

**Summary of Illness/Injury Incidents  
Reported in California as Potentially Related to Pesticide Exposure  
Summarized Statewide and by County of Occurrence<sup>1</sup>  
2008**

Relationship <sup>2</sup>	TOTAL CASES	Type Of Exposure <sup>3</sup>				Intended Use <sup>4</sup>	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
<b>TOTALS</b>							
Definite	105	70	17	1	17	8	97
Probable	544	108	212	91	133	221	323
Possible <sup>5</sup>	246	24	57	72	93	82	163
Unlikely	58	5	13	20	20	11	45
Indirect	10	0	6	4	0	0	10
Asymptomatic	50	4	29	10	7	35	15
Unrelated	120						
Insufficient	10						
Unavailable	132						
<b>OVERALL</b>	<b>1275<sup>5</sup></b>	211	334	198	270	357	653
<b>COUNTY<sup>6</sup></b>							
<b>ALAMEDA</b>							
Definite	3	2	0	0	1	0	3
Probable	11	3	7	1	0	0	11
Possible	4	0	0	1	3	0	4
Asymptomatic	1	1	0	0	0	0	1
Unrelated	2						
Insufficient	1						
Unavailable	7						
<b>AMADOR</b>							
Unavailable	1	0	0	0	0	0	0
<b>BUTTE</b>							
Probable	4	1	2	0	1	2	2
Possible	2	0	0	1	1	1	1
Unrelated	1						
Unavailable	1						
<b>CALAVERAS</b>							
Probable	1	0	0	0	1	0	1

Relationship <sup>2</sup>	TOTAL CASES	Type Of Exposure <sup>3</sup>				Intended Use <sup>4</sup>	
		Direct Contact	Drift	Residue	Other/Unknown	Agricultural	Non-Agricultural
Possible	1	0	0	0	1	0	1
Unrelated	2						
<b>COLUSA</b>							
Probable	2	2	0	0	0	0	2
Unavailable	1						
<b>CONTRA COSTA</b>							
Probable	9	1	4	1	3	0	9
Possible	4	0	0	2	2	0	4
Unlikely	3	0	0	1	2	0	3
<b>DEL NORTE</b>							
Probable	1	0	0	1	0	0	1
<b>EL DORADO</b>							
Probable	3	1	1	0	1	0	3
Possible	2	0	1	0	1	0	2
Unrelated	1						
Unavailable	1						
<b>FRESNO</b>							
Definite	5	4	1	0	0	1	4
Probable	16	5	3	1	7	4	12
Possible	12	2	3	4	3	6	6
Unlikely	2	0	0	2	0	1	1
Unrelated	12						
Insufficient	1						
Unavailable	3						
<b>GLENN</b>							
Probable	3	3	0	0	0	2	1
<b>HUMBOLDT</b>							
Definite	1	0	0	0	1	0	1
Probable	2	1	0	1	0	0	2
Possible	1	0	0	0	1	0	1
Unlikely	1	0	0	0	1	0	1
Unavailable	1						
<b>IMPERIAL</b>							
Definite	1	1	0	0	0	0	1

Relationship <sup>2</sup>	TOTAL CASES	Type Of Exposure <sup>3</sup>				Intended Use <sup>4</sup>	
		Direct Contact	Drift	Residue	Other/Unknown	Agricultural	Non-Agricultural
Probable	39	1	34	4	0	38	1
Possible	2	0	1	0	1	1	1
Asymptomatic	12	0	12	0	0	12	0
Unavailable	1						
<b>INYO</b>							
Probable	1	1	0	0	0	0	1
Possible	1	1	0	0	0	0	1
<b>KERN</b>							
Definite	1	0	0	0	1	0	1
Probable	11	4	3	1	3	3	8
Possible	7	0	0	3	4	7	0
Unlikely	1	0	0	0	1	0	1
Unrelated	4						
Insufficient	2						
Unavailable	1						
<b>KINGS</b>							
Definite	2	1	1	0	0	1	1
Probable	5	2	2	0	1	3	2
Indirect	2	0	0	2	0	0	2
Unavailable	1	0	0	0	0	0	0
<b>LAKE</b>							
Definite	2	2	0	0	0	0	2
Probable	1	0	0	0	1	0	1
<b>LASSEN</b>							
Probable	1	0	0	0	1	0	1
<b>LOS ANGELES</b>							
Definite	20	9	4	0	7	0	20
Probable	62	21	12	6	23	0	62
Possible	47	1	7	24	15	0	47
Unlikely	7	0	4	1	2	0	7
Indirect	6	0	6	0	0	0	6
Asymptomatic	7	0	0	5	2	0	7
Unrelated	24						
Unavailable	22						

Relationship <sup>2</sup>	TOTAL CASES	Type Of Exposure <sup>3</sup>				Intended Use <sup>4</sup>	
		Direct Contact	Drift	Residue	Other/Unknown	Agricultural	Non-Agricultural
<b>MADERA</b>							
Definite	1	1	0	0	0	0	1
Probable	2	0	1	0	1	1	1
Possible	4	0	1	0	3	4	0
Unlikely	1	0	0	1	0	1	0
Unrelated	1						
<b>MARIN</b>							
Probable	1	1	0	0	0	0	1
Possible	1	1	0	0	0	0	1
Unavailable	1						
<b>MARIPOSA</b>							
Definite	1	1	0	0	0	0	1
<b>MENDOCINO</b>							
Definite	1	0	1	0	0	0	1
Probable	2	0	0	0	2	1	1
Possible	1	0	1	0	0	0	1
Unlikely	1	0	0	0	1	0	0
Insufficient	1						
<b>MERCED</b>							
Definite	2	2	0	0	0	0	2
Probable	10	1	8	1	0	7	3
Possible	1	0	1	0	0	0	1
Unlikely	1	0	0	0	1	0	1
Unrelated	4						
Unavailable	1						
<b>MODOC</b>							
Possible	1	1	0	0	0	1	0
<b>MONTEREY</b>							
Definite	3	3	0	0	0	1	2
Probable	106	3	51	49	3	102	4
Possible	38	2	23	13	0	37	1
Unlikely	4	1	1	0	2	3	1
Asymptomatic	18	0	13	5	0	18	0
Unrelated	2						

Relationship <sup>2</sup>	TOTAL CASES	Type Of Exposure <sup>3</sup>				Intended Use <sup>4</sup>	
		Direct Contact	Drift	Residue	Other/Unknown	Agricultural	Non-Agricultural
Insufficient	1						
Unavailable	9						
<b>NAPA</b>							
Definite	1	1	0	0	0	0	1
Probable	3	2	1	0	0	0	3
Possible	1	0	0	0	1	1	0
Unrelated	2						
<b>ORANGE</b>							
Definite	6	6	0	0	0	0	6
Probable	31	5	2	8	16	0	31
Possible	19	0	1	10	8	0	19
Unlikely	4	0	0	2	2	0	4
Indirect	1	0	0	1	0	0	1
Unrelated	10						
Insufficient	1						
Unavailable	14						
<b>PLACER</b>							
Definite	2	2	0	0	0	0	2
Probable	5	2	2	0	1	0	5
Possible	2	0	0	0	2	0	2
Unlikely	1	1	0	0	0	0	1
Unrelated	1						
<b>RIVERSIDE</b>							
Definite	2	1	1	0	0	0	2
Probable	22	6	4	0	12	0	22
Possible	9	3	0	0	6	0	9
Unlikely	1	0	1	0	0	0	1
Asymptomatic	1	0	0	0	1	0	1
Unrelated	5						
Insufficient	2						
Unavailable	11						
<b>SACRAMENTO</b>							
Definite	2	0	2	0	0	0	2
Probable	9	1	3	0	5	0	9

Relationship <sup>2</sup>	TOTAL CASES	Type Of Exposure <sup>3</sup>				Intended Use <sup>4</sup>	
		Direct Contact	Drift	Residue	Other/Unknown	Agricultural	Non-Agricultural
Possible	7	1	1	2	3	0	7
Unlikely	2	1	1	0	0	0	2
Unrelated	4						
Unavailable	5						
<b>SAN BENITO</b>							
Probable	1	0	1	0	0	0	1
Possible	1	0	0	1	0	1	0
Unrelated	1						
Unavailable	1						
<b>SAN BERNARDINO</b>							
Definite	11	6	3	0	2	0	11
Probable	29	8	9	3	9	1	28
Possible	4	0	1	1	2	0	4
Unlikely	3	1	2	0	0	0	3
Asymptomatic	2	0	0	0	2	0	2
Unrelated	7						
Unavailable	8						
<b>SAN DIEGO</b>							
Definite	5	5	0	0	0	0	5
Probable	33	9	4	5	15	0	33
Possible	14	4	0	2	8	2	12
Unlikely	12	0	0	7	5	0	12
Indirect	1	0	0	1	0	0	1
Asymptomatic	1	0	0	0	1	0	1
Unrelated	4						
Unavailable	12						
<b>SAN FRANCISCO</b>							
Definite	2	2	0	0	0	0	2
Probable	4	1	0	0	3	0	4
Possible	5	1	2	1	1	0	5
Unavailable	1						
<b>SAN JOAQUIN</b>							
Definite	3	2	0	1	0	1	2
Probable	8	3	2	1	2	1	7

Relationship <sup>2</sup>	TOTAL CASES	Type Of Exposure <sup>3</sup>				Intended Use <sup>4</sup>	
		Direct Contact	Drift	Residue	Other/Unknown	Agricultural	Non-Agricultural
Possible	6	1	1	1	3	2	4
Unlikely	1	0	0	1	0	1	0
Asymptomatic	1	1	0	0	0	0	1
Unrelated	1						
Unavailable	2						
<b>SAN LUIS OBISPO</b>							
Probable	2	1	1	0	0	1	1
Possible	3	0	3	0	0	3	0
Unrelated	2						
Unavailable	2						
<b>SAN MATEO</b>							
Definite	2	1	1	0	0	0	2
Probable	2	2	0	0	0	0	2
Possible	1	0	0	0	1	0	1
Unlikely	1	1	0	0	0	0	0
Unrelated	2						
Unavailable	3						
<b>SANTA BARBARA</b>							
Probable	17	2	14	0	1	15	2
Possible	6	1	2	1	2	4	2
Unlikely	1	0	0	1	0	0	1
Asymptomatic	2	0	2	0	0	2	0
<b>SANTA CLARA</b>							
Definite	2	2	0	0	0	0	2
Probable	6	2	2	1	1	0	6
Possible	5	0	0	1	4	1	4
Unrelated	3						
Unavailable	3						
<b>SANTA CRUZ</b>							
Probable	3	0	3	0	0	2	1
Possible	2	1	0	0	1	0	2
Unlikely	1	0	1	0	0	1	0
Unavailable	1						
<b>SHASTA</b>							

Relationship <sup>2</sup>	TOTAL CASES	Type Of Exposure <sup>3</sup>				Intended Use <sup>4</sup>	
		Direct Contact	Drift	Residue	Other/Unknown	Agricultural	Non-Agricultural
Definite	3	2	1	0	0	0	3
Unlikely	1	0	0	0	1	0	1
<b>SISKIYOU</b>							
Probable	1	0	1	0	0	0	1
Possible	3	1	0	1	1	2	1
Insufficient	1						
<b>SOLANO</b>							
Definite	4	2	0	0	2	0	4
Probable	14	2	0	7	5	0	14
Possible	5	0	2	0	3	0	5
Asymptomatic	1	0	0	0	1	0	1
Unrelated	3						
Unavailable	1						
<b>SONOMA</b>							
Definite	4	3	1	0	0	1	3
Probable	2	0	1	0	1	0	2
Possible	1	0	0	0	1	0	1
Unrelated	1						
<b>STANISLAUS</b>							
Definite	2	2	0	0	0	1	1
Probable	7	3	2	0	2	1	6
Possible	3	0	1	1	1	1	2
Unlikely	3	0	1	2	0	0	3
Asymptomatic	1	1	0	0	0	0	1
Unrelated	7						
Unavailable	12						
<b>SUTTER</b>							
Probable	3	1	1	0	1	1	2
Possible	1	0	0	1	0	0	1
Unlikely	1	0	0	1	0	0	1
Unrelated	2						
<b>TEHAMA</b>							
Probable	3	1	1	0	1	2	1
<b>TRINITY</b>							

Relationship <sup>2</sup>	TOTAL CASES	Type Of Exposure <sup>3</sup>				Intended Use <sup>4</sup>	
		Direct Contact	Drift	Residue	Other/Unknown	Agricultural	Non-Agricultural
Probable	1	0	0	0	1	0	1
<b>TULARE</b>							
Definite	5	3	0	0	2	2	3
Probable	24	3	19	0	2	22	2
Possible	6	1	2	1	2	3	2
Unlikely	4	0	2	0	2	3	1
Asymptomatic	2	0	2	0	0	2	0
Unrelated	7						
Unavailable	2						
<b>TUOLUMNE</b>							
Possible	1	0	0	0	1	0	1
Unavailable	1						
<b>VENTURA</b>							
Definite	4	2	1	0	1	0	4
Probable	15	1	10	0	4	11	4
Possible	8	1	2	0	5	3	5
Unlikely	1	0	0	1	0	1	0
Asymptomatic	1	1	0	0	0	1	0
<b>YOLO</b>							
Definite	2	2	0	0	0	0	2
Probable	4	2	0	0	2	1	3
Possible	3	1	1	0	1	1	2
Unrelated	3						
Unavailable	2						
<b>YUBA</b>							
Probable	2	0	1	0	1	0	2
Possible	1	0	0	0	1	1	0
Unrelated	2						

1. **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.  
The term “potentially related to pesticide exposure” refers to all cases reported to the program, some of which were later determined to be unrelated to pesticide exposure.

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 (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (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.
- Unlikely : A correlation cannot be ruled out absolutely. Medical and/or physical evidence suggest a cause other than pesticide exposure.
- Indirect : Pesticide exposure is not responsible, but pesticide regulations or product label requirements contributed in some way, (e.g. heat stress while wearing chemical resistant clothing).
- Asymptomatic : Exposure occurred, but did not result in illness/injury. Cholinesterase depression without symptoms falls in this category.
- Unrelated : Definite evidence of cause other than pesticide exposure including exposures to chemicals other than pesticides. Since there is no exposure to pesticides, there are no entries under "Type of Exposure" or "Intended Use."
- Insufficient : The available information is inadequate to make an informed judgment on the relationship between pesticide exposure and the reported symptomatology. For submitted investigations, the investigator failed to make an adequate attempt to obtain the necessary information. Since a relationship to pesticide exposure cannot be determined, there are no entries under "Type of Exposure" or "Intended Use."
- Unavailable : The available information is inadequate to make an informed judgment on the relationship between pesticide exposure and the reported symptomatology. For submitted investigations, the investigator made an adequate attempt to collect the necessary information, but was not able to do so (e.g., none of the parties concerned could be contacted). There usually needs to be more effort than to say the employee is not available for interview; other parties can often supply useful information. Since a relationship to pesticide exposure cannot be determined, there are no entries under "Type of Exposure" or "Intended Use."

3. **Type of Exposure:** Characterization of how an individual came in contact with a pesticide.

- Direct Contact : An appreciable amount of pesticide contacted the individual's body surface. This includes: 1) sprays or squirts from application equipment; 2) leaks or spills whether or not related to the application; and 3) deliberate immersion (as when cleaning implements in a basin with antimicrobials). This excludes drift exposures.
- 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.

Other/Unknown : Any of the following: 1) ingestion; 2) multiple routes of exposure; 3) residue from a spill; 4) exposure to smoke or pyrolytic products from a fire where pesticides are burning; 5) route of exposure is not known.

4. **Intended Use:** Agricultural/Non-Agricultural - Indicates whether the pesticide(s) were intended to contribute to the production of agricultural commodities.

Agricultural : The pesticide(s) were intended to contribute to the production of agricultural commodities, including livestock. This includes: 1) agricultural research facilities, 2) handling of raw agricultural commodities in packing houses, 3) drift from agricultural applications into non-agricultural areas, and 4) transportation and storage of pesticides on farm lands. It excludes forestry operations, although they are classified as agricultural for regulatory purposes. It also excludes manufacture, transportation, and storage of pesticides prior to arrival at the site of agricultural production.

Non-Agricultural : The pesticide(s) were not intended to contribute to the production of agricultural commodities. This includes: 1) residential pesticide uses, 2) structural pest control, 3) rights-of-way, 4) parks, 5) landscaped urban areas, and 6) manufacture, transportation and storage of pesticides except on farm lands.

5. This total includes one case in which the intended use could not be established as either agricultural or nonagricultural.

6. **County:** Individual counties in California where the incident occurred. If a county is not listed, there were no reported illnesses for that county for the year.

#### **Whom to Contact:**

California Department of Pesticide Regulation  
Worker Health and Safety Branch  
Phone: (916) 445-4222.  
Physical address: 1001 I St., Sacramento CA 95814-2828.  
Mailing address: P.O. Box 4015, Sacramento, CA 95812-4015  
Fax: (916) 445-4280  
[www.cdpr.ca.gov](http://www.cdpr.ca.gov)

#### **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(s) the effectiveness of the DPR pesticide safety programs and recommend changes when appropriate.