

Health & Safety

Report

Worker Health and Safety Branch

HS-1776

OVERVIEW OF THE CALIFORNIA PESTICIDE ILLNESS
SURVEILLANCE PROGRAM

- 1996 -

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Pesticide Illness Surveillance Program - 1996

The California Department of Pesticide Regulation (DPR) maintains a surveillance program to record human health effects of pesticide exposure. Section 105200 of the California Health and Safety Code requires physicians to report any patients whose condition they know or have reason to believe derived from exposure to pesticides. To supplement physician reporting, DPR staff review workers' compensation cases for evidence of pesticide involvement. County agricultural commissioners investigate all cases identified as potentially related to pesticide exposure.

Every pesticide active ingredient has a pharmacologic effect by which it controls its target pest. Pesticide products may have other potentially harmful properties in addition to the ones that work to control pests. Excessive exposure to pesticides may cause illness by various mechanisms. The Pesticide Illness Surveillance Program (PISP) collects information on adverse effects from pesticide products including the active ingredients, inert ingredients, impurities, or breakdown products. Whether pesticide products act as irritants or as allergens, through their smell or by causing fires or explosions, DPR's mission is to require users to avoid exposures that compromise health.

DPR maintains the PISP in order to evaluate the circumstances of pesticide exposures that result in illness. Staff regularly consult the data collected to evaluate the effectiveness of the DPR pesticide safety regulatory programs and assess the need for changes.

Background on the Reporting System

The DPR worker safety program is widely regarded as the most stringent in the nation. It includes requirements for thorough data review of all pesticides¹ before registration for use in California, safety training of all pesticide handlers and field workers, and ongoing monitoring of people and the environment to detect potential for pesticide exposure. Mandatory reporting of pesticide illnesses has been part of this comprehensive program since 1971. In a report issued in December 1993, the

¹ "Pesticide" is used to describe many substances that control pests. Pests may be insects, fungi, weeds, rodents, nematodes, algae, viruses or bacteria -- almost any living organisms that cause damage or economic loss, or transmit or produce disease. Therefore, pesticides include herbicides, fungicides, insecticides, rodenticides, 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, and wetting and dispersing agents.

U.S. General Accounting Office noted that "California had by far the most effective and well-established monitoring system in place" and that the U.S. Environmental Protection Agency (U.S. EPA) "relies heavily on the pesticide illness data collected by the California monitoring system... and has tried to encourage selected states to develop monitoring systems modeled after the California system."

Under a statute enacted in 1971 and amended in 1977, California physicians are required to report any suspected case of pesticide-related illness or injury by telephone to the local health department. The health department informs the county agricultural commissioner and also completes a pesticide illness report (PIR), copies of which are distributed to the State Office of Environmental Health Hazard Assessment, to the California Department of Industrial Relations (DIR), and to DPR.

DPR strives to ensure that the PISP captures the majority of illness incidents. For example, since doctors do not always file the required illness reports, DPR's Worker Health and Safety Branch (WH&S) also reviews reports of worker illness and injury submitted to DIR under workers' compensation reporting requirements. Staff select for investigation any report that mentions a pesticide, or pesticides in general, as a possible cause of injury. Reports that mention unspecified chemicals also are investigated if the setting is one in which pesticide use is likely. In typical years, this procedure identifies two-thirds to three-quarters of the incidents investigated.

The agricultural commissioner of the county where the incident occurred investigates every reported incident. DPR provides instructions, training, and technical support for conducting investigations. The commissioners prepare reports describing the circumstances in which pesticide exposure may have occurred and any other relevant aspects of the case. If investigations identify other affected people, they are identified in the investigation report and reflected in the PISP database.

Worker Health and Safety Branch staff evaluate commissioners' reports and classify incidents according to the circumstances of exposure to a pesticide. Staff undertake a complex task of determining the likelihood that a pesticide exposure caused the incident. A number of factors complicate illness incident analysis. First, the PISP evaluates adverse effects after the fact and often from secondary sources. Second, illness incidents can occur from exposure to pesticide product components other than the active ingredient and may be unrelated to predicted hazards of the active ingredient. For instance, a documented allergic reaction to a pesticide would be recorded as a definite adverse effect, although it bears no relation to the way the pesticide acts on pests.

The PISP database provides the means to identify trends in pesticide-related illnesses warranting additional California restrictions or label modifications through the U.S. EPA's Label Improvement Program. Since many illness incidents result from illegal practices, ensuring compliance can improve work place safety. The PISP data allow state and county enforcement staff to prioritize inspections to significant non compliance activities.

Efforts to Improve Reporting Compliance

The illness surveillance program is not designed to capture every pesticide-related incident. Although some cases are missed, the PISP captures the major trends and safety problems. In order to maximize the utility of the database, DPR continually strives to improve reporting compliance and completeness. The PISP can miss pesticide-related illnesses due to a number of factors. People may not consult physicians after a pesticide illness episode, especially if exposed to pesticides outside of a workplace environment. Physicians may not recognize that their patients are suffering from pesticide exposure, or may be unaware of the reporting requirement. The likelihood is very good, however, that people treated for acute illnesses under workers' compensation will be reported to DIR, where review by WH&S will recognize pesticide-related cases.

DPR initiated an effort in 1994 to improve physician familiarity and compliance with the reporting requirement. Besides identifying cases that might escape detection otherwise, direct physician reporting allows DPR to investigate cases promptly, while the people involved remain accessible, with accurate recollection of the event. About half of all direct physician reports arrive within two weeks of the occurrence, and nearly 90 percent within the month following exposure. About three-quarters of the cases identified through workers' compensation records are more than a month old by the time they are located.

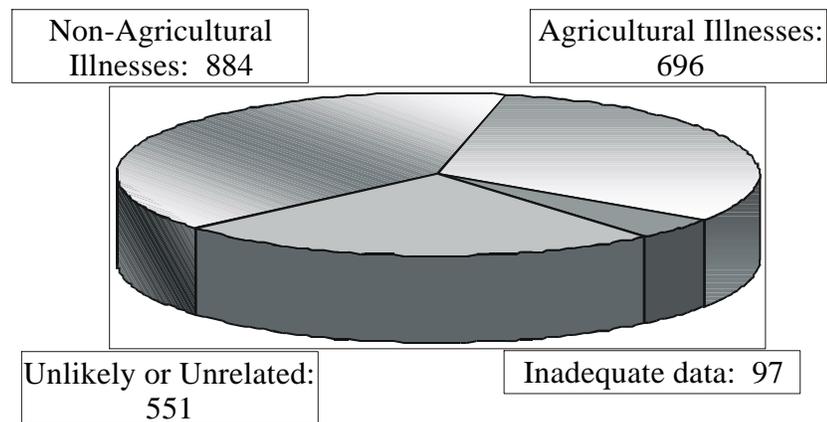
Late in 1994, DPR and DIR sent summaries of the requirements for reporting pesticide-related conditions to all physicians who held active California medical licenses. In 1995 and 1996, WH&S recorded the names of physicians from documents retrieved from workers' compensation records. If no corresponding report had been received through the local health officer, the system generated a letter to the physician explaining the reporting requirement and mentioning the case or cases located through workers' compensation. A total of 1,371 letters were sent to 996 different doctors by the end of 1996. OEHHA, which has statutory responsibility for medical training, conducted outreach sessions during this period. Orange, Riverside, and Stanislaus Counties were selected as primary locations for outreach because they had especially poor records of direct reporting coupled with substantial numbers of cases found through workers' compensation.

This effort increased physician reporting to more than 20 percent of cases from a low of 12 to 13 percent in 1992 and 1993. Because the effort was costly and labor-intensive, DPR sought a more efficient way to increase reporting. In 1996, DPR undertook a pilot project to increase physician reporting by contracting with the poison control center serving the San Joaquin Valley. For one year, that poison control center offered physicians the option of allowing the center to report cases on their behalf. Only a few dozen reports arrived by this route, but they arrived promptly, often within a day or two of the event.

1996 Numerical Results -- Totals

During 1996, DPR received reports of 2,229 people whose health may have been affected by pesticide exposure. After investigation, analysts found that pesticide exposure had been at least a possible contributing factor to 1,580 (71 percent) of the 2,229 cases. Of those 1,580 cases, 696 (44 percent) involved use of pesticides for agricultural purposes and 884 (56 percent) occurred in other settings. Evidence established a definite relationship to pesticide exposure for 331 of the 1,580 cases.

Outcome of 1996 Illness Investigations



Another 757 were classified as probable, with 492 entered as possible. Tabular summaries presenting different aspects of the data are available through the DPR web site at <www.cdpr.ca.gov>, or by contacting the Worker Health and Safety Branch.

The total number of cases referred for investigation declined by 172 (7 percent) relative to 1995. The drop occurred even though a single significant drift episode generated 243 case reports. Physician reporting remained comparable to the enhanced level observed during 1995. Apart from the large drift episode just mentioned (which generated 151 physician reports among its 243 cases), DPR received physician reports for 415 of 1,986 cases investigated (21 percent). This compares to 529 of 2,401 (22 percent) in 1995 and 310 of 1,995 (16 percent) in 1994. Occupational exposures (those that occurred while the affected people were at work and eligible for workers' compensation) accounted for 2,012 (90 percent) of the 2,229 cases identified. A substantial number of the episodes derive from actions already prohibited by pesticide safety regulations, which indicates that safety could be improved through increased efforts to get all users to comply with regulations.

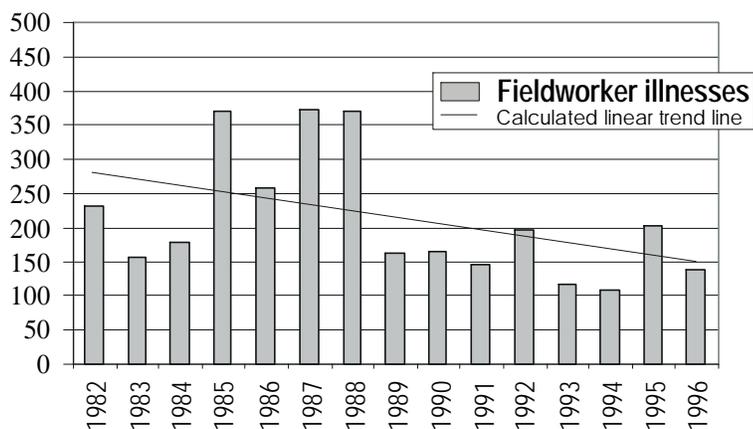
Agricultural Field Residue Incidents

During 1996, exposure to field residue was implicated in 137 cases (20 percent) of the 696 agricultural-related incidents. Of the 137 cases, DPR classified 93 as possible and 44 as definite or probable cases. Illegal reentry during the restricted entry interval contributed to 41 (30 percent) of the 137 cases. Twenty-seven of those 41 occurred in a single episode: An applicator in Monterey County failed to verify the location of the intended application and treated a field scheduled for harvest. The harvesters began work 36 hours into a 72-hour restricted entry interval. The grower discovered the situation about two hours after harvest began, at which point a bus took the whole crew to a medical clinic. The grower and the labor contractor each were fined \$1,000 for their parts in the episode. The negligent applicator was fired and his supervisor suspended pending determination of his responsibility for the mistake.

The 1996 total of 137 field residue cases suggests a return to the improved baseline condition established by the regulatory changes of 1988 - 1989. From the earliest computerized records of 1982 through 1988, an average of 282 cases per year were definitely, probably or possibly related to field residue exposure. Regulatory changes lengthening restricted entry intervals for some pesticides took effect between the 1988 and 1989 growing seasons. Subsequently, the average number of cases related to field residue dropped to 149 per year for 1989 through 1994. In 1995, two large group episodes raised the number of cases identified among field workers to 230.

The improvement in number of field residue cases has continued long enough to provide evidence of a real change, as measured by statistical test. DPR will undertake more intensive review of field residue cases to try to identify the particular types of ill effects and exposure situations that have been mitigated and

Worker Illnesses Caused by Exposure to Pesticide Residue in Agricultural Fields



those that remain to be addressed. Factors to consider include the months of highest risk, the counties and crops where cases occur, the formulations and ingredients of the pesticide products implicated, and the types of health effects experienced by field laborers. Comparing profiles before and since the reduction in case reports may also help to identify measures to reduce the toll further.

Morbidity and Mortality

Among the 1,088 cases evaluated after investigation as definitely or probably related to pesticide exposure, 13 people were hospitalized and 145 lost time from work. Of 492 possible cases, two included hospitalization and 120 lost work time. Of five 1996 fatalities investigated, only one proved definitely related to pesticide exposure. That one involved voluntary ingestion of an organophosphate insecticide by a despondent stroke victim. Another fatality most probably resulted from pesticide ingestion, but DPR was unable to verify how medical staff identified the toxic substance involved. Lacking the hard evidence required for a definite relationship, this case was classified as probable.

Another case was classified as unlikely to be related to pesticides. Initial investigation of the death of a farm worker raised suspicion that the man might have eaten some of the gopher bait found in his truck. The coroner requested assistance from the agricultural commissioner, and DPR provided resources for analyzing samples. Autopsy findings did not support the supposition of pesticide involvement. Non-pesticide causes were identified for the other two deaths investigated.

Examples of the Importance of Compliance with Safety Procedures

Severe intoxications typically result from careless and often illegal use of pesticides. The following episodes came to DPR's attention during 1996. In each case, people used pesticides irresponsibly, jeopardizing their own health and that of others.

The large drift episode mentioned earlier occurred in Kern County when an aerial applicator proceeded with a scheduled application to a cotton field in spite of the obvious presence of about a thousand harvesters in the vineyard across the road. The pesticides applied have strong and objectionable odors. Although none of the harvesters reported feeling any mist, almost all smelled the pesticides. Analysis of grape leaves and of harvesters' clothing confirmed that some of the pesticides had drifted onto the vineyard. The fire department decontaminated the 22 most obviously affected harvesters on site. Over the next several weeks, at least 243 of the harvesters consulted physicians. Most of them reported non-specific symptoms such as headache, nausea, and eye irritation; a few denied experiencing symptoms but wished to be examined as a precaution. Because of the serious nature of the episode, the agricultural commissioner referred the case to DPR for enforcement action. DPR fined the application company \$60,000, suspended the company owner's license to operate for nine months, suspended the pilot's applicator license for six months, and required additional training and supervision for all the company's workers.

The Department of Pesticide Regulation has addressed the issue of drift through strict enforcement, policy development, electronic data management and outreach to pesticide applicators. DPR is working to improve incident/licensee identification, violation trends, statewide consistency in enforcement actions and evaluation of user compliance. In 1997, DPR issued a Pesticide Drift Enforcement Policy which defines drift and summarizes the regulatory standards. An additional step is the ongoing development of a compliance database. Upon completion in 2000, enforcement staff will be able to review compliance history as part of the process of issuing and renewing licenses. This database will enhance communication and add consistency to the overall enforcement decision-making

process. DPR participated in an industry-sponsored program on drift reduction that integrates training on proper equipment use and calibration along with pilot decision-making to decrease drift, risk-taking, and aerial accidents. In addition, drift control regulations under development will expand the drift regulations to all types of applications, not just restricted material applications.

In another noteworthy incident, a Los Angeles County woman attempted to treat herself for head lice by washing her hair with a home use insecticide intended for application to building surfaces. The next morning she was sick with nausea, vomiting, stomach cramps, blurred vision, and difficulty breathing. She spent more than one day in the hospital.

A Stanislaus County homeowner treated his yard with a home-use insecticide. He did not use any protective equipment and did not wash afterwards, although gusty wind had blown pesticide spray into his face. Several hours later, he developed symptoms including shortness of breath and vomiting. He was hospitalized for a day-and-a-half. Because the homeowner had already discarded the pesticide container, the investigator could not determine to what extent the homeowner had ignored available safety instructions.

A grower applied metam-sodium on a field adjacent to a water district canal. In the process, some of the pesticide entered a network of canals that supplied water to 20 households, which stored the water in cisterns for later use. The residents recognized and reported the problem because the water smelled bad. Besides noticing the odor and several dead crayfish, the investigator took samples that confirmed the presence of 3 parts per million of methyl isothiocyanate (the breakdown product of metam-sodium) in the household water supply. The irrigation district supplied the residents with clean water. The agricultural commissioner fined the grower \$2,500 for use in conflict with the label (in failing to take all precautions against environmental contamination), and also imposed a \$1,000 penalty on the dealer who delivered the pesticide and set up the equipment without insisting that the equipment be located to minimize risk.

Regulatory Responses to Illness Data Analysis

Review of illness data showed that fumigating tree-planting sites with methyl bromide caused a number of incidents including severe burns to applicators. Among 16 cases definitely or probably attributed to methyl bromide exposure during 1994 and 1995, four involved tree hole fumigation, and two of the people involved each lost a week of work. In 1996, three of nine definite or probable methyl bromide cases derived from tree hole fumigation. One of the injured workers was disabled for two weeks. DPR has worked with a supplier of tree hole fumigant to develop improved application equipment. This effort has produced a modified application probe that appears to provide greater safety to applicators.

Field trials to document the improvement have been scheduled. If monitoring results confirm the expected advantage, DPR plans to impose new requirements for safer delivery systems and techniques in 1999.

Based on preliminary review of episodes involving pesticide applicators, use of backpack sprayers appears to be another area of potential concern. DPR will undertake more extensive analysis of use patterns and health complaints to determine whether the situation warrants regulatory intervention.

DPR also has begun a more general initiative, the Pesticide Workplace Evaluation Program. This program aims specifically to find ways to reduce the number of pesticide-related illnesses. DPR will train County Agricultural Commissioner enforcement staff in principles of industrial hygiene and occupational safety. This will equip them to take a broader view of safe pesticide use practices than they have had as enforcement agents. This initiative should provide new insights into the sources of illness and injury and new proposals for practical measures to control them.

Regulations requiring laboratories to report cholinesterase test results in standard units progressed towards implementation. To make use of cholinesterase tests, it is almost always necessary to compare results from the time of exposure to levels measured when the person had not been in contact with pesticides. At present, laboratories use such a variety of methods and procedures that tests done at one lab provide little guidance in determining whether another lab's test reflects a change from a person's normal status. The proposed regulations will not eliminate differences among laboratories, but should achieve reasonable comparability among their results. DPR expects standardized reporting to begin by January 1, 2000.

TABLE 1
Summary of Illness/Injury Associated with Suspected Pesticide Exposure
Reported by California Physicians
1996

Type of Illness	Adequate or Complete Data										Incomplete Data		
	Occupational					Non-Occupational					All Unrelated	Insufficient	Unavailable
	Def ¹	Pro ²	Pos ³	Unl ⁴	Ind ⁵	Def ¹	Pro ²	Pos ³	Unl ⁴	Ind ⁵			
Systemic	49	572	298	62	1	16	35	32	13	0	138	2	35
Eye	203	61	29	8	0	10	21	9	0	0	118	3	8
Skin	46	60	119	30	0	1	2	4	0	0	80	3	11
Eye/Skin	4	6	1	0	0	2	0	0	0	0	6	1	0
None/ND*	0	0	0	0	0	0	0	0	0	0	96	25	9
Subtotal	302	699	447	100	1	29	58	45	13	0	438	34	63
Total	1549					145					438	97	

* Not Determined; a relationship and/or illness type could not be determined from the information available

¹ Def = Definitely related to pesticide exposure

² Pro = Probably related to pesticide exposure

³ Pos = Possibly related to pesticide exposure

⁴ Unl = Unlikely to be related to pesticide exposure

⁵ Ind = Indirectly related to pesticide use

TABLE 2
Illnesses and Injuries Associated with Exposure to Pesticides
Reported by Physicians in California
Summarized by Activity and Type of Illness/Injury
1996

ACTIVITY	ILLNESS/INJURY TYPE								Total	
	Systemic		Eye		Skin		Eye/Skin			
	Def/ Prob	Pos	Def/ Prob	Pos	Def/ Prob	Pos	Def/ Prob	Pos	Def/ Prob	Pos
Mixer/Loader, Aerial	1	1	0	1	0	0	0	0	1	2
Mixer/Loader, Ground	1	3	3	2	3	1	0	0	7	6
Mixer/Loader, Hand	29	3	49	0	13	1	2	0	93	4
Mixer/Loader, Unknown	0	0	0	0	0	0	0	0	0	0
Applicator, Aerial	0	0	0	0	0	0	0	0	0	0
Applicator, Ground	3	20	8	4	3	9	0	0	14	33
Applicator, Hand	22	15	27	3	11	6	3	0	63	24
Applicator, Other	58	19	103	5	41	15	1	0	203	39
Fumigation, Chamber	6	0	0	0	1	1	0	0	7	1
Fumigation, Field	3	1	1	0	3	0	1	0	8	1
Flagger	0	1	0	0	0	0	0	0	0	1
Exposed to Drift	353	95	16	3	4	7	1	0	374	105
Repair/Maintenance	13	3	16	4	1	2	0	0	30	9
Pack/Process (Commodity)	2	3	0	0	1	9	0	0	3	12
Exposed to Field Residue	29	35	2	2	12	55	1	1	44	93
Structural Residue	43	61	0	0	0	4	0	0	43	65

TABLE 2
Illnesses and Injuries Associated with Exposure to Pesticides
Reported by Physicians in California
Summarized by Activity and Type of Illness/Injury
1996

ACTIVITY	ILLNESS/INJURY TYPE								Total	
	Systemic		Eye		Skin		Eye/Skin			
	Def/ Prob	Pos	Def/ Prob	Pos	Def/ Prob	Pos	Def/ Prob	Pos	Def/ Prob	Pos
Other Residue	8	14	4	3	4	6	0	0	16	23
Manufacture/Formulation	1	2	2	0	2	0	0	0	5	2
Exposed to Concentrate	18	5	10	1	1	1	1	0	30	7
Emergency Response	16	4	0	0	2	0	0	0	18	4
Other	15	13	23	1	4	2	0	0	42	16
NON-OCCUPATIONAL- less fully reported than occupational										
Application	6	5	6	1	1	1	0	0	13	7
Exposed to Drift	19	15	5	8	1	0	1	0	26	23
Exposed to Residue	14	10	20	0	0	3	1	0	35	13
Other	12	2	0	0	1	0	0	0	13	2
TOTALS	672	330	295	38	109	123	12	1	1088	492

TABLE 4
Illnesses/Injuries Reported in 1996
With Confirmed Relationship to Pesticide Exposure
Summarized by Pesticide(s), Type of Illness and Degree of Relationship

PESTICIDE	SYSTEMIC		EYE		SKIN		EYE & SKIN		TOTAL	
	Def/ Prob	Pos								
2,4-D	1	0	0	0	0	0	0	0	1	0
ABAMECTIN	0	1	0	2	0	1	0	0	0	4
ACEPHATE	0	1	0	0	1	2	0	0	1	3
ADJUVANT	2	0	0	0	0	1	0	0	2	1
ALDICARB	0	1	0	0	0	0	0	0	0	1
ALLETHRIN	1	0	0	0	0	0	0	0	1	0
ALUMINUM PHOSPHIDE	4	2	0	0	0	1	0	0	4	3
AMMONIACAL COPPER ZINC ARSENATE	0	0	1	0	0	0	0	0	1	0
BENDIOCARB	1	0	0	0	0	0	0	0	1	0
BENSULIDE	0	1	0	0	0	0	0	0	0	1
BORIC ACID	0	3	0	0	0	0	0	0	0	3
BUTYRIC ANHYDRIDE	0	6	0	0	0	0	0	0	0	6
CALCIUM HYPOCHLORITE	19	2	3	0	0	0	1	0	23	2
CAPTAN	0	0	0	0	1	0	0	0	1	0
CARBARYL	2	3	1	0	0	1	0	0	3	4
CARBOFURAN	0	1	1	0	0	0	0	0	1	1
CHLORINE	33	5	0	0	0	4	0	0	33	9
CHLOROTHALONIL	2	5	0	0	0	3	0	0	2	8
CHLORPYRIFOS	16	22	5	0	0	0	0	0	21	22
CITRONELLA	1	0	0	0	0	0	0	0	1	0
COPPER ETHANOLAMINE COMPLEX	0	0	1	0	0	0	0	0	1	0

PESTICIDE	SYSTEMIC		EYE		SKIN		EYE & SKIN		TOTAL	
	Def/ Prob	Pos								
COPPER HYDROXIDE	1	0	0	0	0	0	0	0	1	0
COPPER NAPHTHENATE	0	0	1	0	0	0	0	0	1	0
CREOSOTE	1	0	0	0	0	0	0	0	1	0
CYANURIC ACID	11	1	5	0	4	3	0	0	20	4
CYFLUTHRIN	1	3	1	0	0	0	0	0	2	3
CYPERMETHRIN	2	0	0	0	0	0	0	0	2	0
DDVP	1	6	0	0	0	0	0	0	1	6
DIAZINON	9	9	0	0	0	2	0	0	9	11
DICOFOL	0	1	0	0	0	0	0	0	0	1
DIMETHOATE	1	1	0	0	0	0	0	0	1	1
DIPHENYLAMINE	0	0	0	0	1	0	0	0	1	0
DIQUAT	0	1	0	0	3	1	0	0	3	2
DISODIUM OCTABORATE TETRAHYDRATE	0	0	0	0	1	0	0	0	1	0
ENDOSULFAN	0	1	0	0	0	0	0	0	0	1
EPTC	0	0	2	1	0	1	0	0	2	2
ESFENVALERATE	1	1	0	0	0	0	0	0	1	1
ETHALFLURALIN	0	1	0	0	0	0	0	0	0	1
FENAMIPHOS	0	0	1	0	0	0	0	0	1	0
FENARIMOL	1	0	0	0	0	0	0	0	1	0
FLUAZIFOP-BUTYL	0	1	0	0	0	0	0	0	0	1
FLUVALINATE	0	0	0	0	2	0	0	0	2	0
FORMALDEHYDE	1	0	1	0	0	0	0	0	2	0
FOSETYL-AL	0	0	0	1	0	0	0	0	0	1
GIBBERELIC ACID	0	0	0	1	0	0	0	0	0	1
GLUTARALDEHYDE	8	2	8	1	2	0	0	0	18	3

PESTICIDE	SYSTEMIC		EYE		SKIN		EYE & SKIN		TOTAL	
	Def/ Prob	Pos								
GLYPHOSATE	4	6	5	3	4	3	1	0	14	12
HALOGENATED HYDANTOINS	0	0	1	0	0	0	0	0	1	0
HYDROGEN CHLORIDE	4	1	4	0	2	0	0	0	10	1
HYDROGEN PEROXIDE	2	0	0	0	0	0	0	0	2	0
IMIDACLOPRID	0	0	1	0	0	0	0	0	1	0
IPRODIONE	0	0	0	0	0	1	0	0	0	1
K SALTS OF FATTY ACIDS	0	1	1	0	0	0	0	0	1	1
KATHON	0	0	0	0	0	0	1	0	1	0
LACTIC ACID	0	0	1	0	0	0	0	0	1	0
LIME-SULFUR	0	1	0	0	0	0	0	0	0	1
MALATHION	23	4	1	0	1	0	0	0	25	4
MANCOZEB	0	1	0	0	0	0	0	0	0	1
METALAXYL	0	1	1	0	0	0	0	0	1	1
METAM-SODIUM	23	0	22	1	5	0	1	0	51	1
METHIDATHION	0	0	0	0	0	1	0	0	0	1
METHOMYL	2	0	0	0	0	0	0	0	2	0
METHYL BROMIDE	3	1	0	0	1	0	0	0	4	1
MYCLOBUTANIL	0	0	0	0	0	1	0	0	0	1
NALED	0	1	0	0	1	0	0	0	1	1
OXADIAZON	0	3	0	0	0	0	0	0	0	3
OXYFLUORFEN	0	1	0	0	0	0	0	0	0	1
OXYTETRACYCLINE	0	0	0	1	0	0	0	0	0	1
OZONE	0	1	0	0	0	0	0	0	0	1
PARAQUAT	0	1	4	2	2	1	0	0	6	4
PERMETHRIN	2	1	2	0	0	0	0	0	4	1

PESTICIDE	SYSTEMIC		EYE		SKIN		EYE & SKIN		TOTAL	
	Def/ Prob	Pos	Def/ Prob	Pos	Def/ Prob	Pos	Def/ Prob	Pos	Def/ Prob	Pos
COMBINATIONS OF INSECTICIDES INCLUDING CHOLINESTERASE INHIBITOR(S)	237	60	3	0	1	4	1	0	242	64
COMBINATIONS OF INSECTICIDES OTHER THAN CHOLINESTERASE INHIBITORS	43	21	1	0	1	6	1	0	46	27
COMBINATIONS OF HERBICIDES/DEFOLIANTS	2	8	0	10	1	4	0	0	3	22
COMBINATIONS OF FUNGICIDES	1	2	3	0	1	14	0	0	5	16
COMBINATIONS OF FUMIGANTS	3	0	1	0	1	0	1	0	6	0
COMBINATIONS OF ANTIMICROBIALS	31	5	19	3	15	4	0	0	65	12
MISCELLANEOUS COMBINATIONS	35	68	5	3	8	28	1	0	49	99
UNKNOWN PESTICIDES	14	24	8	2	3	5	0	0	25	31
TOTAL	672	330	295	38	109	123	12	1	1088	492

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
ALAMEDA						
Definite	13	0	9	0	0	13
Probable	7	0	6	0	0	7
Possible	5	0	4	1	0	5
Unlikely	2	0	1	0	1	1
Unrelated	10					
Unavailable	1					
ALPINE						
Definite	1	0	1	0	0	1
AMADOR						
Possible	1	0	0	1	0	1
BUTTE						
Definite	5	0	5	0	2	3
Possible	5	0	4	0	2	3
Unlikely	1	0	0	0	1	0
Unrelated	1					
CALAVERAS						
Probable	1	0	1	0	0	1
Possible	1	0	1	0	1	0
Unrelated	1					
COLUSA						
Possible	4	0	3	1	4	0
Unrelated	2					
CONTRA COSTA						
Definite	5	0	5	0	2	3
Probable	15	2	10	2	0	15
Possible	4	0	0	2	1	3
Unlikely	1	0	0	1	0	1
Unrelated	5					
Unavailable	2					

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
DEL NORTE						
Definite	2	0	2	0	0	2
Possible	1	0	0	1	1	0
Unlikely	2	0	1	1	2	0
Unrelated	2					
EL DORADO						
Definite	1	0	1	0	0	1
Possible	1	0	1	0	0	1
FRESNO						
Definite	17	1	11	1	5	12
Probable	66	1	24	7	43	23
Possible	48	2	23	22	37	11
Unlikely	14	1	5	7	10	4
Asymptomatic	9	1	0	2	9	0
Unrelated	35					
Insufficient	2					
Unavailable	4					
GLENN						
Probable	1	0	1	0	0	1
Possible	2	0	1	1	2	0
Unrelated	1					
HUMBOLDT						
Definite	4	0	2	0	0	4
Probable	4	0	3	1	0	4
Unrelated	1					
IMPERIAL						
Definite	1	0	0	0	1	0
Probable	11	0	5	2	10	1
Possible	4	0	3	1	3	1
Unlikely	3	0	0	3	3	0

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
INYO						
Possible	1	0	1	0	0	1
KERN						
Definite	13	0	10	0	5	8
Probable	224	0	220	1	212	12
Possible	54	0	29	21	51	3
Unlikely	15	0	8	5	15	0
Asymptomatic	3	0	3	0	3	0
Unrelated	23					
Insufficient	2					
Unavailable	5					
KINGS						
Definite	4	0	2	1	2	2
Probable	4	0	3	1	4	0
Possible	17	0	4	4	17	0
Unlikely	1	0	1	0	1	0
Asymptomatic	5	0	0	0	5	0
Unrelated	1					
Unavailable	2					
LAKE						
Probable	1	0	1	0	0	1
Unlikely	1	0	0	1	0	1
Unrelated	1					
LASSEN						
Definite	1	0	1	0	0	1
Unrelated	1					
Unavailable	1					

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
LOS ANGELES						
Definite	56	6	39	2	0	56
Probable	57	11	31	13	0	57
Possible	44	3	8	26	6	38
Unlikely	5	0	3	0	0	5
Asymptomatic	25	17	0	4	0	25
Unrelated	53					
Insufficient	1					
Unavailable	6					
MADERA						
Definite	6	0	2	0	5	1
Probable	1	0	0	0	0	1
Possible	6	0	1	5	6	0
Unrelated	8					
MARIN						
Definite	5	0	5	0	0	5
Probable	9	0	6	3	1	8
Possible	1	0	0	1	0	1
Unlikely	1	0	0	0	0	1
Unrelated	4					
Unavailable	1					
MARIPOSA						
Definite	4	0	4	0	0	4
MENDOCINO						
Definite	2	0	1	0	0	2
Probable	2	0	0	2	1	1
Possible	1	0	1	0	1	0
Unlikely	3	0	0	0	0	3
Unrelated	2					

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
MERCED						
Definite	8	0	5	3	3	5
Probable	10	0	6	3	4	6
Possible	12	0	4	8	11	1
Unlikely	5	0	3	1	5	0
Unrelated	17					
Insufficient	3					
MODOC						
Unrelated	1					
MONO						
Definite	1	0	1	0	0	1
Unrelated	1					
MONTEREY						
Definite	12	0	4	2	6	6
Probable	43	0	10	29	34	9
Possible	12	0	2	9	9	3
Unlikely	3	0	0	2	2	1
Asymptomatic	5	0	3	2	4	1
Unrelated	8					
Unavailable	2					
NAPA						
Definite	6	0	6	0	1	5
Probable	3	0	3	0	0	3
Possible	3	0	2	0	2	1
Unrelated	6					
Unavailable	1					
NEVADA						
Definite	2	0	2	0	0	2
Probable	1	0	1	0	0	1

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
ORANGE						
Definite	20	0	19	1	1	19
Probable	15	0	12	2	2	13
Possible	17	1	6	4	1	16
Unlikely	4	0	3	1	2	2
Unrelated	14					
Insufficient	1					
Unavailable	3					
PLACER						
Definite	2	0	2	0	0	2
Probable	3	0	0	0	0	3
Possible	4	0	4	0	0	4
Unlikely	1	0	0	0	0	1
Insufficient	18					
RIVERSIDE						
Definite	8	0	6	1	0	8
Probable	11	0	8	1	3	8
Possible	10	0	8	1	2	8
Unlikely	4	0	4	0	1	3
Unrelated	19					
Insufficient	1					
Unavailable	3					
SACRAMENTO						
Definite	7	0	6	0	1	6
Probable	24	3	15	6	1	23
Possible	13	1	5	4	1	12
Unlikely	5	0	2	3	2	3
Unrelated	10					
Unavailable	2					

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
SAN BENITO						
Asymptomatic	1	0	1	0	1	0
Unrelated	1					
SAN BERNARDINO						
Definite	10	1	9	0	0	10
Probable	26	8	9	7	0	26
Possible	3	0	1	1	0	3
Unlikely	5	0	0	5	1	4
Unrelated	6					
Insufficient	1					
SAN DIEGO						
Definite	18	0	17	0	0	18
Probable	27	0	18	8	1	26
Possible	32	3	5	15	8	24
Asymptomatic	3	0	0	0	0	3
Unrelated	25					
Insufficient	1					
Unavailable	4					
SAN FRANCISCO						
Definite	1	0	1	0	0	1
Probable	6	1	3	1	0	6
Possible	4	0	3	0	0	4
Asymptomatic	1	0	1	0	0	1
Unrelated	7					
Unavailable	3					

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
SAN JOAQUIN						
Definite	20	3	12	3	4	16
Probable	38	5	28	4	18	20
Possible	9	0	4	4	6	3
Unlikely	1	0	0	1	1	0
Unrelated	8					
Unavailable	4					
SAN LUIS OBISPO						
Definite	9	0	1	0	0	9
Probable	4	0	3	0	0	4
Possible	6	0	2	4	2	4
Unlikely	1	0	1	0	1	0
Unrelated	2					
SAN MATEO						
Definite	5	0	5	0	0	5
Probable	14	3	9	1	0	14
Possible	10	0	3	6	6	4
Unlikely	1	0	0	1	0	1
Unrelated	4					
Unavailable	2					
SANTA BARBARA						
Definite	1	0	1	0	0	1
Probable	1	0	1	0	0	1
Possible	15	0	11	4	13	2
Unlikely	2	0	0	2	2	0
Asymptomatic	2	2	0	0	0	2
Unrelated	1					

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
SANTA CLARA						
Definite	13	1	10	1	0	13
Probable	24	1	17	5	0	24
Possible	25	0	11	12	3	22
Unlikely	3	0	1	1	1	2
Indirect	1	0	1	0	0	1
Unrelated	12					
Insufficient	2					
Unavailable	6					
SANTA CRUZ						
Definite	5	0	5	0	2	3
Probable	13	0	12	1	0	13
Possible	6	0	4	2	3	3
Unlikely	1	0	0	1	1	0
Asymptomatic	23	0	23	0	0	23
Unrelated	1					
SHASTA						
Definite	2	0	2	0	0	2
Probable	2	0	2	0	0	2
SISKIYOU						
Definite	2	0	2	0	0	2
Probable	2	0	2	0	0	2
Unlikely	1	0	0	1	0	1
Unrelated	1					
SOLANO						
Probable	7	0	6	1	0	7
Unlikely	2	0	1	1	1	1
Unrelated	5					
Unavailable	1					

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
SONOMA						
Definite	10	0	10	0	3	7
Probable	9	0	5	3	0	9
Possible	14	0	7	5	5	9
Unlikely	2	0	0	1	0	2
Asymptomatic	1	0	1	0	1	0
Unrelated	11					
STANISLAUS						
Definite	6	0	4	2	4	2
Probable	13	1	10	1	6	7
Possible	22	0	7	10	14	8
Unlikely	1	0	0	0	0	1
Asymptomatic	2	0	0	2	2	0
Unrelated	17					
SUTTER						
Definite	2	1	0	1	0	2
Probable	2	0	2	0	1	1
Possible	5	0	2	3	3	2
Unrelated	1					
Unavailable	1					
TEHAMA						
Probable	5	0	4	0	1	4
TULARE						
Definite	15	0	6	5	4	11
Probable	17	1	12	4	15	2
Possible	27	1	11	12	18	9
Unlikely	16	0	3	13	16	0
Unrelated	17					
Unavailable	1					

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
TUOLUMNE						
Definite	2	0	2	0	0	2
Possible	1	0	1	0	0	1
VENTURA						
Definite	1	0	1	0	0	1
Probable	25	2	20	0	18	7
Possible	25	1	22	2	24	1
Unlikely	1	0	0	1	0	1
Asymptomatic	1	0	1	0	1	0
Unrelated	5					
Insufficient	2					
Unavailable	7					
YOLO						
Definite	2	0	1	0	1	1
Probable	8	0	2	4	3	5
Possible	17	1	7	9	4	13
Unlikely	5	0	3	1	4	1
Asymptomatic	2	1	1	0	1	1
Unrelated	4					
Unavailable	1					
YUBA						
Probable	1	0	1	0	0	1

TABLE 5
Summary of Illness/Injury Incidents
Reported by Physicians According to County of Occurrence
1996

COUNTY Relationship	TOTAL CASES	Type of Exposure*			Type of Use	
		Pesticide Concentrate ¹	Pesticide Use ²	Pesticide Residue ³	Agric.	Non- Agric.
TOTALS:						
Definite	331	14	238	23	51	280
Probable	757	39	532	113	378	379
Possible	492	13	216	202	267	225
Unlikely	113	1	40	54	73	40
Indirect	1	0	1	0	0	1
Asymptomatic	83	21	34	10	27	56
Unrelated	355					
Insufficient	34					
Unavailable	63					
Overall	2132	115	1267	466	899	1228

* Type of exposure is determined by activity of affected person at the time of exposure. If the activity of affected people could not be adequately described by one of the categories listed below, those episodes are not included in any type of exposure column, and the sum of the columns is less than the total cases.

1. Exposure to concentrate includes exposure incurred in the process of manufacture, formulation, response to emergencies, or while handling pesticide containers in the course of shipping, warehousing or retailing.
2. Exposure via pesticide use includes exposures to mixers, loaders, applicators, flaggers, fumigators and people exposed to drift.
3. Exposure to pesticide residue includes residues in the field, on commodities being packed or processed, on equipment being serviced, resulting from structural applications, or any other residue encountered in the course of employment.

TABLE 6
Number of Cases Classified as Systemic
by Types of Symptoms Reported and Degree of Relationship
- 1996 -

Symptomatology Reported	Probability of Relationship			Total
	Definite	Probable	Possible	
Respiratory & Other Systemic				
including topical (eye and/or skin)	9	114	47	170
without topical effects	19	163	66	248
Systemic but not Respiratory				
including topical effects	8	84	43	135
without topical effects	8	128	116	252
Respiratory Effects				
including topical effects	11	42	23	76
without topical effects	10	76	35	121
TOTAL	65	607	330	1002

TABLE 7
Pesticide-Associated Skin Disease
Among Field Workers
1982 - 1996

Year	Definite or Probable	Possible
1982	32	105
1983	28	77
1984	45	99
1985	154	146
1986	148	56
1987	51	139
1988	62	186
1989	7	77
1990	8	98
1991	2	64
1992	16	94
1993	1	51
1994	5	37
1995	74	74
1996	12	55

* Evaluation of field worker dermatitis became more conservative in 1987, following a 1986 study that demonstrated the difficulty of collecting reliable information.

TABLE 8
Age Distribution of Cases Definitely, Probably or Possibly
Related to Exposure to Pesticides
Other than Antimicrobial
1996

Age Group	Agricultural			Non-Agricultural		
	Male	Female	Unknown	Male	Female	Unknown
Age Unknown	21	9	0	10	22	0
< 10 years	1	2	0	3	3	0
10 - 14.9	14	16	0	2	0	0
15 - 19.9	11	12	0	7	5	0
20 - 29.9	152	61	0	42	30	0
30 - 39.9	111	61	0	50	42	0
40 - 49.9	80	34	0	34	49	0
50 - 59.9	39	19	0	11	14	0
60 + years	16	2	0	4	5	0
Total	445	216	0	163	170	0

Age Distribution of Cases Definitely, Probably or Possibly
Related to Exposure to Antimicrobials
1996

Age Group	Agricultural			Non-Agricultural		
	Male	Female	Unknown	Male	Female	Unknown
Age Unknown	0	0	0	3	2	0
< 10 years	0	0	0	4	3	0
10 - 14.9	0	0	0	3	1	0
15 - 19.9	1	1	0	17	17	0
20 - 29.9	15	4	0	96	65	0
30 - 39.9	2	1	0	79	78	0
40 - 49.9	5	2	0	55	61	0
50 - 59.9	3	1	0	18	29	0
60 + years	0	0	0	7	13	0
Total	26	9	0	282	269	0

TABLE 9
Classification of Cases
By Symptom Type and Pesticide Type
1996

Pesticide Type	Eye Symptoms Only				
	Definite	Probable	Possible	Unlikely	Indirect
Antimicrobials	182	35	10	2	0
ChE Inhibitors	9	6	19	3	0
Other Pesticides	22	41	27	32	0
	Skin Symptoms, With or Without Eye Involvement				
Antimicrobials	37	34	28	3	0
ChE Inhibitors	1	11	18	83	0
Other Pesticides	15	23	782	19	0
	Systemic or Respiratory Symptoms With or Without Eye or Skin Involvement				
Antimicrobials	40	176	44	4	0
ChE Inhibitors	10	329	143	27	0
Other Pesticides	15	102	143	44	1

TABLE 3A
Hospitalization and Disability Associated with
Illnesses/Injuries Definitely or Probably Related to Pesticide Exposure
1996

ACTIVITY	TOTAL CASES	HOSPITALIZATION				DISABILITY			
		Number of Cases			Total Days Reported	Number of Cases			Total Days Reported
		Unk ¹	Indef ²	Rep ³		Unk ¹	Indef ²	Rep ³	
Mixer/Loader, Aerial	1	0	0	0	0	1	0	0	0
Mixer/Loader, Ground	7	0	0	0	0	0	0	1	11
Mixer/Loader, Hand	93	0	0	0	0	1	0	17	49
Applicator, Ground	14	0	0	0	0	2	0	3	5
Applicator, Hand	63	0	0	0	0	1	0	9	69
Applicator, Other	203	0	0	1	5	4	2	29	88
Fumigation, Chamber	7	0	0	0	0	1	0	1	1
Fumigation, Field	8	0	0	0	0	0	0	4	15
Exposed to Drift	374	0	0	1	3	219	1	31	87
Repair/Maintenance	30	0	0	0	0	0	1	7	22
Pack/Process (Commodity)	3	0	0	0	0	0	0	0	0
Exposed to Field Residue	44	0	0	0	0	0	0	5	10
Structural Residue	43	0	0	0	0	2	0	15	38

TABLE 3A
Hospitalization and Disability Associated with
Illnesses/Injuries Definitely or Probably Related to Pesticide Exposure
1996

ACTIVITY	TOTAL CASES	HOSPITALIZATION				DISABILITY			
		Number of Cases			Total Days Reported	Number of Cases			Total Days Reported
		Unk ¹	Indef ²	Rep ³		Unk ¹	Indef ²	Rep ³	
Other Residue	16	0	0	0	0	0	0	2	10
Manufacture/Formulation	5	0	0	0	0	0	0	1	1
Exposed to Concentrate	30	0	0	0	0	2	1	6	23
Emergency Response	18	0	0	0	0	0	0	1	3
Other	42	0	0	1	2	0	0	6	31
NON-OCCUPATIONAL- less fully reported than occupational cases									
Application	13	0	0	1	1	4	0	0	0
Exposed to Drift	26	0	0	2	5	0	0	1	15
Exposed to Residue	35	0	0	0	0	1	0	0	0
Other	13	1	0	7	35	6	0	1	35
Total Prob and Def Cases	1088	1	0	13	51	244	5	140	513

¹ Unknown whether hospitalization or disability occurred or not

² Disability or hospitalization occurred, but the number of days and not known

³ Duration of hospitalization/disability reported as one or more days

TABLE 3B
Hospitalization and Disability Associated with
Illnesses/Injuries Possibly Related to Pesticide Exposure
1996

ACTIVITY	TOTAL CASES	HOSPITALIZATION				DISABILITY			
		Number of Cases			Total Days Reported	Number of Cases			Total Days Reported
		Unk ¹	Indef ²	Rep ³		Unk ¹	Indef ²	Rep ³	
Mixer/Loader, Aerial	2	0	0	0	0	0	0	1	3
Mixer/Loader, Ground	6	0	0	0	0	1	0	2	2
Mixer/Loader, Hand	4	0	0	0	0	1	0	1	14
Applicator, Ground	33	0	0	0	0	2	0	6	15
Applicator, Hand	24	0	0	0	0	2	0	5	13
Applicator, Other	39	0	0	0	0	0	2	4	16
Fumigation, Chamber	1	0	0	0	0	0	0	0	0
Fumigation, Field	1	0	0	0	0	0	0	1	15
Flagger	1	0	0	0	0	0	0	0	0
Exposed to Drift	105	0	0	0	0	20	0	32	146
Repair/Maintenance	9	0	0	0	0	0	0	2	25
Pack/Process (Commodity)	12	0	0	0	0	1	0	1	2
Exposed to Field Residue	93	0	0	1	4	6	1	28	199

TABLE 3B
Hospitalization and Disability Associated with
Illnesses/Injuries Possibly Related to Pesticide Exposure
1996

ACTIVITY	TOTAL CASES	HOSPITALIZATION				DISABILITY			
		Number of Cases			Total Days Reported	Number of Cases			Total Days Reported
		Unk ¹	Indef ²	Rep ³		Unk ¹	Indef ²	Rep ³	
Structural Residue	65	0	0	0	0	1	0	22	57
Other Residue	23	0	0	0	0	2	0	6	23
Manufacture/Formulation	2	0	0	0	0	1	0	0	0
Exposed to Concentrate	7	0	0	0	0	1	0	0	0
Emergency Response	4	0	0	0	0	0	0	1	7
Other	16	0	0	0	0	0	0	3	3
Non-Occupational - Less fully reported than occupational									
Application	7	0	0	1	2	0	0	2	7
Exposed to Drift	23	0	0	0	0	1	0	0	0
Exposed to Residue	13	0	0	0	0	2	0	0	0
Other	2	0	0	0	0	0	0	0	0
Total Possible Cases	492	0	0	2	6	41	3	117	547

¹ Unknown whether hospitalization or disability occurred or not

² Disability or hospitalization occurred, but the number of days and not known

³ Duration of hospitalization/disability reported as one or more days

TABLE 7
Pesticide-Associated Skin Disease
Among Field Workers
1982 - 1996

Year	Definite or Probable	Possible
1982	32	105
1983	28	77
1984	45	99
1985	154	146
1986	148	56
1987	51	139
1988	62	186
1989	7	77
1990	8	98
1991	2	64
1992	16	94
1993	1	51
1994	5	37
1995	74	74
1996	12	55

* Evaluation of field worker dermatitis became more conservative in 1987, following a 1986 study that demonstrated the difficulty of collecting reliable information.