the conclusions.
5. A *probable* relationship indicates a relatively high degree of correlation between the pattern of exposure and resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.
6. A *possible* relationship indicates that health effects correspond generally to the reported exposure, but evidence is not available to support a relationship.
7. An *unlikely* relationship indicates that a correlation cannot be ruled out absolutely. Medical and/or physical evidence suggest a cause other than pesticide exposure.

8. An *indirect* relationship indicates that pesticide exposure is not responsible for symptomatology, but pesticide regulations or product label requirements contributed in some way, (e.g., heat stress while wearing chemical resistant clothing).
9. An *asymptomatic* relationship indicates that exposure occurred, but did not result in illness/injury.
10. An *unrelated* relationship indicates definite evidence of causes other than pesticide exposure, including exposure to chemicals other than pesticides.
11. *Not applicable* indicates that relationship cannot be established because the necessary information is not available to the evaluator.

Occupational exposures, defined as those that occurred while the affected people were at work, accounted for 453 (46%) of the 992 pesticide-associated cases from 2012. Non-occupational exposures accounted for 524 pesticide-associated cases (53%). Fifteen pesticide-associated cases could not be characterized as occupational or non-occupational; 2 of these 15 cases also could not be characterized as agricultural or non-agricultural.

Enforcement actions often are still under consideration when PISP receives and evaluates illness investigative reports, so linking cases to DPR Enforcement Branch violations is approximate. Based on the information available at the time of evaluation, PISP epidemiologists concluded that of the 992 pesticide-associated cases, 541 (55%) provided evidence that violation of safety requirements had contributed to exposure, and harm might have been avoided if all the people involved had adhered strictly to safety procedures already required by regulations and/or pesticide labels. Of the 541 cases with contributory violations, 136 (25%) were attributed to pesticides intended for agricultural purposes. Non-compliance with regulations that did not contribute to the pesticide exposure (e.g., paperwork violations) was identified in 83 (8%) cases. It was unknown whether violations contributed to 147 cases (15%) and 215 cases (22%) had health effects attributed to pesticide exposure in spite of apparent compliance with all applicable label instructions and safety regulations. Of these 215 cases, 50 (23%) were attributed to pesticides used for agricultural purposes. Further evaluation of these cases is needed to determine if additional safety requirements are appropriate.

Non-Agricultural Pesticide Episodes

PISP defines drift as spray, mist, fumes, or odor carried from the target site by air. Drift episodes may include on-site or off-site movement of pesticide during or after an application. Definitions of drift may vary among agencies. One hundred seventy-four non-agricultural drift episodes resulted in 181 illnesses in 2012, which constitutes 24% of the 741 non-agricultural cases. Residue, defined as exposure to pesticide that remains in the environment for a period of time following an application or drift, accounted for 102 non-agricultural illnesses in 79 episodes, or 14% of the non-agricultural cases. While most incidents affected only one person, a multi-person episode involving pesticide residue is highlighted below.

Residential Pesticide Use

A landlord failed to notify his tenants prior to the application of an insecticide to one unit of a duplex complex in San Bernardino County. He also did not advise the tenants to vacate the

premises, so they stayed in their homes while he sprayed dimethoate on the interior and exterior of the building.

The application left oily residue in the yard, on toys inside the garage, and on the kitchen floor. Five tenants in the treated unit and neighboring units described a strong odor, and six tenants developed symptoms. The five tenants who noted an odor experienced symptoms such as headache, throat irritation, and stomachache. The sixth tenant developed itchy feet after she walked through the kitchen barefoot.

Concerned for her children's welfare, a tenant asked the landlord for the product name. When the landlord refused to tell her, she contacted law enforcement. The police advised the tenants to evacuate the premises due to the strong chemical odor. The affected individuals were evaluated by paramedics on site and one person was taken for medical attention the following day.

Though the landlord reported that he had followed label instructions, the county investigator noted that the label of the pesticide container was torn. The insecticide is prohibited for use in residential settings and has a 2-25 day restricted entry interval when used appropriately. The investigator ensured that the remainder of the pesticide was properly disposed of, and a remediation company was hired to clean up the treated sites and remove contaminated items. The landlord was fined $3,000 for failing to follow the label, improper storage, handling, or disposal of a pesticide, and for failing to properly notify the residents of the application.

Pesticide Illness Among Field Workers

PISP data reflects that 146 field workers were injured by pesticide exposure in 26 separate episodes in 2012, which constitutes 60% of the 245 agricultural illness cases and 31% of the 84 agricultural episodes. This is fairly consistent with 2011, in which 137 field workers were injured in 28 separate episodes.

In 2012, the largest number of field workers injured in a single episode was 42, which coincidentally occurred twice. The previous year, the largest number of field workers injured in a single episode was 14. Despite these larger episodes, the total number of multi-person field worker episodes decreased 31% from 13 multi-person episodes in 2011 to 9 in 2012. Pesticide drift as defined by PISP was associated with 126 (86%) of the 146 field worker illnesses in 12 separate multi- and single-person episodes. Among field workers, pesticide residue contributed to 17 illnesses (12%) over 11 multi- and single-person episodes. There were three additional single-person episodes. One case sustained multiple exposures, one was exposed by spill or other direct contact, and one was directly sprayed by application equipment (Figure 4). Three field worker episodes are highlighted below.

Drift – Santa Barbara County

In Santa Barbara County, a miscommunication resulted in two strawberry harvesting crews entering a buffer zone three hours before the expiration of a restricted entry interval and while fumigation tarps were still in place. Two applications of chloropicrin took place nearby on the

weekend the exposure occurred. Both were pre-plant soil treatments for strawberries and both treatments were applied using chemical irrigation equipment and covered with standard tarps. The harvesting work site was 50 feet west of the applications, which is 250 feet closer than the buffer zone permits. Though the harvesters' employer was aware of the buffer zone, he relayed to the crews that it would be acceptable to enter the field the morning of the incident, but he did not specify the time.

Soon after arriving at the field, 42 workers from the two crews experienced symptoms including watering and irritated eyes, headache, respiratory discomfort, and nausea. They were all transported for medical attention and all recovered within a few hours. No workers were hospitalized and none missed days of work.

A third crew worked further west and a fourth crew worked to the east; they did not report symptoms. The weather was described as clear and calm, with some workers reporting a slight breeze blowing from east to west. The grower was fined $5,000 for failing to properly notify workers about the buffer zones and failing to keep them out of the 300-foot buffer zone required when using standard tarps.

Drift – Monterey County

In Monterey County, members of two lettuce harvesting crews became ill working near a pre-plant strawberry field that was fumigated with 1, 3-dichloropropene and chloropicrin the previous day. The fumigant was introduced via a tarped drip irrigation system, and the introduction was complete by 11:00 a.m.

Workers arrived the next day at 4:00 a.m. One crew worked approximately 920 feet to the southwest of the fumigation; the other crew was 2,240 feet away, also to the southwest. Many workers noticed an odor described as “manure,” “chemicals,” “paint,” “pesticides,” “PVC glue,” “bleach,” “fertilizer,” “tear gas,” “diesel,” “piney,” “ammonia,” “ground cilantro seed,” “sulfur,” and “propane.” Symptoms started soon after the smell was noticed, around 6:30 a.m., and included watering and irritated eyes, respiratory discomfort, headache, and nausea.

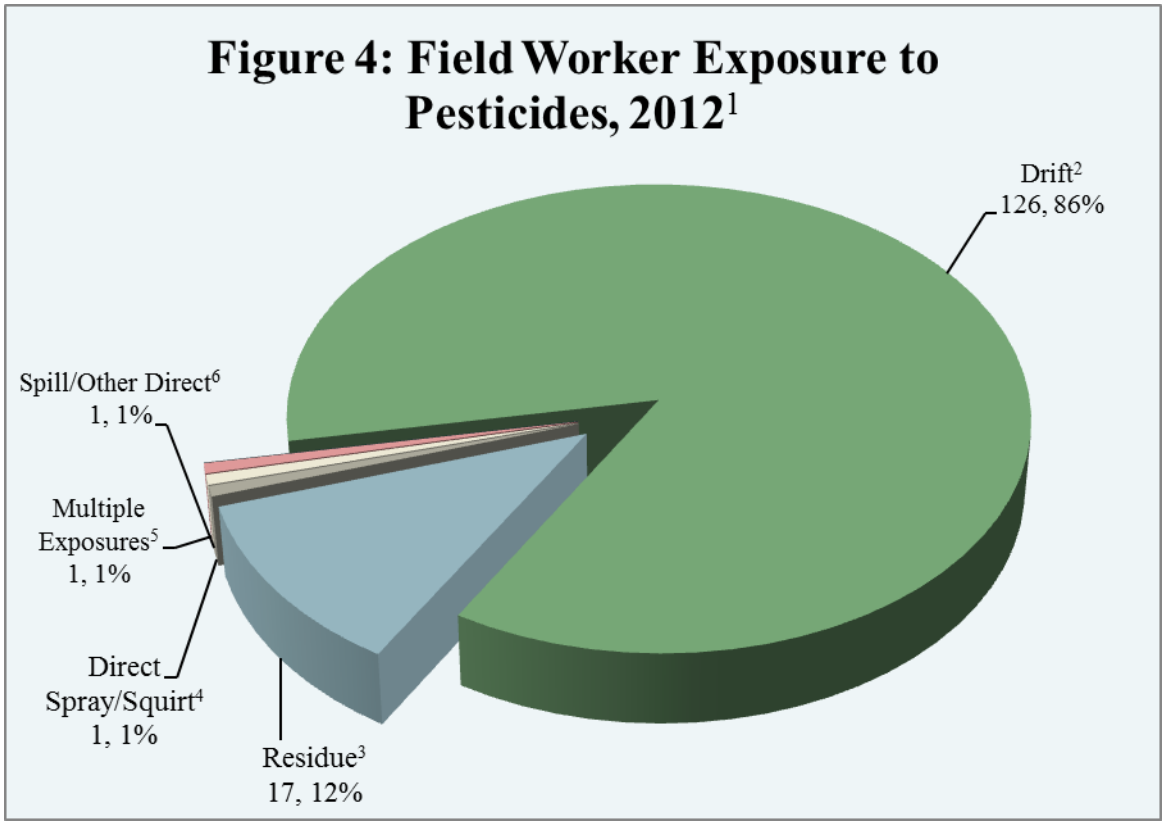
Investigators were notified and arrived on scene around 11:45 a.m. They found no tears or holes in the tarps, no standing water, and had no sensory irritation. The temperature on the day of the fumigation was unexpectedly high, in the 90s, and night time air movement was minimal. At the time of the incident, a slight breeze blew from the direction of the fumigation toward the workers. The pesticide applicator reported taking two air samples near the application site that morning. He said both samples were negative for the presence of fumigants. Of 52 workers, two people were asymptomatic and four were unavailable for interview. Forty-two field workers reported symptoms, of which 16 were taken for care. Four management employees also reported symptoms after driving around the fields in an attempt to find the source of the odor.

No violations were found in relation to the application. However, the farm labor contractor was fined $5,000 for failing to take all crew members for medical attention when a pesticide-related illness was suspected.

Residue

In Tulare County, 18 field workers were exposed to pesticide residue when they entered a vineyard before the 24-hour restricted entry interval had expired. A fungicide was applied to the vineyard at 5:00 a.m. that morning, and the crew entered the area to tie canes around 11:00 a.m. the same day. The field workers were not notified of the application prior to arriving and no signs were posted. Within 15-30 minutes of working, a supervisor came to inform the crew leader that the area had been sprayed a few hours earlier. The crew was asked to stop working and sent home.

According to interviews, the field workers were not told what product was applied to the area and they were not asked about their symptoms or lack thereof. Some of the employees noted an odor in the field. Of the 18 field workers exposed, 13 were asymptomatic. Five workers reported symptoms of throat irritation, chest irritation, nausea, dizziness, and/or headache. One employee sought care for his symptoms and recovered after missing one day of work. The employer was cited for multiple violations, including failure to keep workers out of the field under restricted entry interval, not notifying the field workers about the application, and for failing to complete a pesticide use report.



1. Total pesticide-associated field worker cases = 146
2. *Drift* refers to field worker cases associated with exposure to spray, mist, fumes, or odor carried from the target application site by air.
3. *Residue* refers to field worker cases associated with exposure to pesticide that remains in the environment for a period of time following an application or drift.

4. *Direct Spray/Squirt* indicates that application equipment propelled pesticide onto the worker.
5. *Multiple Exposures* indicates that contact with pesticide occurred through two or more distinct mechanisms.
6. *Spill/Other Direct* refers to contact made where the material is not propelled by application equipment.

Agricultural Pesticide Use Affecting Bystanders

In Kern County, chlorpyrifos drifted onto a school bus carrying 29 elementary school students when a crop duster, which was applying the pesticide to a wheat field adjacent to the road, flew across the highway. A few students had their windows open about one inch and many smelled an odor and complained to the bus driver. Of the 29 students aboard at the time of incident, 18 smelled an odor and 14 reported symptoms. The bus driver also noted an odor but did not report symptoms. The driver reported the incident to the school district and was instructed to return to the school. On the way back, he picked up 10 additional students, none of whom complained of an odor or experienced symptoms.

At the school, emergency responders decontaminated 27 of the students and the driver at the school's swimming pool showers. Kern County Agricultural Commissioner staff took swab samples from inside and outside the bus and obtained clothing samples from three students. All samples were positive for chlorpyrifos residue and levels between 0.36 and 0.91 micrograms were detected on the student's t-shirt samples.

Kern County staff were able to interview all but one student, and although accounts varied widely, many reported hearing or seeing a plane. The students ranged in age from 7 to 13 years old and reported symptoms which included itchiness, stomachache, burning eyes, and headache. One child was reportedly taken for care by her parents.

The crop duster pilot was issued a violation for failure to use the product pursuant to the label instructions by not ensuring persons would not be contacted directly or through drift.

Pesticide Illness in Schools

Twenty illnesses evaluated as definitely, probably, or possibly associated with pesticide exposure occurred in schools. PISP defines schools as establishments that provide academic or technical instruction, including child day care centers. These 20 cases reflect a 67% increase from 2011 data which included 12 school-related illness cases, and a 54% decrease from 44 cases in 2010. None of the pesticide illnesses reported in schools in 2012 involved agricultural use pesticides; the majority (75%) of the 2012 cases involved exposure to antimicrobial pesticides or pool adjuvants.

In 2012, two children were reported to have sustained pesticide illness at schools. In the first case, a 14 year-old boy drank from a water bottle that, unbeknownst to him, contained an antimicrobial. In the second case, a boy of unknown age developed symptoms during football practice. Parents then noticed signs indicating that aluminum phosphide had been used on the

premises. In both cases, the children's parents did not respond to interview requests and the investigators were unable to gather detailed information on the exposures.

Morbidity and Mortality

Of the 992 cases evaluated as associated with pesticide exposure, 47 people (5%) were hospitalized and 118 (12%) reported time lost from work or normal activity (e.g., going to school) (Table 2). Twenty-eight (60%) of the 47 people hospitalized had ingested pesticide. Of the 28 patients hospitalized due to ingesting pesticide, 20 (71%) acknowledged suicide attempts.

Table 2: Summary of Pesticide-Associated[1] Hospitalization and Disability, 2012

Relationship	Total Cases	Hospitalized[4]	Lost Work Time[5]
Definite/Probable[2]	710	34	84
Possible[3]	282	13	34
Total Cases	**992**	**47**	**118**

1. *Pesticide-associated* cases are those in which pesticide exposure was evaluated as definite, probable, or possible contributor to ill health.
2. A *definite* relationship indicates a high degree of correlation between the pattern of exposure and resulting symptomology. The relationship requires both physical evidence of exposure and medical evidence of consequent ill health to support the conclusions. A *probable* relationship indicates a relatively high degree of correlation between the pattern of exposure and resulting symptomology. Either medical or physical evidence is inconclusive or unavailable.
3. A *possible* relationship indicates that health effects correspond generally to the reported exposure, but evidence is not available to support a relationship.
4. Number of associated cases who were admitted and were hospitalized at least one full day (24-hour period).
5. Number of associated cases who missed at least one day of work or normal activity such as school.

A total of seven fatalities were evaluated as definitely, probably, or possibly associated with pesticide exposure. Six of the seven incidents were related to deliberate self-harm. Two of the suicide cases involved the ingestion of insecticides, one of which was aluminum phosphide, a restricted use pesticide. The individual in this case impersonated a pest control company employee in order to purchase the product. The four other suicide cases involved mixing products registered as pesticides, such as fungicides and disinfectants, to produce a lethal gas, a method known as detergent suicide. Due to the high toxicity of the resultant fumes and public health concerns, some county emergency responders have established a designated team to respond to these incidents.

The one non-suicide related fatality involved a man who illegally entered a business that was being fumigated with sulfuryl fluoride. The fumigant had been introduced the day before and the aeration process had not yet begun. After leaving the premises, the individual collapsed at a nearby gas station. Emergency responders took him to the hospital where he was stabilized and

then released. He collapsed again several hours later and was taken to a different hospital. He died shortly after arrival. Diagnostic analysis confirmed a significantly elevated level of fluoride in his blood.

PISP Program Updates

Legislative Update – AB 1963

Assembly Bill 1963 (Nava, Chapter 369, Statutes of 2010), which modified California Health and Safety Code Section 105206, requires clinical laboratories to provide DPR the results of all cholinesterase tests performed for agricultural pesticide-related exposures associated with certain activities. AB 1963 was established to evaluate the Medical Supervision Program (California Food and Agriculture Code, Section 12981), which requires agricultural employers to contract with physicians to monitor their employees who regularly handle cholinesterase-inhibiting, toxicity category I or II pesticides. Physicians order baseline and periodic blood testing for these employees to measure the level of cholinesterase enzyme activity.

Health and Safety Code Section 105206 requires clinical laboratories to provide the test results values, and the reason medical providers order cholinesterase tests (pursuant to Section 6728 of Title 3, California Code of Regulations). Information on the patient, physician, employer and laboratory should also be provided.

PISP began receiving cholinesterase test results in 2011 and continued to receive results in 2012. In 2015, DPR and OEHHA, in consultation with CDPH, will produce a report on the effectiveness of the Medical Supervision Program and the usefulness of laboratory-based reporting of cholinesterase testing for pesticide illness and surveillance.

Further Information

Tabular summaries presenting different aspects of 2012 pesticide illness data are available online at http://www.cdpr.ca.gov/docs/whs/currpisp.htm or by contacting the WHS Branch at (916) 445-4222. Additionally, the public can retrieve reports of pesticide illness and generate reports according to their own specifications using the California Pesticide Illness Query program (CalPIQ). CalPIQ is available at http://apps.cdpr.ca.gov/calpiq and can retrieve cases evaluated as definitely, probably, or possibly related to pesticides from 1992 through the most recent year published.

Appendix I: Acronyms

CAC	County Agricultural Commissioner
CDPH	California Department of Public Health
CPCS	California Poison Control System
DFROII	Doctor's First Reports of Occupational Illness and Injury
DIR	Department of Industrial Relations

DPR	California Department of Pesticide Regulation
HIPAA	Health Insurance Portability and Accountability Act
NIOSH	National Institute for Occupational Safety and Health
OEHHA	Office of Environmental Health Hazard Assessment
OHB	Occupational Health Branch (of CDPH)
PIR	Pesticide Illness Report
PISP	Pesticide Illness Surveillance Program
REI	Restricted Entry Interval
SENSOR	Sentinel Event Notification System for Occupational Risk
U.S. EPA	United States Environmental Protection Agency
WHS	Worker Health and Safety Branch