Illnesses and Injuries Reported in California[1] Associated With[2] Pesticide Exposure Summarized by the Type of Activity and Type of Exposure
2013

Occupational[3]

Type of Activity[4]	Type of Exposure[5]								
	Drift	Residue	Direct Spray/ Squirt	Spill/ Other Direct	Ingestion	Multiple	Other	Unknown	Total
Mixer/Loader	9	0	1	12	0	0	2	0	24
Applicator	23	1	12	62	1	2	3	16	120
Mechanical	1	2	3	6	0	0	2	1	15
Packaging/Processing	3	16	0	3	0	9	1	0	32
Field Worker	143	92	1	1	1	0	0	28	266
Routine Indoor	36	12	0	2	3	1	4	0	58
Routine Outdoor	2	3	1	0	0	1	1	0	8
Manufacturing/Formulation	0	0	0	0	0	0	0	1	1
Transport/Storage/Disposal	0	0	0	7	0	0	1	0	8
Emergency Response	3	0	0	3	0	0	10	0	16
Other	16	8	2	2	2	23	9	4	66
Unknown	0	0	2	6	0	1	0	4	13
Total Occupational Cases	**236**	**134**	**22**	**104**	**7**	**37**	**33**	**54**	**627**

Non-Occupational[3]

Type of Activity[4]	Type of Exposure[5]								
	Drift	**Residue**	**Direct Spray/ Squirt**	**Spill/ Other Direct**	**Ingestion**	**Multiple**	**Other**	**Unknown**	**Total**
Mixer/Loader	3	0	0	6	1	0	0	0	10
Applicator	65	18	21	36	8	5	4	9	166
Routine Indoor	49	52	11	7	63	3	4	5	194
Routine Outdoor	11	3	6	1	7	1	1	1	31
Transport/Storage/Disposal	0	0	0	0	0	0	1	0	1
Other	4	6	0	7	29	1	13	1	61
Unknown	4	1	3	3	2	1	2	10	26
Total Non-Occupational Cases	**136**	**80**	**41**	**60**	**110**	**11**	**25**	**26**	**489**
Total Occupational/ Non-Occupational Cases[6]	**374**	**214**	**65**	**166**	**117**	**51**	**59**	**82**	**1128**

1. Source: California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

2. Relationship: Degree of correlation between pesticide exposure and resulting symptomatology.

Definite: High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (e.g., measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (e.g., environmental and/or biological samples, exposure history) to support the conclusions.

Probable: Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible: Health effects correspond generally to the reported exposure, but evidence is not available to support a relationship.

3. Occupational or Non-Occupational: The relationship between the illness/injury and the individual's work.

Occupational:	Work related. The individual was on the job at the time of the incident. This includes both paid employees and volunteers working in similar capacity to paid employees.
Non-Occupational:	Not work related. The individual was not on the job at the time of the incident. This category includes individuals on the way to or from work (e.g., before the start of the workday, after the end of the workday).

4. Type of Activity: Activity of the injured individual at the time of exposure

Mixer/Loader:	Mixes and/or loads pesticides. This includes: 1) removing a pesticide from its original container; 2) transferring the pesticide to a mixing or holding tank; 3) mixing pesticides prior to application; 4) driving a nurse rig; or 5) transferring the pesticide from a mix/holding tank or nurse rig to an application tank.
Applicator:	Applies pesticides by any method or conducts activities considered ancillary to the application (e.g., cleans spray nozzles in the field).
Flagger:	Flags for an aerial application, either fixed-winged or helicopter.
Mechanical:	Maintains (e.g., cleans, repairs, conducts maintenance) pesticide contaminated equipment used to mix, load, or apply pesticides, as well as the protective equipment used by individuals involved in such activities. This excludes the following: 1) maintenance performed by applicators on their equipment incidental to the application; 2) maintenance performed by mixer/loaders on their equipment incidental to mixing and loading; 3) decontamination by HAZMAT teams.
Packaging/ Processing:	Handles (packs, processes, retails) agricultural commodities from the packing house to the final market place. Field packing of agricultural commodities is classified as field worker.
Field Worker:	Works in an agricultural field performing tasks such as advising, scouting, harvesting, thinning, irrigating, driving tractor (except as part of an application), field packing, conducting cultural work in a greenhouse, etc. Researchers performing similar tasks in an agricultural field are also included.
Routine Indoor:	Conducts activities in an indoor environment with minimal expectation for exposure to pesticides. This includes people in offices and businesses, residential structures, etc. who are not handling pesticides.
Routine Outdoor:	Conducts activities in an outdoor environment with minimal expectation for exposure to pesticides. This excludes field workers in agricultural fields. This includes gardeners who are not handling pesticides.

Manufacturing and Formulation:	Manufactures, processes, or packages pesticides. This includes “mixing” if it is done in a plant for application elsewhere.
Transport/ Storage/ Disposal:	Transports or stores pesticides between packaging and preparation for use. This includes shipping, warehousing, and retailing, as well as storage by the end-user prior to preparation for use. Disposal of unused pesticides is also included in this activity. This excludes driving a nurse rig to an application site.
Emergency Response:	Emergency response personnel (police, fire, ambulance, and HAZMAT personnel) responding to a fire, spill, accident, or any other pesticide incident in the line of duty.
Other:	Activity is not adequately described by any other activity category. This includes but is not limited to: 1) individuals inside a vehicle; 2) dog groomers not handling pesticides; 3) individuals handling pesticide treated wood; 4) two or more activities with potential for pesticide exposure.
Unknown:	Activity is not known.

5. Type of Exposure: Characterization of how an individual came in contact with a pesticide. Exposure categories not listed on the table indicate that no illnesses occurred under that category.

Drift:	Spray, mist, fumes, or odor carried from the target site by air. Drift must be related to an application or mix/load activity.
Residue:	The part of a pesticide that remains in the environment for a period of time following an application or drift. This includes odor after the completion of an application.
Direct Spray/ Squirt:	Material propelled by the application or mix/load equipment. Contact with the material can be by direct projection or ricochet. This includes exposure of mechanics working on application or mix/load equipment when the material is forced out by pressure.
Spill/ Other Direct:	Any of the following: 1) contact made during an application or mixing/loading operation where the material is not propelled by the equipment; 2) expected direct contact during use (e.g., washing dishes in a disinfectant solution); 3) leaks, spills, etc. not related to an application.
Ingestion:	Intentional or unintentional oral ingestion.

Multiple: Contact with pesticides occurred through two or more mechanisms.

Other: Other known route of exposure not included in other exposure categories. This includes, but is not limited to: 1) residue from a spill and 2) exposure to smoke or pyrolytic products from a fire where pesticides are burning.

Unknown: Route of exposure is not known.

6. Totals include 12 cases in which the activity could not be determined as occupational or non-occupational.

Whom to Contact:

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About the Pesticide Illness Surveillance Program Data

Pesticide-related illnesses have been tracked within the state of California for more than 50 years. The California Environmental Protection Agency, Department of Pesticide Regulation (DPR) maintains a surveillance program which records human health effects of pesticide exposure. The Pesticide Illness Surveillance Program (PISP) documents information on adverse effects from pesticide products, whether elicited by the active ingredients, inert ingredients, impurities, or breakdown products. This program maintains a database, which is utilized for evaluating the circumstances of pesticide exposures resulting in illness. This database is consulted regularly by staff who evaluate the effectiveness of the DPR pesticide safety programs and recommend changes when appropriate.