

**Table C1: Summary of Illness/Injury Incidents
Reported in California¹ Related to Pesticide Exposure,
Summarized Statewide and by County of Occurrence
2019**

Statewide

Relationship ²	TOTAL EPISODES ³	TOTAL CASES	Type of Exposure ⁴				Intended Use ⁵	
			Direct Contact	Off-Site	Residue	Other/Unknown	Agricultural	Non-Agricultural
TOTALS								
Definite		138	77	40	3	18	21	116
Probable		896	267	361	137	131	357	536
Possible		164	43	33	53	35	31	129
TOTAL	814	1198	387	434	193	184	409	781

County of Occurrence⁶

Relationship ²	TOTAL EPISODES ³	TOTAL CASES	Type of Exposure ⁴				Intended Use ⁵	
			Direct Contact	Off-Site	Residue	Other/Unknown	Agricultural	Non-Agricultural
ALAMEDA								
Definite		5	3	1	0	1	0	5
Probable		16	7	3	0	6	0	16
Possible		2	1	0	0	1	0	2
TOTAL	22	23	11	4	0	8	0	23
BUTTE								
Definite		2	1	0	0	1	0	2
Probable		5	3	1	0	1	0	4
TOTAL	7	7	4	1	0	2	0	6
CALAVERAS								
Probable		2	2	0	0	0	0	2
TOTAL	2	2	2	0	0	0	0	2
CONTRA COSTA								
Definite		3	3	0	0	0	0	3
Probable		9	6	2	0	1	0	9
Possible		2	2	0	0	0	0	2
TOTAL	14	14	11	2	0	1	0	14
DEL NORTE								
Probable		1	1	0	0	0	0	1

Relationship ²	TOTAL EPISODES ³	TOTAL CASES	Type of Exposure ⁴				Intended Use ⁵	
			Direct Contact	Off-Site	Residue	Other/Unknown	Agricultural	Non-Agricultural
Possible		1	0	1	0	0	0	1
TOTAL	2	2	1	1	0	0	0	2
EL DORADO								
Probable		1	1	0	0	0	0	1
Possible		2	0	1	1	0	0	2
TOTAL	3	3	1	1	1	0	0	3
FRESNO								
Definite		4	3	0	0	1	0	4
Probable		91	14	72	4	1	66	24
Possible		12	2	5	4	1	5	7
TOTAL	38	107	19	77	8	3	71	35
GLENN								
Possible		1	1	0	0	0	1	0
TOTAL	1	1	1	0	0	0	1	0
HUMBOLDT								
Definite		1	1	0	0	0	0	1
Probable		2	1	0	0	1	0	2
Possible		1	0	1	0	0	0	1
TOTAL	4	4	2	1	0	1	0	4
IMPERIAL								
Definite		4	2	2	0	0	4	0
Probable		10	2	5	2	1	2	8
Possible		2	2	0	0	0	0	2
TOTAL	16	16	6	7	2	1	6	10
INYO								
Probable		1	0	1	0	0	0	1
TOTAL	1	1	0	1	0	0	0	1
KERN								
Definite		10	7	2	1	0	2	7
Probable		110	22	75	10	3	81	29
Possible		19	3	11	4	1	10	7
TOTAL	60	139	32	88	15	4	93	43

Relationship ²	TOTAL EPISODES ³	TOTAL CASES	Type of Exposure ⁴				Intended Use ⁵	
			Direct Contact	Off-Site	Residue	Other/Unknown	Agricultural	Non-Agricultural
KINGS								
Definite		3	0	1	0	2	0	3
Probable		67	6	19	40	2	58	9
Possible		4	0	0	3	1	4	0
TOTAL	18	74	6	20	43	5	62	12
LAKE								
Definite		1	0	0	0	1	0	1
TOTAL	1	1	0	0	0	1	0	1
LASSEN								
Probable		1	1	0	0	0	0	1
TOTAL	1	1	1	0	0	0	0	1
LOS ANGELES								
Definite		28	13	12	1	2	0	28
Probable		109	52	23	20	14	0	109
Possible		35	12	2	14	7	0	35
TOTAL	159	172	77	37	35	23	0	172
MADERA								
Probable		5	2	3	0	0	3	2
Possible		1	1	0	0	0	0	1
TOTAL	4	6	3	3	0	0	3	3
MARIN								
Probable		4	1	1	0	2	0	4
TOTAL	4	4	1	1	0	2	0	4
MENDOCINO								
Probable		3	1	1	0	1	0	3
Possible		1	0	0	0	1	0	1
TOTAL	4	4	1	1	0	2	0	4
MERCED								
Definite		4	1	1	0	2	0	4
Probable		7	3	3	0	1	1	6
Possible		3	0	0	3	0	0	3
TOTAL	13	14	4	4	3	3	1	13

Relationship ²	TOTAL EPISODES ³	TOTAL CASES	Type of Exposure ⁴				Intended Use ⁵	
			Direct Contact	Off-Site	Residue	Other/Unknown	Agricultural	Non-Agricultural
MONTEREY								
Definite		8	5	2	1	0	3	5
Probable		64	3	14	14	33	60	4
Possible		1	1	0	0	0	1	0
TOTAL	18	73	9	16	15	33	64	9
NAPA								
Probable		3	1	1	1	0	0	3
TOTAL	3	3	1	1	1	0	0	3
ORANGE								
Definite		2	2	0	0	0	0	2
Probable		30	16	8	2	4	0	30
Possible		13	2	1	8	2	0	13
TOTAL	42	45	20	9	10	6	0	45
PLACER								
Definite		1	1	0	0	0	1	0
Probable		3	1	1	0	1	0	3
TOTAL	4	4	2	1	0	1	1	3
RIVERSIDE								
Definite		5	4	0	0	1	0	5
Probable		41	15	10	2	14	1	40
Possible		6	1	2	1	2	0	5
TOTAL	45	52	20	12	3	17	1	50
SACRAMENTO								
Definite		7	3	3	0	1	0	7
Probable		14	7	4	2	1	0	14
Possible		3	2	0	0	1	0	2
TOTAL	24	24	12	7	2	3	0	23
SAN BENITO								
Definite		1	1	0	0	0	1	0
Probable		2	0	1	0	1	1	1
TOTAL	3	3	1	1	0	1	2	1
SAN BERNARDINO								
Definite		9	4	3	0	2	0	9

Relationship ²	TOTAL EPISODES ³	TOTAL CASES	Type of Exposure ⁴				Intended Use ⁵	
			Direct Contact	Off-Site	Residue	Other/Unknown	Agricultural	Non-Agricultural
Probable		33	21	5	3	4	0	33
Possible		7	2	0	1	4	0	7
TOTAL	44	49	27	8	4	10	0	49
SAN DIEGO								
Definite		5	4	1	0	0	0	5
Probable		36	16	14	2	4	0	36
Possible		12	3	0	6	3	0	12
TOTAL	52	53	23	15	8	7	0	53
SAN FRANCISCO								
Definite		1	1	0	0	0	0	1
Probable		10	4	6	0	0	0	10
Possible		2	0	0	1	1	0	2
TOTAL	9	13	5	6	1	1	0	13
SAN JOAQUIN								
Definite		3	1	1	0	1	1	2
Probable		20	8	5	7	0	3	17
Possible		3	2	1	0	0	1	2
TOTAL	22	26	11	7	7	1	5	21
SAN LUIS OBISPO								
Definite		4	2	2	0	0	1	3
Probable		5	3	1	1	0	1	4
Possible		4	1	0	1	2	0	4
TOTAL	13	13	6	3	2	2	2	11
SAN MATEO								
Probable		6	1	2	1	2	0	6
Possible		2	1	0	0	1	0	2
TOTAL	8	8	2	2	1	3	0	8
SANTA BARBARA								
Definite		2	0	2	0	0	0	2
Probable		11	3	2	4	2	6	5
Possible		2	0	1	1	0	2	0
TOTAL	9	15	3	5	5	2	8	7

Relationship ²	TOTAL EPISODES ³	TOTAL CASES	Type of Exposure ⁴				Intended Use ⁵	
			Direct Contact	Off-Site	Residue	Other/Unknown	Agricultural	Non-Agricultural
SANTA CLARA								
Definite		2	2	0	0	0	0	2
Probable		18	9	5	2	2	2	16
Possible		3	0	0	0	3	0	3
TOTAL	22	23	11	5	2	5	2	21
SANTA CRUZ								
Definite		2	1	1	0	0	0	2
Probable		14	2	3	8	1	8	6
Possible		1	0	1	0	0	0	1
TOTAL	10	17	3	5	8	1	8	9
SHASTA								
Probable		2	0	0	1	1	1	1
Possible		2	0	1	0	1	0	2
TOTAL	4	4	0	1	1	2	1	3
SOLANO								
Probable		4	2	1	1	0	0	4
TOTAL	4	4	2	1	1	0	0	4
SONOMA								
Definite		2	2	0	0	0	0	2
Probable		3	3	0	0	0	1	2
Possible		1	1	0	0	0	0	1
TOTAL	6	6	6	0	0	0	1	5
STANISLAUS								
Definite		3	2	1	0	0	2	1
Probable		27	3	7	1	16	6	21
Possible		7	1	2	3	1	2	5
TOTAL	20	37	6	10	4	17	10	27
SUTTER								
Probable		21	4	16	1	0	14	7
Possible		2	0	1	0	1	1	1
TOTAL	9	23	4	17	1	1	15	8
TEHAMA								
Probable		2	0	1	0	1	1	1

Relationship ²	TOTAL EPISODES ³	TOTAL CASES	Type of Exposure ⁴				Intended Use ⁵	
			Direct Contact	Off-Site	Residue	Other/Unknown	Agricultural	Non-Agricultural
Possible		1	0	0	1	0	1	0
TOTAL	3	3	0	1	1	1	2	1
TULARE								
Definite		7	3	3	0	1	3	4
Probable		50	9	36	5	0	36	14
Possible		3	1	1	0	1	2	1
TOTAL	23	60	13	40	5	2	41	19
TUOLUMNE								
Probable		3	1	2	0	0	0	3
TOTAL	3	3	1	2	0	0	0	3
VENTURA								
Definite		2	1	0	0	1	0	2
Probable		14	7	1	2	4	2	12
Possible		2	1	0	1	0	0	2
TOTAL	16	18	9	1	3	5	2	16
YOLO								
Definite		4	4	0	0	0	2	2
Probable		9	3	2	1	3	2	7
TOTAL	13	13	7	2	1	3	4	9
YUBA								
Definite		3	0	2	0	1	1	2
Probable		7	0	4	0	3	1	5
Possible		1	0	1	0	0	1	0
TOTAL	11	11	0	7	0	4	3	7

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 (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. Episode: An incident in which a one or more people (*cases*) experience pesticide exposure from a particular source.

4. 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.

Off-Site Movement: Spray, mist, vapors, or odor carried from the target site by air. Off-site movement 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.

5. 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.

6. 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) 322-8577

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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.