California Department of Public Health – Occupational Health Branch

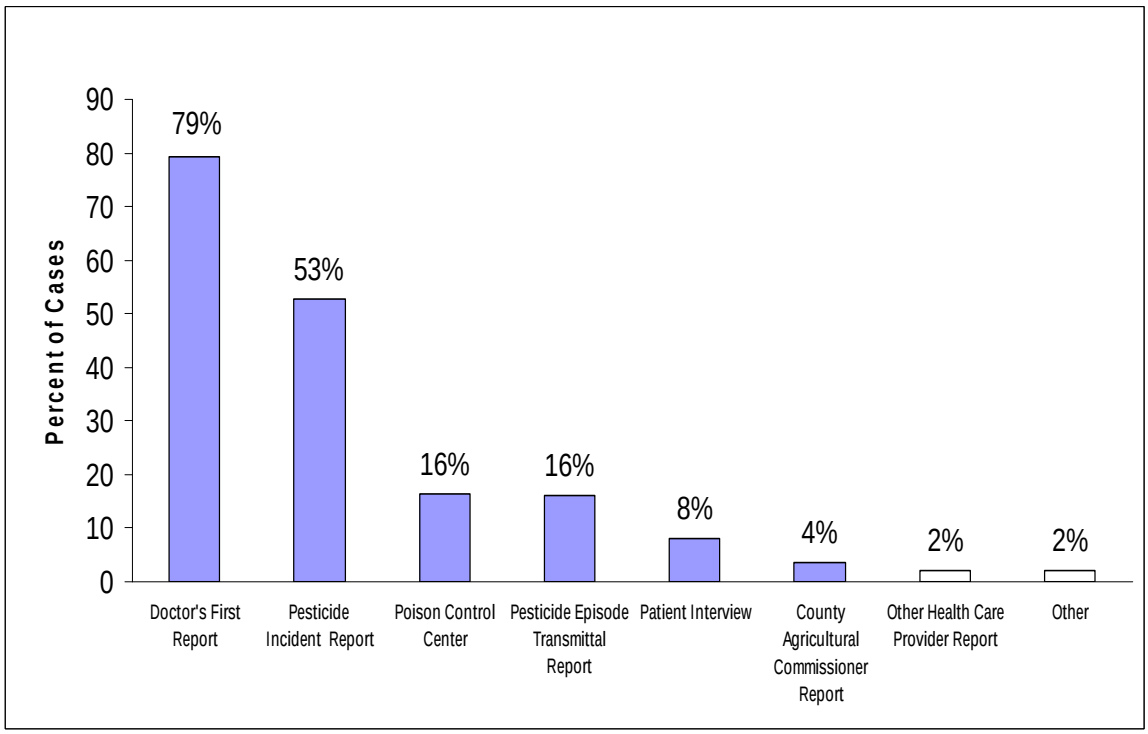
Occupational Pesticide Illness in California 1998 - 2007

About Our Program

The Occupational Pesticide Illness Prevention Program (OPIPP) has worked to reduce work-related pesticide illness since 1998. OPIPP tracks information about acute occupational pesticide illnesses (OPI) statewide, investigates select incidents, and develops recommendations to prevent such illnesses from occurring again. OPIPP is a part of the Occupational Health Branch in the California Department of Public Health.

Pesticides are substances that are designed to control or destroy specific living organisms. Sometimes, workers and others become ill due to unintentional exposure to pesticides. OPIPP learns about pesticide illness cases from a variety of sources, most commonly from physicians, who are required to report any illnesses that they suspect may be related to work or to pesticides (Figure 1).

Figure 1. Initial Report Source for 1605 Workers With Acute Pesticide-Related Illness*



* Includes Definite, Probable, and Possible cases. Excludes all cases related to disinfectants. An additional 1585 reports were classified as Suspicious, Unlikely, Insufficient Information, Asymptomatic, and Not a Case according to the NIOSH case classification system.

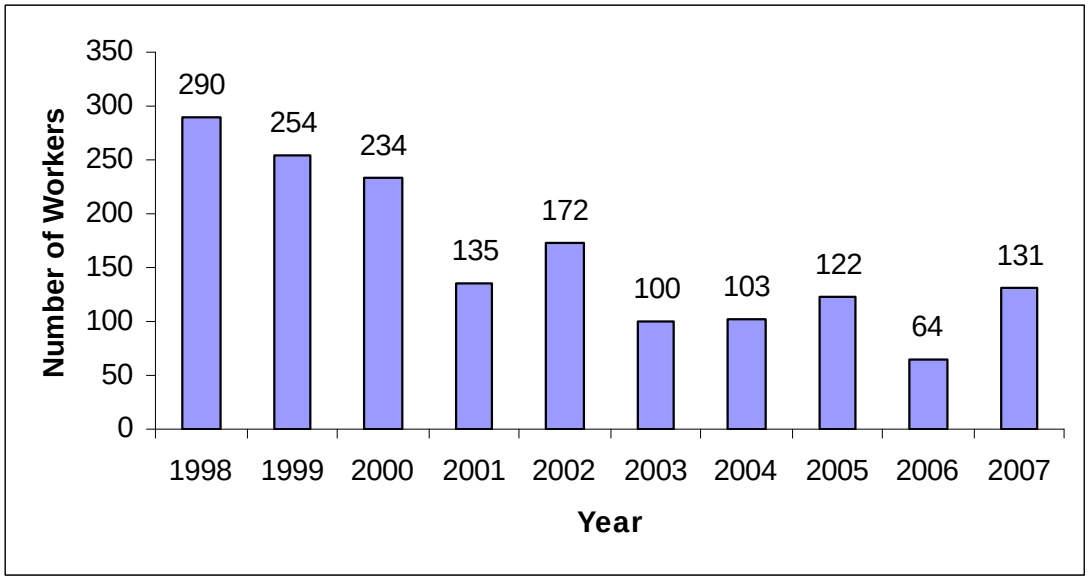
OPIPP participates in the national Sentinel Event Notification System for Occupational Risk (SENSOR) Pesticides Program, and is supported in part by the National Institute for Occupational Safety and Health (NIOSH) and the US Environmental Protection Agency (US EPA).

The Department of Pesticide Regulation, a regulatory agency, also tracks pesticide illnesses in California.

Occupational Pesticide Illness Cases in California 1998-2007

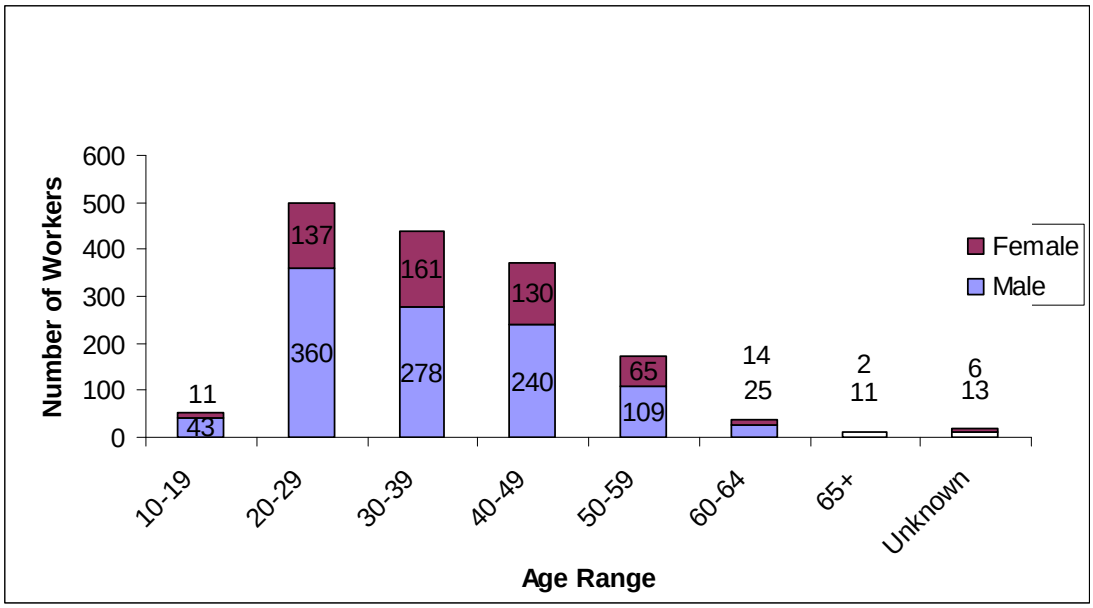
Between 1998 and 2007 OPIPP identified 1605 reports as OPI cases (Figure 2). During this nine-year period, the annual number of OPI cases has decreased. This decline is not entirely explained by a true drop in the number of pesticide illnesses. Various factors, including incomplete reporting of pesticide illnesses, partly account for the fall in the number of cases. Illnesses may not be reported for a variety of reasons. For example, workers may not have access to health care or may be afraid to seek medical care and physicians may not recognize or report pesticide illness. The number of OPI cases reported most likely represents an undercount of the actual number of illnesses that occur in California.

Figure 2. Numbers of Workers per Year With Occupational Acute Pesticide-Related Illness



Nearly two out of three California workers (62%) with pesticide illnesses were men between the ages of 20 and 59, but cases included those as young as 13 and as old as 77 (Figure 3). According to California law, youth must be at least 12 years old to be hired as a farmworker if they have a work permit from their school. Federal child labor laws require farmworker youth who handle highly toxic chemicals to be at least 16 years old. However, youth of any age may work at any time in any job on a farm owned or operated by their parents.

Figure 3. Age and Gender of 1605 Workers With Acute Pesticide Illness



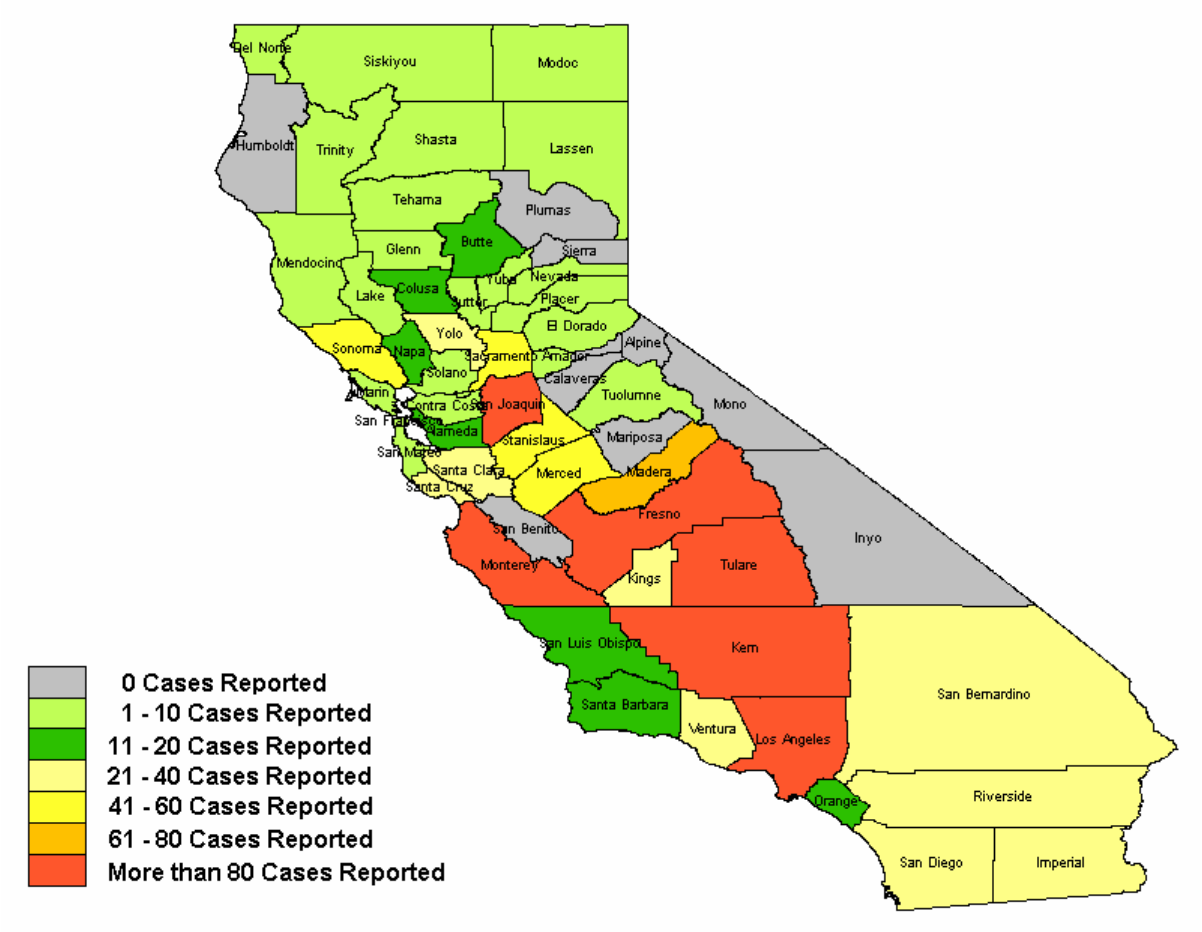
Workers with pesticide illness had a variety of health effects. Most commonly reported were headache, nausea, and eye irritation (Table 1). Severity is a measure of how ill a person is. Most OPI cases (nearly three out of four) were of low severity (mild illness that resolves on its own), but one out of four illnesses were moderately severe (pronounced or prolonged illness); very few cases of OPI (one-half of one percent) was of high severity (life-threatening illness). Nearly one-third of workers with OPI lost eight or more hours of work as a result of their illness.

Table 1. Ten Most Commonly Reported Health Effects for 1605 Workers with Acute Pesticide Illness

Health Effect	Percent
Headache	38.3
Nausea	36.8
Eye Pain or Irritation	32.6
Upper Respiratory Pain or Irritation	22.7
Dizziness	21.2
Vomiting	18.2
Pruritis	17.4
Rash	16.2
Skin Flushing	15.8
Skin Irritation or Pain	14.8

Occupational pesticide illnesses were reported from 48 of the 58 California counties. The Central Valley counties of Fresno, Kern, San Joaquin, and Tulare, Los Angeles, and the Central Coast county of Monterey reported the highest numbers of workers with OPI (Figure 4).

Figure 4. Number of Acute Work-Related Pesticide Illnesses Reported per County for 1605 Workers With Acute Pesticide Illness



Many classes of pesticides were associated with OPI (Figure 5). Cholinesterase-inhibiting pesticides (organophosphates and carbamates) were the largest single class of pesticide associated with illness. The pyrethroid pesticides were second most commonly associated with OPI. Additional pesticides associated with OPI included glyphosate, used for weed control; and sulfur, used primarily to control fungus on grapes.

Figure 5. Pesticides Associated With Acute Illness in 1605 Workers

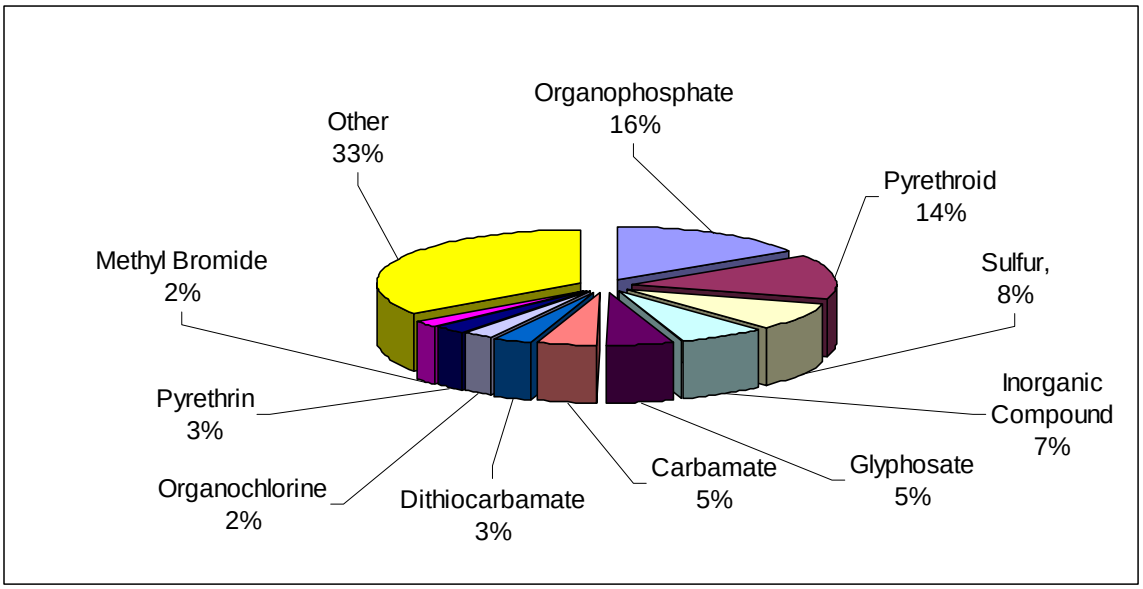


Table 1. Activity at Time of Pesticide Exposure for 1605 Workers With Acute Pesticide Illness

Activity at Time of Exposure	Number of Workers (%)
Routine work (not application)	971 (60.1%)
Applying pesticides	352 (22.0%)
Mixing/loading	72 (4.5%)
Transporting or disposing of pesticides	50 (3.1%)
Repairing or maintaining application equipment	24 (1.2%)
Any combination of above	22 (1.4%)
Emergency response	41 (2.6%)
Manufacturing or formulating pesticides	4 (0.3%)
Unknown	66 (4.1%)

Workers were engaged in a variety of activities on the job at the time they were exposed to pesticides (Table 1). Nearly two out of three workers were performing their “routine work” activities that did not involve handling pesticides at the time they became ill. Most workers who became ill while performing routine work (56%) were farm workers who were involved in such activities as weeding and handling crops. Almost one out of four workers became ill while applying pesticides.

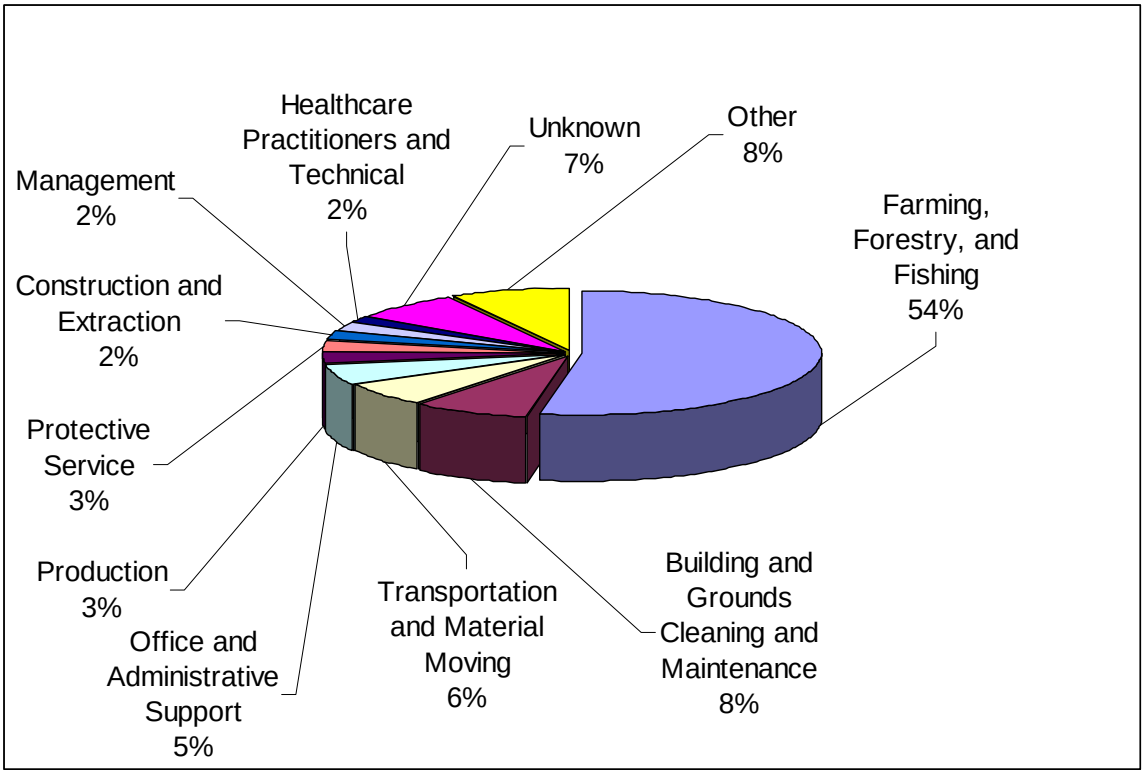
OPI was reported most commonly in agriculture: over half the cases were in this industrial sector (Table 2). In addition, workers in many other industries also had OPI. Manufacturing, which includes food manufacturing, Public Administration, and Administrative and Support industries were among the top industries reporting OPI. It is important to note that janitorial and landscape industries make up a part of the Administrative and Support category.

Table 2. Industry of 1605 Workers with Acute Pesticide illness

Industry	Percentage Of Workers
Agriculture,Forestry,Fishing and Hunting	52.8%
Manufacturing	6.9%
Public Administration	6.4%
Administrative and Support	6.1%
Healthcare and Social Assistance	4.9%
Wholesale Trade	3.6%
Educational Services	3.1%
Transportation and Warehousing	2.5%
Other	10.7%
Unknown	3.0%

As shown in Figure 6, OPI affects workers in various occupations.

Figure 6. Occupation of 1605 Workers with Acute Pesticide illness



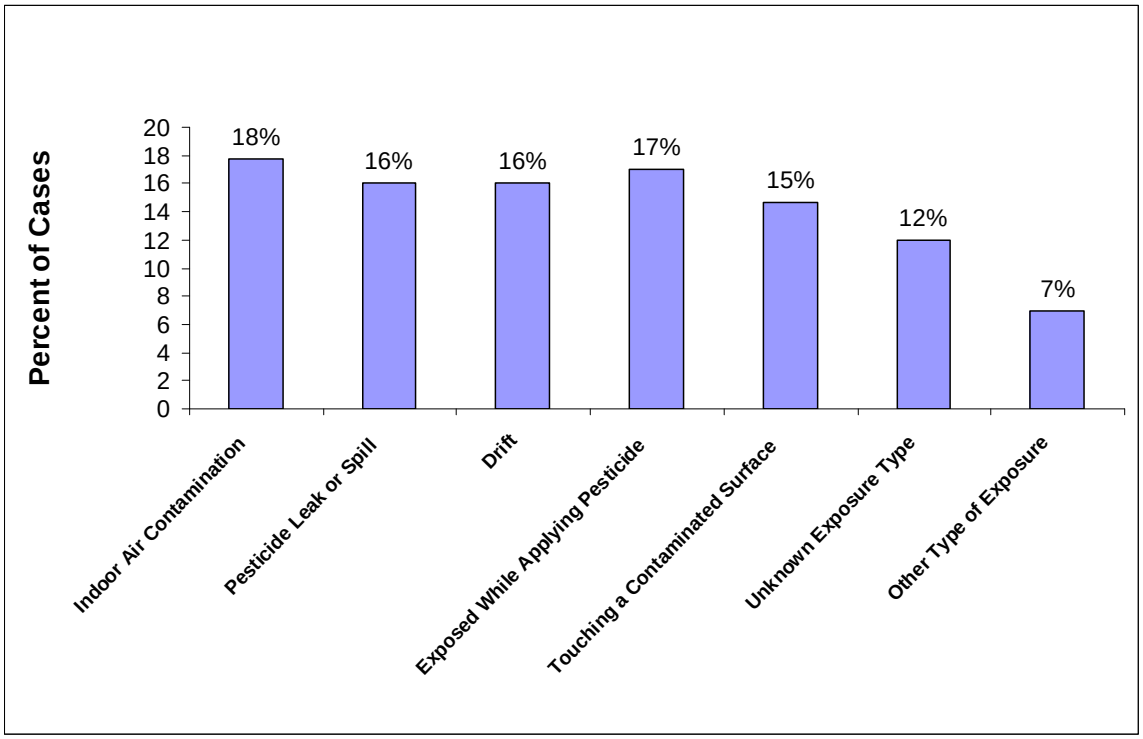
More than half of those with OPI are workers in Farm, Forestry, and Fishing occupations (Figure 6). Of these workers, over 80 percent are farmworkers. This shows that although pesticide illness affects many different kinds of workers, it is most commonly reported among farmworkers

Workers were exposed to pesticides in a variety of ways, including by breathing contaminated air following indoor pesticide application, as a result of leaks or spills, through pesticide drift, while applying pesticides, and by touching a surface where pesticides had been applied (Figure 7). Pesticide drift accounted for 16% of all OPI cases. Drift is of particular concern to farm workers, as 67% of all drift-related pesticide illnesses occurred in this worker group.

Table 3. Occupation of 907 Workers in the Farm, Forestry, and Fishing Occupation Category

Occupation	Percentage Of Workers
Farm and Nursery Workers	85.9%
Grounds Keepers and Gardeners	5.3%
Graders and Sorters	4.2%
Farmworker Supervisors	2.6%
Farm Managers	0.7%
Farmers	0.6%
Other	0.8%

Figure 7. Type of Exposure Reported by 1605 Workers With Acute Pesticide Illness



Summary

This summary of California information tracked by OPIPP demonstrates that OPI is caused by a variety of pesticides. Workers may be exposed in many different ways and while engaged in a variety of tasks. They experience various health effects and sometimes may not be able to work as a result of their illnesses. While most OPI is of low severity, moderately and highly severe pesticide illnesses do occur.

Illnesses due to pesticides are preventable. To minimize pesticide exposure, workers should:

- Wash hands before eating, drinking, or smoking
- Not enter areas where a danger sign has been posted
- Leave an area if pesticides are being applied or if you experience symptoms listed in Table 1

If you are a pesticide user some of the ways you can minimize pesticide exposures for yourself and others are:

- Use pesticides only if other methods of pest control have failed
- Use the least toxic pesticide
- Follow instructions on the pesticide label
- Wear proper personal protective equipment
- Stop application if you see people in surrounding areas who could be affected

If you think you have symptoms caused by pesticides at work, you should do one or more of the following:

- Tell your supervisor
- Seek medical care as soon as possible
- Call the Poison Control Center 1-800-222-1222

Tracking information on work-related pesticide illnesses allows OPIPP to identify the causes of pesticide exposure and illness and to prevent repeat incidents. By investigating selected incidents, building partnerships with stakeholders, and educating health care providers and others, OPIPP aims to improve the recognition and reporting of pesticide illness and to prevent its occurrence. An example of methods of pest control that use fewer pesticides can be found in "Alternatives to the Use of Cyfluthrin to Control Thrips Damage in the Orange Growing Industry".

For more information, contact the Occupational Health Branch at 510-620-5757 or visit www.cdph.ca.gov/programs/ohb.

Hyperlinks Used in this Document with Corresponding URL

Hyperlink (listed in order of appearance)	**URL**
Pesticides	http://www.epa.gov/pesticides/about/index.htm#what_pesticides
NIOSH Case Classification System	http://www.cdc.gov/niosh/topics/pesticides/pdfs/casedef2003_revAPR2005.pdf
Sentinel Event Notification System for Occupational Risk (SENSOR) Pesticides Program	http://www.cdc.gov/niosh/topics/pesticides/
NIOSH	http://www.cdc.gov/niosh/
US EPA	http://www.epa.gov/
Department of Pesticide Regulation	http://www.cdpr.ca.gov/
Pesticide drift	http://www.epa.gov/pesticides/factsheets/spraydrift.htm
Educating health care providers	http://aoec.org/content/resources_1_3_1.htm
Alternatives to the Use of Cyfluthrin to Control Thrips Damage in the Orange Growing Industry	http://www.cdph.ca.gov/programs/ohsep/Documents/thripscontrol.pdf