DPR Pesticide Illness Surveillance Program (PISP) Data – Category 2

Pesticide Illness Surveillance Program (PISP) identifies an individual's exposure to a pesticide(s) that may or may not result in an illness and/or injury as a 'case.' PISP identifies an event in which one or more individuals ('cases') are exposed to an acute pesticide(s) as an 'episode.' All reports received by PISP are evaluated to determine if the pesticide exposure was associated with the reported health effects. PISP defines the term 'associated' as cases where the reported illnesses or injuries were evaluated as definitely, probably, or possibly related to an acute pesticide exposure. All reported pesticide-related illnesses and injuries are investigated by the County Agricultural Commissioners to support statewide enforcement and compliance with pesticide use laws and regulations. Reported pesticide-related illnesses and injuries and PISP evaluation inform DPR's continuous evaluation of pesticides to mitigate human health and environmental risks, including identification of potential exposure trends from pesticide use.

Summaries and Trends per AI over last 10 years (2015 – 2024)

DEFINITIONS

Violation: A violation identified through statements obtained during the investigation or through documentation that demonstrates noncompliance with an explicit label statement or regulatory requirement.

> **Contributory violation**: One or more violations were identified during the investigation that contributed to the pesticide exposure (e.g., drift, failure to use required equipment, early reentry, etc.).
>
> **Non-contributory**: One or more violations were identified during the investigation, but those violations did not contribute to the pesticide exposure.
>
> **None**: Information provided in the investigation report shows no violation occurred. Specific statements reporting that "no violation was found" will be disregarded if the investigation report indicates otherwise.
>
> **Unknown**: The type of violation that occurred, if any, is not known. This includes potential violations noted in the investigation, but not substantiated due to lack of evidence.

Application Equipment: The type of application or mix/load equipment, or method of application, that contributed to the exposure, regardless of who performed the application.

Aerosol Can: Disposable pressurized cans designed for intermittent use. The pesticide is propelled out of the can by an inert compressed gas propellant. This excludes foggers.

Aerosol/Fog Generating Equipment: Refillable application equipment designed to disperse pesticide as a small airborne droplet, either in confined spaces or outdoor areas.

Air, Other or Unspecified: Aerial application equipment, other or unspecified. This includes two or more types of aerial application equipment.

Air Blast Sprayer: Ground application equipment with a pump that delivers spray into an air stream created by a large fan at the back of the spray equipment.

Back Pack Sprayer: Sprayer where the tank is worn on the back of the applicator. This may include compressed, motorized, liquid, granules, or dust.

Chamber: A sealed enclosure used for fumigating or sterilizing its contents.

Electrostatic Sprayer: Ground operated equipment designed to impart an electrical charge to the pesticide particles. The electrostatic designation for ground application equipment overrides any other type of equipment it is used with.

Fixed Wing Aircraft: A fixed wing aircraft.

Ground Boom Below/Behind: Ground application equipment with a spray boom located below the equipment operator with the spray nozzles pointed downward.

Ground Boom, Other or Unspecified: Ground application equipment with a spray boom, where the location of the boom was not specified.

Ground, Other or Unspecified: Ground application equipment, unknown or unspecified. This includes two or more types of ground application.

Hand Pump Sprayer: Hand-held compressed air sprayer with small volume tanks (1 to 5 gallons). This excludes Back Pack Sprayers.

Hand, Other or Unspecified: Hand-held types of application equipment not already specified where the equipment must propel the pesticide from a reservoir. This includes two or more types of hand-held application equipment.

Hand-held Dusters: Hand-held application equipment for granules or dust. This includes belly grinders, bellows, squeeze bulbs, etc.

Helicopter: A helicopter.

Manual Placement: Pesticide is manually placed directly to the area. This includes bait stations, hand tossed pellets, and direct pouring of a pesticide onto a target

surface from a container (such as pouring liquid chlorine directly into swimming pool water). This excludes the placement of fumigation pellet packs in chambers and under tarps.

Other Equipment: Any application methodology not described in any of the equipment categories. This includes two or more types of application equipment.

Over-the-vine Boom: Ground operated equipment with the arms of the spray boom extending over the tops of grapevines.

Pressurized Hose-Line Sprayer: Hand-held spray equipment attached by a long hose to a power-pressurized tank.

Shank Injection with Tarps: Ground application equipment that uses a shank or other piece of equipment to directly apply a pesticide into the soil and a tarp is placed over the soil to restrict the pesticide to the application site.

Unpressurized Hand-Held Spray Equipment: Hand-held spray bottles (usually plastic) with built-in finger triggers. This includes battery powered continuous spray products and application syringes.

Not Applicable: No application equipment is involved or exposure from original container without known method of application.

Unknown: Equipment is unknown.

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

Emergency Response: Emergency response personnel (police, fire, ambulance, and HAZMAT personnel) responding to a fire, spill, accident, or any pesticide incident in the line of duty.

Field Worker: Works in an agricultural setting 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.

Handler Activity: Combination of four activities: Applicator, Mixer/Loader, Mechanical, and Handler, Other or Unspecified.

Applicator: Applies pesticides by any method or conducts activities pre- and post-application (e.g., cleans spray nozzles in the field).

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; and 2) maintenance performed by mixer/loaders on their equipment incidental to mixing and loading.

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.

Handler (Other or Unspecified): Assists with tasks following an application (i.e., tarp removal during a structural application or soil fumigation, and not ancillary to the application or mix/load activity).

Other Activity: Activity is not adequately described by any other activity category. This includes but is not limited to: 1) dog groomers not handling pesticides; 2) individuals handling pesticide treated wood; 3) two or more activities with potential for pesticide exposure.

Packaging/Processing: Handles (packs, processes, or retails) agricultural commodities from the packing house to the final marketplace. Field packing of agricultural commodities is classified as field worker.

Routine Activity: Combination of three Routine activities: Routine Indoor, Routine Outdoor and Routine (Other/Unspecified).

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.

Routine (Other/Unspecified): Conducts activities in an environment with minimal expectation for exposure to pesticides but is not adequately defined as indoor or outdoor. This includes individuals exposed to pesticides while inside a vehicle.

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 (not ancillary to an application or mix/load activity) is also included in this activity. This excludes driving a nurse rig to an application site.

Unknown: Activity is unknown.

Illness type: Categorization of the type of symptoms experienced by the affected individual.

Eye: Health effects involving the eyes. This excludes outward physical signs (miosis and lacrimation) related to effects on internal bodily systems. These signs are classified under “Systemic”.

Respiratory: Health effects involving any part of the respiratory tree.

Skin: Health effects involving the skin.

Systemic: Any health effects not limited to the skin, eye and/or respiratory systems.

GAMMA-CYHALOTHRIN*

**Data tables include cases of gamma-cyhalothrin alone, and in combination with other active ingredients*

Table 1. Total number of gamma-cyhalothrin cases (illnesses) by violation type and by application equipment, 2015-2024.

Application Equipment	Contributory violation	Non-contributory/ None	Unknown	Total
Aerosol Can	6	2	2	**10**
Back Pack Sprayer	1	-	-	**1**
Hand Pump Sprayer	2	-	-	**2**
Hand, Other or Unspecified	12	3	6	**21**
Hand-held Dusters	-	1	-	**1**
Manual Placement	1	-	1	**2**
Not Applicable	10	-	-	**10**
Unknown	4	-	1	**5**
Unpressurized Hand-held Spray Equipment	34	21	8	**63**
Total	**70**	**27**	**18**	**115**

Table 2. Total number of gamma-cyhalothrin cases (illnesses) by violation type and activity, 2015-2024

Activity	Contributory violation	Non-contributory/ None	Unknown	Total
Handler*	14	20	12	**46**
Routine	41	6	2	**49**
Other	13	-	-	**13**
Transport/Storage/Disposal	-	1	-	**1**
Unknown	2	-	4	**6**
Total	**70**	**27**	**18**	**115**

*Handler: Applicator and Mixer/Loader activity categories

Table 3. Total number of gamma-cyhalothrin cases (illnesses) by violation type and illness type, 2015-2024.

Illness Type	Contributory violation	Non-contributory/ None	Unknown	Total
Eye	10	7	4	**21**
Eye, Respiratory	2	1	-	**3**
Eye, Respiratory, Systemic	-	1	-	**1**
Eye, Systemic	1	2	-	**3**
Respiratory	4	5	1	**10**
Respiratory, Systemic	14	2	7	**23**
Skin	3	1	1	**5**
Skin, Eye	3	1	1	**5**
Skin, Eye, Respiratory, Systemic	-	1	-	**1**
Skin, Systemic	2	2	1	**5**
Systemic	31	4	3	**38**
Total	**70**	**27**	**18**	**115**

LAMBDA-CYHALOTHRIN*

**Data tables include cases of lambda-cyhalothrin alone, and in combination with other active ingredients.*

Table 1. Total number of lambda-cyhalothrin cases (illnesses) by violation type and by application equipment, 2015-2024.

Application Equipment	Contributory violation	Non-contributory/ None	Unknown	Total
Aerosol Can	24	14	12	**50**
Air, Other or Unspecified	1	-	-	**1**
Airblast Sprayers	52	11	1	**64**
Back Pack Sprayer	3	6	-	**9**
Electrostatic Sprayer	11	-	2	**13**
Fixed Wing Aircraft	32	9	1	**42**
Ground Boom, Other or Unspecified	36	1	-	**37**
Ground, Boom Below/Behind	12	-	-	**12**
Ground, Other or Unspecified	73	12	12	**97**
Hand Pump Sprayer	5	-	-	**5**
Hand, Other or Unspecified	18	9	12	**39**
Helicopter	2	3	-	**5**
Manual Placement	2	2	1	**5**
Not Applicable	16	1	1	**18**
Other	4	5	1	**10**
Pressurized Hose-line Sprayers	1	-	-	**1**
Unknown	3	1	12	**16**
Unpressurized Hand-held Spray Equipment	6	4	1	**11**
Total	**301**	**78**	**56**	**435**

Table 2. Total number of lambda-cyhalothrin cases (illnesses) by violation type and activity, 2015-2024.

Activity	Contributory violation	Non-contributory/ None	Unknown	Total
Handler*	31	24	18	**73**
Emergency Response	1	4	-	**5**
Field Worker	154	19	5	**178**
Other	17	3	2	**22**
Packaging/Processing	-	-	7	**7**
Routine	98	27	19	**144**
Unknown	-	1	5	**6**
Total	**301**	**78**	**56**	**435**

*Handler: Applicator, Mixer/Loader, and Handler (Other or Unspecified) activity categories

Table 3. Total number of lambda-cyhalothrin cases (illnesses) by violation type and illness type, 2015-2024.

Illness Type	Contributory violation	Non-contributory/ None	Unknown	Total
Eye	17	3	5	**25**
Eye, Respiratory	16	2	2	**20**
Eye, Respiratory, Systemic	18	5	2	**25**
Eye, Systemic	3	3	2	**8**
Respiratory	34	6	4	**44**
Respiratory, Systemic	60	17	14	**91**
Skin	15	7	6	**28**
Skin, Eye	8	5	5	**18**
Skin, Eye, Respiratory	4	1	-	**5**
Skin, Eye, Respiratory, Systemic	6	-	4	**10**
Skin, Eye, Systemic	4	3	-	**7**
Skin, Respiratory	3	-	-	**3**
Skin, Respiratory, Systemic	9	1	-	**10**
Skin, Systemic	15	2	3	**20**
Systemic	89	23	9	**121**
Total	**301**	**78**	**56**	**435**

DICHLORVOS*

**Data tables include cases of dichlorvos alone, and in combination with other active ingredients.*

Table 1. Total number of dichlorvos cases (illnesses) by violation type and by application equipment, 2015-2024.

Application Equipment	Contributory violation	Non-contributory/ None	Unknown	Total
Aerosol/fog Generating Equipment	55	14	-	**69**
Hand Pump Sprayer	1	-	-	**1**
Hand, Other or Unspecified	15	-	2	**17**
Manual Placement	9	-	1	**10**
Not Applicable	1	1	-	**2**
Unknown	-	-	2	**2**
Unpressurized Hand-held Spray Equipment	2	-	1	**3**
Total	**83**	**15**	**6**	**104**

Table 2. Total number of dichlorvos cases (illnesses) by violation type and activity, 2015-2024.

Activity	Contributory violation	Non-contributory/ None	Unknown	Total
Handler*	5	0	4	**9**
Field Worker	1	-	-	**1**
Other	10	-	-	**10**
Packaging/Processing	44	13	-	**57**
Routine	23	2	1	**26**
Unknown	-	-	1	**1**
Total	**83**	**15**	**6**	**104**

*Handler: Applicator and Mechanical activity categories

Table 3. Total number of dichlorvos cases (illnesses) by violation type and illness type, 2015-2024.

Illness Type	Contributory violation	Non-contributory/ None	Unknown	Total
Eye	2	-	2	**4**
Eye, Respiratory	3	-	1	**4**
Eye, Respiratory, Systemic	14	-	-	**14**
Eye, Systemic	6	1	-	**7**
Respiratory	8	1	-	**9**
Respiratory, Systemic	18	4	1	**23**
Skin, Eye, Respiratory, Systemic	1	-	-	**1**
Skin, Eye, Systemic	4	-	-	**4**
Skin, Respiratory, Systemic	2	-	-	**2**
Systemic	25	9	2	**36**
Total	**83**	**15**	**6**	**104**

MALATHION*

**Data tables include cases of malathion alone, and in combination with other active ingredients.*

Table 1. Total number of malathion cases (illnesses) by violation type and by application equipment, 2015-2024.

Application Equipment	Contributory violation	Non-contributory/ None	Unknown	Total
Aerosol Can	-	-	1	**1**
Airblast Sprayers	1	-	-	**1**
Back Pack Sprayer	1	-	-	**1**
Fixed Wing Aircraft	-	4	-	**4**
Ground Boom, Other or Unspecified	53	-	-	**53**
Hand Pump Sprayer	10	6	-	**16**
Hand, Other or Unspecified	2	1	4	**7**
Helicopter	3	1	-	**4**
Manual Placement	3	-	-	**3**
Not Applicable	12	5	10	**27**
Other	-	-	1	**1**
Unknown	2	-	2	**4**
Unpressurized Hand-held Spray Equipment	3	-	1	**4**
Total	**90**	**17**	**19**	**126**

Table 2. Total number of malathion cases (illnesses) by violation type and activity, 2015-2024.

Activity	Contributory violation	Non-contributory/ None	Unknown	Total
Handler*	4	2	3	**9**
Emergency Response	-	5	-	**5**
Field Worker	54	1	-	**55**
Other	7	-	2	**9**
Routine	24	8	10	**42**
Transport/Storage/Disposal	-	1	-	**1**
Unknown	1	-	4	**5**
Total	**90**	**17**	**19**	**126**

*Handler: Applicator and Handler (Other or Unspecified) activity categories

Table 3. Total number of malathion cases (illnesses) by violation type and illness type, 2015-2024.

Illness Type	Contributory violation	Non-contributory/ None	Unknown	Total
Eye	3	-	-	**3**
Eye, Respiratory	1	-	-	**1**
Eye, Respiratory, Systemic	14	1	-	**15**
Eye, Systemic	4	3	-	**7**
Respiratory	3	1	-	**4**
Respiratory, Systemic	12	4	4	**20**
Skin, Eye	-	1	-	**1**
Skin, Eye, Respiratory, Systemic	-	-	1	**1**
Skin, Respiratory, Systemic	4	-	-	**4**
Systemic	49	7	14	**70**
Total	**90**	**17**	**19**	**126**

NALED*

**Data tables include cases of naled alone, and in combination with other active ingredients.*

Table 1. Total number of naled cases (illnesses) by violation type and by application equipment, 2015-2024.

Application Equipment	Contributory violation	Non-contributory/ None	Unknown	Total
Fixed Wing Aircraft	-	1	-	**1**
Ground, Boom Below/Behind	-	2	-	**2**
Ground, Other or Unspecified	24	-	-	**24**
Helicopter	-	3	-	**3**
Manual Placement	1	-	-	**1**
Not Applicable	-	2	-	**2**
Other	-	1	1	**2**
Total	**25**	**9**	**1**	**35**

Table 2. Total number of naled cases (illnesses) by violation type and activity, 2015-2024.

Activity	Contributory violation	Non-contributory/ None	Unknown	Total
Field Worker	24	3	-	**27**
Handler*	1	1	1	**3**
Other	-	1	-	**1**
Routine	-	4	-	**4**
Total	**25**	**9**	**1**	**35**

*Handler: Mixer/Loader and Handler (Other or Unspecified) activity categories

Table 3. Total number of naled cases (illnesses) by violation type and illness type, 2015-2024.

Illness Type	Contributory violation	Non-contributory/ None	Unknown	Total
Eye	1	1	-	**2**
Eye, Respiratory, Systemic	-	1	-	**1**
Eye, Systemic	5	3	-	**8**
Respiratory	1	1	-	**2**
Respiratory, Systemic	3	3	-	**6**
Skin	4	-	-	**4**
Skin, Eye	1	-	-	**1**
Skin, Eye, Respiratory	1	-	-	**1**
Skin, Systemic	1	-	-	**1**
Systemic	8	-	1	**9**
Total	**25**	**9**	**1**	**35**

METHYL BROMIDE*

**Data tables include cases of methyl bromide alone, and in combination with other active ingredients.*

Table 1. Total number of methyl bromide cases (illnesses) by violation type and by application equipment, 2015-2024.

Application Equipment	Contributory violation	Non-contributory/ None	Unknown	Total
Chamber	3	2	1	**6**
Not Applicable	1	-	-	**1**
Shank Injection with Tarps	1	-	-	**1**
Unknown	-	-	1	**1**
Total	**5**	**2**	**2**	**9**

Table 2. Total number of methyl bromide cases (illnesses) by violation type and activity, 2015-2024.

Activity	Contributory violation	Non-contributory/ None	Unknown	Total
Applicator	2	-	-	**2**
Other	1	2	1	**4**
Routine	2	0	1	**3**
Total	**5**	**2**	**2**	**9**

Table 3. Total number of methyl bromide cases (illnesses) by violation type and illness type, 2015-2024.

Illness Type	Contributory violation	Non-contributory/ None	Unknown	Total
Respiratory, Systemic	-	-	1	**1**
Skin, Eye, Respiratory, Systemic	1	-	-	**1**
Skin, Eye, Systemic	1	-	-	**1**
Systemic	3	2	1	**6**
Total	**5**	**2**	**2**	**9**

FLUOPYRAM*

**Data tables include cases of fluopyram alone, and in combination with other active ingredients.*

Table 1. Total number of fluopyram cases (illnesses) by violation type and by application equipment, 2015-2024.

Application Equipment	Contributory violation	Non-contributory/ None	Unknown	Total
Airblast Sprayers	4	1	3	**8**
Electrostatic Sprayer	11	-	-	**11**
Ground Boom, Other or Unspecified	-	1	-	**1**
Ground, Other or Unspecified	-	1	-	**1**
Helicopter	21	-	-	**21**
Over-the-vine Boom	3	-	1	**4**
Pressurized Hose-line Sprayers	5	-	-	**5**
Unknown	-	-	1	**1**
Total	**44**	**3**	**5**	**52**

Table 2. Total number of fluopyram cases (illnesses) by violation type and activity, 2015-2024.

Activity	Contributory violation	Non-contributory/ None	Unknown	Total
Applicator	-	2	-	**2**
Field Worker	26	1	-	**27**
Routine	18	0	4	**22**
Unknown	-	-	1	**1**
Total	**44**	**3**	**5**	**52**

Table 3. Total number of fluopyram cases (illnesses) by violation type and illness type, 2015-2024.

Illness Type	Contributory violation	Non-contributory/ None	Unknown	Total
Eye	-	1	-	**1**
Eye, Respiratory	2	-	-	**2**
Eye, Respiratory, Systemic	5	-	1	**6**
Eye, Systemic	1	-	-	**1**
Respiratory	4	-	1	**5**
Respiratory, Systemic	15	-	-	**15**
Skin	1	-	-	**1**
Skin, Eye	-	1	-	**1**
Skin, Eye, Respiratory	1	-	-	**1**
Skin, Eye, Respiratory, Systemic	3	-	-	**3**
Skin, Eye, Systemic	3	-	-	**3**
Skin, Respiratory, Systemic	1	1	-	**2**
Skin, Systemic	1	-	-	**1**
Systemic	7	-	3	**10**
Total	**44**	**3**	**5**	**52**