

**Table D1: Summary of Illness/Injury Incidents
Reported in California Related to Pesticide Exposure,
Summarized Statewide and by County of Occurrence¹
2016**

Statewide

| Relationship ² | TOTAL EPISODES ³ | TOTAL CASES | Type of Exposure ³ | | | | Intended Use ⁴ | |
|---------------------------|-----------------------------|-------------|-------------------------------|------------|------------|---------------|---------------------------|------------------|
| | | | Direct Contact | Drift | Residue | Other/Unknown | Agricultural | Non-Agricultural |
| Definite | | 140 | 86 | 21 | 7 | 26 | 19 | 121 |
| Probable | | 607 | 152 | 213 | 102 | 140 | 179 | 427 |
| Possible | | 231 | 27 | 43 | 48 | 113 | 38 | 186 |
| TOTAL | 750 | 978 | 268 | 277 | 157 | 279 | 236 | 734 |

County of Occurrence⁵

| Relationship ² | TOTAL EPISODES ³ | TOTAL CASES | Type of Exposure ³ | | | | Intended Use ⁴ | |
|---------------------------|-----------------------------|-------------|-------------------------------|----------|----------|---------------|---------------------------|------------------|
| | | | Direct Contact | Drift | Residue | Other/Unknown | Agricultural | Non-Agricultural |
| ALAMEDA | | | | | | | | |
| Definite | | 6 | 5 | 0 | 1 | 0 | 1 | 5 |
| Probable | | 9 | 4 | 1 | 0 | 4 | 0 | 9 |
| Possible | | 6 | 2 | 0 | 0 | 4 | 0 | 6 |
| TOTAL | 21 | 21 | 11 | 1 | 1 | 8 | 1 | 20 |
| BUTTE | | | | | | | | |
| Probable | | 7 | 1 | 1 | 0 | 5 | 0 | 7 |
| Possible | | 7 | 1 | 1 | 1 | 4 | 2 | 3 |
| TOTAL | 14 | 14 | 2 | 2 | 1 | 9 | 2 | 10 |
| CALAVERAS | | | | | | | | |
| Possible | | 2 | 0 | 0 | 0 | 2 | 1 | 1 |
| TOTAL | 2 | 2 | 0 | 0 | 0 | 2 | 1 | 1 |
| COLUSA | | | | | | | | |
| Probable | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Possible | | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| TOTAL | 2 | 2 | 1 | 0 | 0 | 1 | 0 | 2 |

| Relationship ² | TOTAL EPISODES ³ | TOTAL CASES | Type of Exposure ³ | | | | Intended Use ⁴ | |
|---------------------------|-----------------------------|-------------|-------------------------------|-----------|-----------|---------------|---------------------------|------------------|
| | | | Direct Contact | Drift | Residue | Other/Unknown | Agricultural | Non-Agricultural |
| CONTRA COSTA | | | | | | | | |
| Definite | | 3 | 2 | 0 | 0 | 1 | 0 | 3 |
| Probable | | 8 | 3 | 2 | 0 | 3 | 0 | 8 |
| Possible | | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| TOTAL | 12 | 12 | 5 | 2 | 0 | 5 | 0 | 12 |
| DEL NORTE | | | | | | | | |
| Probable | | 2 | 0 | 0 | 1 | 1 | 0 | 2 |
| TOTAL | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 2 |
| EL DORADO | | | | | | | | |
| Probable | | 2 | 1 | 0 | 0 | 1 | 0 | 2 |
| TOTAL | 2 | 2 | 1 | 0 | 0 | 1 | 0 | 2 |
| FRESNO | | | | | | | | |
| Definite | | 6 | 3 | 1 | 1 | 1 | 2 | 4 |
| Probable | | 99 | 10 | 50 | 28 | 11 | 67 | 32 |
| Possible | | 18 | 1 | 5 | 6 | 6 | 7 | 11 |
| TOTAL | 46 | 123 | 14 | 56 | 35 | 18 | 76 | 47 |
| GLENN | | | | | | | | |
| Possible | | 2 | 0 | 0 | 1 | 1 | 1 | 1 |
| TOTAL | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 |
| HUMBOLT | | | | | | | | |
| Probable | | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| TOTAL | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| IMPERIAL | | | | | | | | |
| Definite | | 8 | 6 | 1 | 0 | 1 | 2 | 6 |
| Probable | | 5 | 1 | 2 | 0 | 2 | 3 | 2 |
| Possible | | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| TOTAL | 13 | 14 | 7 | 3 | 0 | 4 | 5 | 9 |
| INYO | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Possible | | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| TOTAL | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 2 |
| KERN | | | | | | | | |
| Definite | | 6 | 3 | 1 | 0 | 2 | 2 | 4 |

| Relationship ² | TOTAL EPISODES [‡] | TOTAL CASES | Type of Exposure ³ | | | | Intended Use ⁴ | |
|---------------------------|-----------------------------|-------------|-------------------------------|-----------|-----------|---------------|---------------------------|------------------|
| | | | Direct Contact | Drift | Residue | Other/Unknown | Agricultural | Non-Agricultural |
| Probable | | 17 | 6 | 9 | 1 | 1 | 8 | 9 |
| Possible | | 14 | 1 | 2 | 2 | 9 | 6 | 8 |
| TOTAL | 31 | 37 | 10 | 12 | 3 | 12 | 16 | 21 |
| KINGS | | | | | | | | |
| Possible | | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| TOTAL | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| LAKE | | | | | | | | |
| Probable | | 3 | 2 | 0 | 0 | 1 | 1 | 2 |
| Possible | | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| TOTAL | 4 | 4 | 2 | 1 | 0 | 1 | 1 | 3 |
| LASSEN | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Probable | | 2 | 1 | 0 | 0 | 1 | 0 | 2 |
| Possible | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| TOTAL | 4 | 4 | 3 | 0 | 0 | 1 | 0 | 4 |
| LOS ANGELES | | | | | | | | |
| Definite | | 23 | 14 | 4 | 1 | 4 | 0 | 23 |
| Probable | | 85 | 31 | 18 | 15 | 21 | 0 | 85 |
| Possible | | 43 | 4 | 5 | 14 | 20 | 0 | 42 |
| TOTAL | 134 | 151 | 49 | 27 | 30 | 45 | 0 | 150 |
| MADERA | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| Probable | | 6 | 1 | 1 | 0 | 4 | 2 | 4 |
| Possible | | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| TOTAL | 8 | 8 | 2 | 1 | 0 | 5 | 3 | 4 |
| MARIN | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Probable | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| TOTAL | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| MARIPOSA | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| TOTAL | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |

| Relationship ² | TOTAL EPISODES ³ | TOTAL CASES | Type of Exposure ³ | | | | Intended Use ⁴ | |
|---------------------------|-----------------------------|-------------|-------------------------------|-----------|-----------|---------------|---------------------------|------------------|
| | | | Direct Contact | Drift | Residue | Other/Unknown | Agricultural | Non-Agricultural |
| MENDOCINO | | | | | | | | |
| Probable | | 4 | 1 | 0 | 0 | 3 | 1 | 3 |
| TOTAL | 3 | 4 | 1 | 0 | 0 | 3 | 1 | 3 |
| MERCED | | | | | | | | |
| Definite | | 2 | 1 | 0 | 1 | 0 | 0 | 2 |
| Probable | | 12 | 3 | 3 | 5 | 1 | 4 | 8 |
| Possible | | 3 | 0 | 0 | 0 | 3 | 1 | 2 |
| TOTAL | 14 | 17 | 4 | 3 | 6 | 4 | 5 | 12 |
| MONTEREY | | | | | | | | |
| Definite | | 4 | 1 | 3 | 0 | 0 | 0 | 4 |
| Probable | | 45 | 1 | 41 | 1 | 2 | 43 | 2 |
| Possible | | 3 | 0 | 3 | 0 | 0 | 3 | 0 |
| TOTAL | 12 | 52 | 2 | 47 | 1 | 2 | 46 | 6 |
| NAPA | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Probable | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| TOTAL | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| ORANGE | | | | | | | | |
| Definite | | 4 | 2 | 1 | 0 | 1 | 1 | 3 |
| Probable | | 18 | 3 | 2 | 5 | 8 | 0 | 18 |
| Possible | | 18 | 0 | 2 | 10 | 6 | 0 | 18 |
| TOTAL | 33 | 40 | 5 | 5 | 15 | 15 | 1 | 39 |
| PLACER | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Probable | | 3 | 0 | 0 | 0 | 3 | 0 | 3 |
| Possible | | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| TOTAL | 6 | 6 | 1 | 0 | 0 | 5 | 0 | 6 |
| RIVERSIDE | | | | | | | | |
| Definite | | 9 | 3 | 0 | 1 | 5 | 0 | 9 |
| Probable | | 17 | 4 | 8 | 3 | 2 | 0 | 17 |
| Possible | | 15 | 6 | 2 | 0 | 7 | 0 | 15 |
| TOTAL | 41 | 41 | 13 | 10 | 4 | 14 | 0 | 41 |

| Relationship ² | TOTAL EPISODES ³ | TOTAL CASES | Type of Exposure ³ | | | | Intended Use ⁴ | |
|---------------------------|-----------------------------|-------------|-------------------------------|-----------|----------|---------------|---------------------------|------------------|
| | | | Direct Contact | Drift | Residue | Other/Unknown | Agricultural | Non-Agricultural |
| SACRAMENTO | | | | | | | | |
| Definite | | 4 | 4 | 0 | 0 | 0 | 0 | 4 |
| Probable | | 16 | 5 | 5 | 1 | 5 | 1 | 15 |
| Possible | | 5 | 0 | 0 | 1 | 4 | 0 | 4 |
| TOTAL | 25 | 25 | 9 | 5 | 2 | 9 | 1 | 23 |
| SAN BERNARDINO | | | | | | | | |
| Definite | | 6 | 3 | 2 | 0 | 1 | 0 | 6 |
| Probable | | 28 | 7 | 6 | 1 | 14 | 0 | 28 |
| Possible | | 7 | 2 | 1 | 1 | 3 | 0 | 7 |
| TOTAL | 35 | 41 | 12 | 9 | 2 | 18 | 0 | 41 |
| SAN DIEGO | | | | | | | | |
| Definite | | 8 | 6 | 1 | 0 | 1 | 0 | 8 |
| Probable | | 35 | 9 | 10 | 2 | 14 | 0 | 35 |
| Possible | | 15 | 1 | 3 | 6 | 5 | 0 | 15 |
| TOTAL | 54 | 58 | 16 | 14 | 8 | 20 | 0 | 58 |
| SAN FRANCISCO | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Probable | | 7 | 1 | 2 | 3 | 1 | 0 | 7 |
| Possible | | 3 | 1 | 2 | 0 | 0 | 1 | 2 |
| TOTAL | 10 | 11 | 3 | 4 | 3 | 1 | 1 | 10 |
| SAN JOAQUIN | | | | | | | | |
| Definite | | 5 | 3 | 1 | 0 | 1 | 0 | 5 |
| Probable | | 9 | 4 | 2 | 0 | 3 | 0 | 9 |
| Possible | | 10 | 1 | 1 | 1 | 7 | 2 | 7 |
| TOTAL | 24 | 24 | 8 | 4 | 1 | 11 | 2 | 21 |
| SAN LUIS OBISPO | | | | | | | | |
| Definite | | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| Probable | | 4 | 3 | 0 | 0 | 1 | 1 | 2 |
| TOTAL | 5 | 5 | 3 | 1 | 0 | 1 | 1 | 3 |
| SAN MATEO | | | | | | | | |
| Definite | | 3 | 1 | 0 | 2 | 0 | 0 | 3 |
| Probable | | 6 | 3 | 0 | 0 | 3 | 0 | 6 |

| Relationship ² | TOTAL EPISODES ³ | TOTAL CASES | Type of Exposure ³ | | | | Intended Use ⁴ | |
|---------------------------|-----------------------------|-------------|-------------------------------|----------|----------|---------------|---------------------------|------------------|
| | | | Direct Contact | Drift | Residue | Other/Unknown | Agricultural | Non-Agricultural |
| Possible | | 4 | 1 | 0 | 1 | 2 | 0 | 4 |
| TOTAL | 13 | 13 | 5 | 0 | 3 | 5 | 0 | 13 |
| SANTA BARBARA | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Probable | | 4 | 4 | 0 | 0 | 0 | 1 | 3 |
| Possible | | 11 | 0 | 6 | 1 | 4 | 8 | 3 |
| TOTAL | 11 | 16 | 5 | 6 | 1 | 4 | 9 | 7 |
| SANTA CLARA | | | | | | | | |
| Definite | | 5 | 2 | 0 | 0 | 3 | 0 | 5 |
| Probable | | 20 | 8 | 5 | 0 | 7 | 0 | 20 |
| Possible | | 8 | 0 | 0 | 2 | 6 | 0 | 8 |
| TOTAL | 31 | 33 | 10 | 5 | 2 | 16 | 0 | 33 |
| SANTA CRUZ | | | | | | | | |
| Definite | | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| Probable | | 3 | 3 | 0 | 0 | 0 | 1 | 2 |
| Possible | | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| TOTAL | 5 | 5 | 4 | 1 | 0 | 0 | 2 | 3 |
| SHASTA | | | | | | | | |
| Definite | | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| Probable | | 5 | 4 | 0 | 0 | 1 | 0 | 5 |
| Possible | | 2 | 0 | 0 | 1 | 1 | 0 | 2 |
| TOTAL | 8 | 8 | 4 | 0 | 1 | 3 | 0 | 8 |
| SISKIYOU | | | | | | | | |
| Probable | | 2 | 0 | 1 | 0 | 1 | 0 | 2 |
| TOTAL | 2 | 2 | 0 | 1 | 0 | 1 | 0 | 2 |
| SOLANO | | | | | | | | |
| Definite | | 3 | 2 | 1 | 0 | 0 | 0 | 3 |
| Probable | | 8 | 1 | 6 | 0 | 1 | 2 | 6 |
| Possible | | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| TOTAL | 10 | 12 | 3 | 7 | 0 | 2 | 2 | 10 |
| SONOMA | | | | | | | | |
| Probable | | 15 | 2 | 8 | 2 | 3 | 0 | 15 |

| Relationship ² | TOTAL EPISODES [‡] | TOTAL CASES | Type of Exposure ³ | | | | Intended Use ⁴ | |
|---------------------------|-----------------------------|-------------|-------------------------------|-----------|-----------|---------------|---------------------------|------------------|
| | | | Direct Contact | Drift | Residue | Other/Unknown | Agricultural | Non-Agricultural |
| Possible | | 3 | 0 | 1 | 0 | 2 | 1 | 2 |
| TOTAL | 10 | 18 | 2 | 9 | 2 | 5 | 1 | 17 |
| STANISLAUS | | | | | | | | |
| Definite | | 6 | 2 | 4 | 0 | 0 | 3 | 3 |
| Probable | | 21 | 9 | 5 | 0 | 7 | 0 | 21 |
| Possible | | 6 | 4 | 0 | 0 | 2 | 1 | 5 |
| TOTAL | 22 | 33 | 15 | 9 | 0 | 9 | 4 | 29 |
| SUTTER | | | | | | | | |
| Definite | | 2 | 2 | 0 | 0 | 0 | 1 | 1 |
| Probable | | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| TOTAL | 3 | 3 | 2 | 0 | 0 | 1 | 1 | 2 |
| TEHAMA | | | | | | | | |
| Probable | | 2 | 1 | 0 | 0 | 1 | 0 | 2 |
| Possible | | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| TOTAL | 3 | 3 | 1 | 1 | 0 | 1 | 0 | 3 |
| TULARE | | | | | | | | |
| Definite | | 9 | 7 | 0 | 0 | 2 | 5 | 4 |
| Probable | | 50 | 6 | 10 | 34 | 0 | 42 | 8 |
| Possible | | 4 | 0 | 1 | 0 | 3 | 2 | 2 |
| TOTAL | 28 | 63 | 13 | 11 | 34 | 5 | 49 | 14 |
| TUOLUMNE | | | | | | | | |
| Definite | | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| Probable | | 2 | 0 | 1 | 0 | 1 | 0 | 2 |
| TOTAL | 4 | 4 | 2 | 1 | 0 | 1 | 0 | 4 |
| VENTURA | | | | | | | | |
| Definite | | 2 | 1 | 0 | 0 | 1 | 0 | 2 |
| Probable | | 13 | 3 | 8 | 0 | 2 | 2 | 11 |
| Possible | | 3 | 0 | 2 | 0 | 1 | 1 | 1 |
| TOTAL | 16 | 18 | 4 | 10 | 0 | 4 | 3 | 14 |
| YOLO | | | | | | | | |
| Probable | | 5 | 2 | 3 | 0 | 0 | 0 | 5 |
| Possible | | 4 | 0 | 2 | 0 | 2 | 0 | 4 |

| Relationship ² | TOTAL EPISODES [‡] | TOTAL CASES | Type of Exposure ³ | | | | Intended Use ⁴ | |
|---------------------------|-----------------------------|-------------|-------------------------------|----------|----------|---------------|---------------------------|------------------|
| | | | Direct Contact | Drift | Residue | Other/Unknown | Agricultural | Non-Agricultural |
| TOTAL | 9 | 9 | 2 | 5 | 0 | 2 | 0 | 9 |
| YUBA | | | | | | | | |
| Definite | | 2 | 1 | 0 | 0 | 1 | 0 | 2 |
| Probable | | 3 | 1 | 2 | 0 | 0 | 0 | 3 |
| Possible | | 2 | 1 | 0 | 0 | 1 | 1 | 1 |
| TOTAL | 7 | 7 | 3 | 2 | 0 | 2 | 1 | 6 |

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.

[‡]- An *episode* is an incident in which a one or more people (*cases*) experience pesticide exposure from a particular source.

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. 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, vapors, 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. Intended use is not inputted in cases classified as Unrelated, Insufficient, or Unavailable.

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. County: Individual counties in California where the incident occurred. If a county is not listed, there were no reported illnesses or associated episodes/cases for that county for the year.

Whom to Contact:

California Department of Pesticide Regulation
Worker Health and Safety Branch
Physical address: 1001 I St., Sacramento, CA 95814-2828
Mailing address: P.O. Box 4015, Sacramento, CA 95812-4015
Phone: (916) 445-4222; Fax: (916) 445-4280
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 the effectiveness of the DPR pesticide safety programs and recommend changes when appropriate.