

# PESTICIDE ANALYTICAL AND RESPONSE CENTER

## 2015-17 Biennial Legislative Report



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## » Acronym definitions

**DEQ** Oregon Department of Environmental Quality

**FIFRA** Federal Insecticide, Fungicide and Rodenticide Act

**FY** Fiscal year; from 7/1/2009 – 6/30/2010, as an example

**NIOSH** National Institute of Occupational Safety and Health

**OAR** Oregon Administrative Rules

**ODA** Oregon Department of Agriculture

**ODF** Oregon Department of Forestry

**ODFW** Oregon Department of Fish and Wildlife

**ODOT** Oregon Department of Transportation

**OHA** Oregon Health Authority

**OERS** Oregon Emergency Response System

**OHSU** Oregon Health and Sciences University

**OPC** Oregon Poison Center, Oregon Health & Science University

**OR-OSHA** Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services

**ORS** Oregon Revised Statutes

**OSFM** Office of State Fire Marshal

**OSU** Oregon State University

**PARC** Pesticide Analytical and Response Center

**PEST** Pesticide Exposure, Safety and Tracking, Oregon Health Authority

**US EPA** United States Environmental Protection Agency

**USFWS** United States Fish and Wildlife Service

**WPS** Worker Protection Standard

## » Executive Summary

The Pesticide Analytical and Response Center (PARC) is mandated to coordinate the State of Oregon's response to pesticide-related incidents. It also has a responsibility to collect incident information, report investigation results, and evaluate mitigation measures or trends that may affect public health. This legislative report is a description of PARC activities from July 1, 2015 through June 30, 2017.

The eight PARC member state agencies are:

- Oregon Department of Agriculture (ODA)
- Oregon Department of Environmental Quality (DEQ)
- Oregon Department of Fish and Wildlife (ODFW)
- Oregon Department of Forestry (ODF)
- Oregon Health Authority, Public Health Division (OHA)
- Oregon Occupational Safety and Health Administration (OR-OSHA)
- Oregon Office of State Fire Marshal (OSFM)
- Oregon Poison Center (OPC)

Several other organizations provide expertise to the PARC Board as contracted consultants:

- Oregon Institute of Occupational Health Sciences
- The Department of Environmental and Molecular Toxicology at Oregon State University (OSU)
- Oregon Department of Transportation (ODOT)

The data presented in this legislative report was produced using PARC's new database that began being utilized in July 2017.

## » PARC's history

Increasing use of pesticides in Oregon in 1978 led to rising concerns regarding possible detrimental effects of these chemicals on the environment and health concerns of the toxicity of pesticides to individuals within the State of Oregon. There was also a need to improve interagency coordination in investigating pesticide incidents.

In an effort to respond to these concerns, Executive Order No. 78-23 was issued in July 1978, directing that a task force be formed to report to the Governor recommendations for budgetary provisions and legislative changes needed to increase capabilities of the State to investigate environmental and human health concerns relating to pesticides.

In 1979, PARC was incorporated into statute (ORS 634.02) with responsibilities to centralize the receiving of information relating to actual or alleged health and environmental incidents involving pesticides and to mobilize the expertise necessary for timely and accurate investigations of pesticide incidents and analysis of associated samples. Finally, to report in a standardized format the results of investigations of pesticide reports.

Since July 1, 2005, the primary responsibility for the administrative functions of the Pesticide Analytical and Response Center (PARC) has resided with the

Oregon Department of Agriculture (ODA). The PARC Coordinator collects and disseminates information to and from different agencies relating to pesticide-related incidents. Major funding is provided to the Oregon Health Authority (OHA) to collect health-related information from medical records and to conduct interviews with the affected person or persons.

Representatives from ODA and OHA alternate as PARC board chair each calendar year, with ODA conducting chairperson activities during odd numbered years and OHA during even numbered years. The Board meets every other month beginning each year with a January meeting, to discuss incidents and pesticide-related topics.

## » PARC mandates

PARC is mandated by statute to perform the following activities when pesticide-related incidents result in suspected health or environmental effects:

- Collect incident information;
- Mobilize expertise for investigations;
- Identify trends and patterns of problems;
- Develop policy or other recommendations for action;
- Report results of investigations;
- Prepare activity reports for legislative sessions.

## » Investigation Coordination

The primary statutory function of PARC is to coordinate pesticide-related investigations. PARC collects and analyzes information about reported incidents of health or environmental effects from possible pesticide exposures. As PARC does not have regulatory or investigative authority itself, it relies on these agencies to collect pertinent information. PARC member agencies conduct the investigations and take necessary enforcement actions.

Investigation coordination includes:

- Collecting information from callers and distributing the information to member agencies and other organizations as necessary.
- Assigning a tracking number for possible pesticide incidents when adverse health or environmental effects are alleged or suspected.
- Requesting investigation or collaboration by member or partner agencies.
- Coordinating information sharing, as appropriate, between member agencies.
- Collecting investigative reports and enforcement actions from other agencies.

Participants in incident investigations may include other government agencies that are not specifically mentioned in the PARC mandate. Some examples of those agencies are:

- Oregon State University Extension Service
- United States Environmental Protection Agency
- United States Fish and Wildlife Service

## » PARC incidents

PARC defines an incident as an event involving a pesticide(s) whereby adverse effects to people, animals, or the environment have been alleged or suspected.

Incidents are reported to PARC in a variety of ways. This includes receiving reports through PARC member agencies, as well as other federal, state, or local agencies. By state law (1987) in Oregon, all health care providers, including Oregon Poison Control (OPC), must report suspected pesticide poisonings to the Pesticide Exposure Safety and Tracking (PEST) program within 24 hours. Additionally, other sources for reporting incidents include the Oregon Emergency Response System (OERS) and the news media. PARC maintains a telephone line and email address for the public to report impacts to health and/or the environment. PARC follows up on any allegations to confirm which agency should take the lead in the investigation and which agencies should be involved or notified.

When an incident is reported to PARC, an incident number is assigned. This incident number is used to track the incident from start to finish. Each incident is entered into a spreadsheet and summarized for presentation to the PARC Board at each bimonthly meeting. Incident reports represent urban (indoor and outdoor) and rural situations, agricultural and forestry pesticide applications, pesticide spills, accidents, homeowner applications, and neighbor-to-neighbor complaints.

Member agencies submit final incident investigation reports to the PARC Coordinator. These reports include any violations and/or enforcement actions and are routinely shared among agencies and with the PARC Board, when incidents are assigned contributing factors (CFs).

The data developed from incident investigations are

analyzed and presented to the Oregon Legislature. Information collected by PARC is used to:

- Identify the appropriate agencies that can assist during a pesticide-related event.
- Conduct training of other agencies' personnel to ensure information collection.
- Develop educational materials aimed at reducing exposures.
- Make recommendations to state and federal agencies regarding products and application practices with the aim of reducing acute pesticide poisonings.

Information collected by the PARC program is available and provided to the public, other agencies, and business interests. Information is also provided to the U. S. Environmental Protection Agency (US EPA) and the U. S. Fish and Wildlife Service (US F&W) when appropriate. These federal agencies combine PARC data with information from other states to identify possible national trends regarding pesticide products or uses. Upon request, pesticide product manufacturers, industry organizations, and public-interest groups are also provided the information developed by PARC agencies and any conclusions that PARC has drawn from that information.

Information is disseminated to targeted groups through presentations at training seminars, meetings, and through pesticide safety literature. PARC anticipates expanding public and professional educational efforts as the program moves forward.

Education is identified as a key component to collecting and substantiating exposure scenarios. Delays in reporting pesticide exposures inhibits the ability of PARC and individual member agencies to gather adequate information, identify rule violations, and evaluate the relationships between reported exposures and adverse impacts to people, animals, or the environment.

## » Biennial report

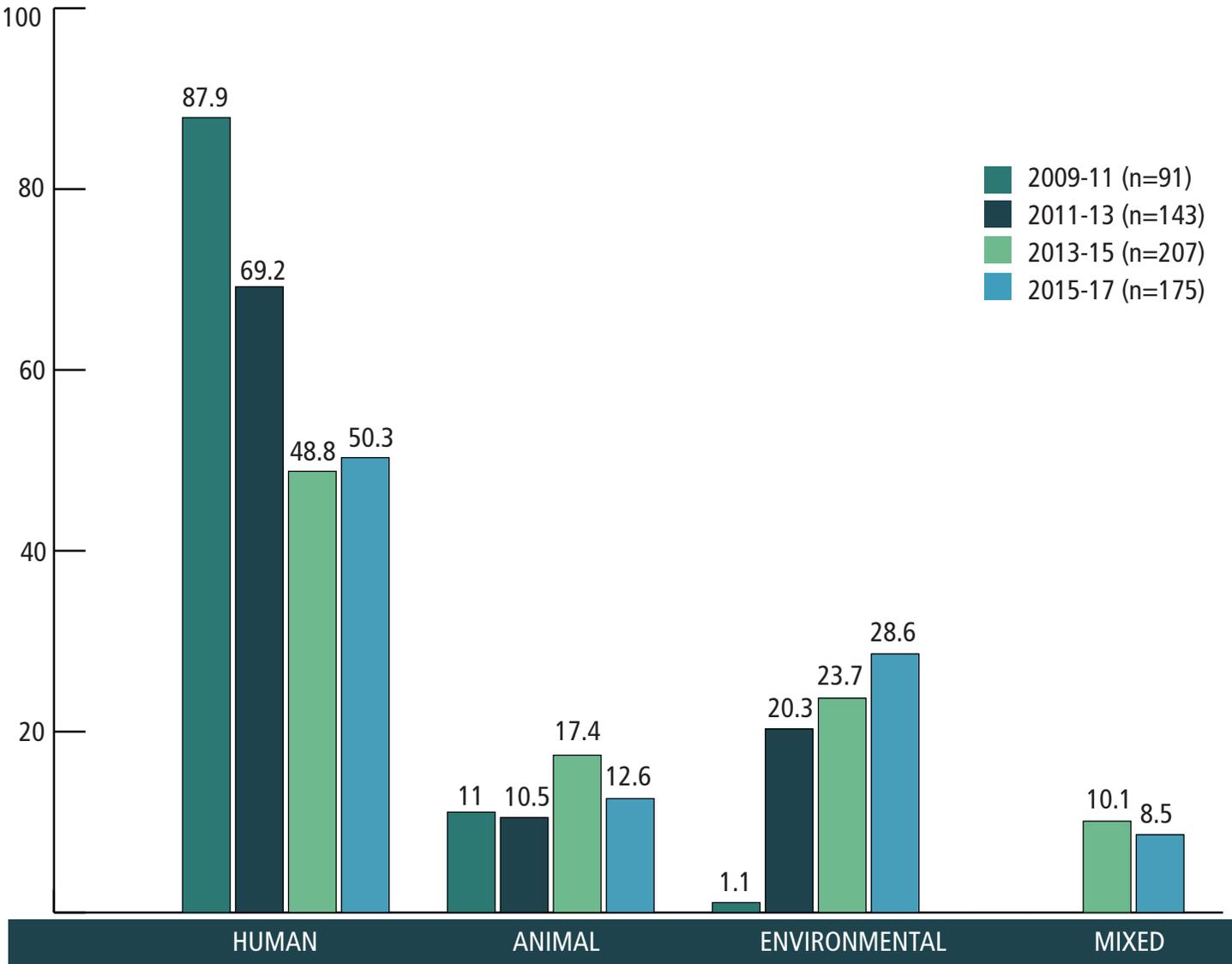
This biennial report covers the period from July 1, 2015 to June 30, 2017. This delay was caused by a number of factors.

- The schedule of PARC meetings limits the Board’s availability to discuss incidents. Normally, the PARC board meets every other month for three hours to address PARC-related issues and to classify PARC cases. This meeting schedule affects PARC’s ability to work through the backlog of PARC cases.
- PARC continues to operate without a database in which data may be entered and associations

between contributing factors may be closely examined. Further delays in database development inhibit PARC’s ability to fully carry out its mandated mission in the areas of trend analysis and policy recommendations.

PARC classifies incidents as human, animal, or environmental. A single PARC incident may also fall into multiple classifications (‘mixed’). During the reporting period from July 1, 2015 through June 31, 2017, there were a total of 175 PARC incidents. Of these incidents, 88 were coded human, 22 were coded animal, 50 were coded environmental, and 14 incidents were mixed.

Percent of PARC incidents, by class



### Data Sources for PARC Pesticide-Related Incidents

	FY 2016	FY 2017
ODA Report	64	59
ODF	4	3
OERS	10	5
OHA/PEST	22	24
OR-OSHA	11	7
OPC	1	2
SFM	4	1
News media	2	2
Dr. Fred Berman	1	0
DEQ	1	0
ODOT	0	1
<b>Total incidents</b>	<b>74</b>	<b>133</b>

### PARC concerns received from:

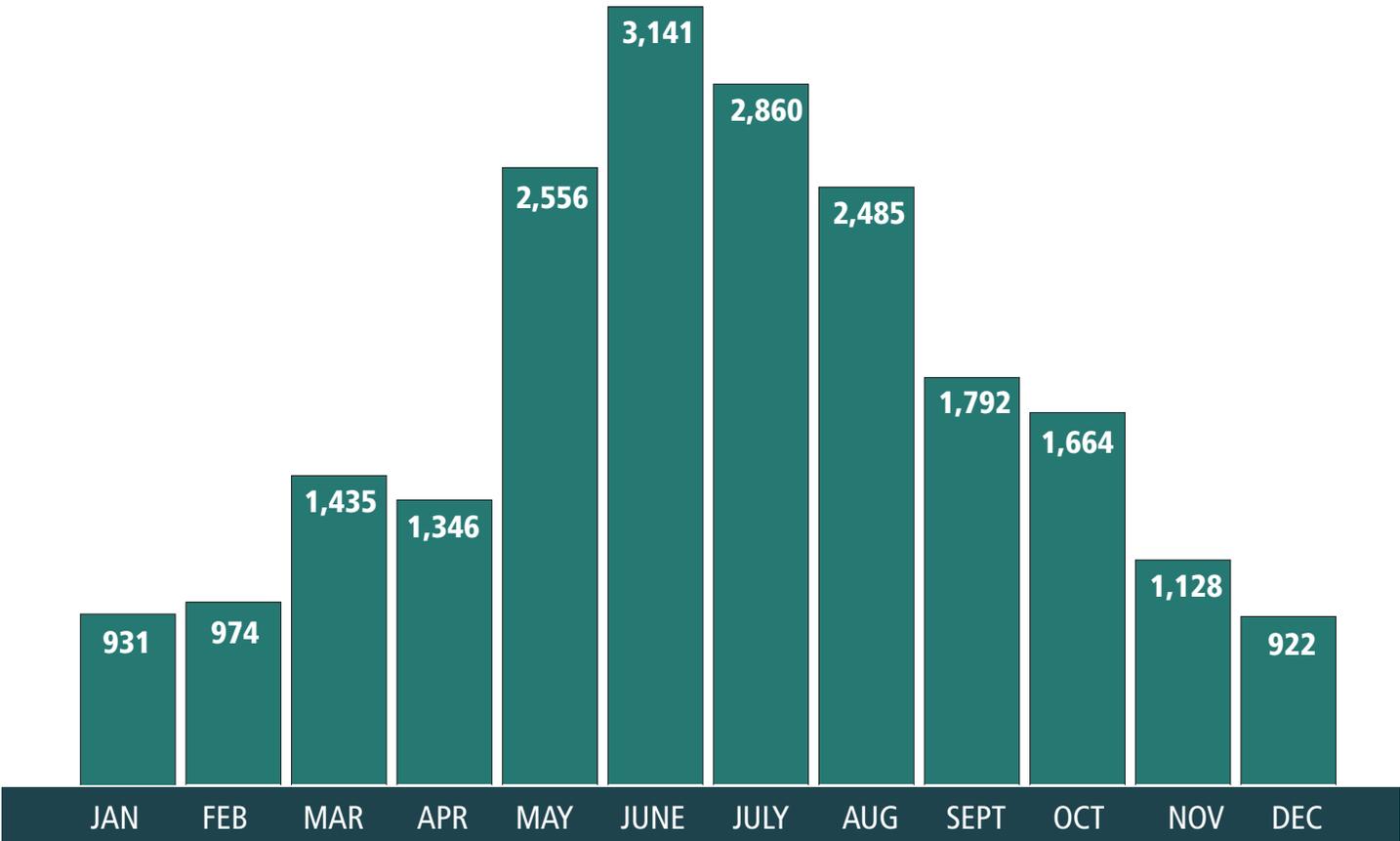
	FY 2016	FY 2017
211 info	57	41
DEQ	15	21
DEQ complaint form	5	0
Dr. Fred Berman	1	0
EPA Region 10	1	0
ODA	55	13
ODF	5	5
OERS	2	2
OHA / PEST	1	1
OR-OSHA	2	1
OPC	0	1
<b>Total concerns</b>	<b>142</b>	<b>85</b>

Data sources for PARC pesticide-related incidents come from a variety of PARC member agencies. More than one PARC member agency may provide data for a single PARC incident.

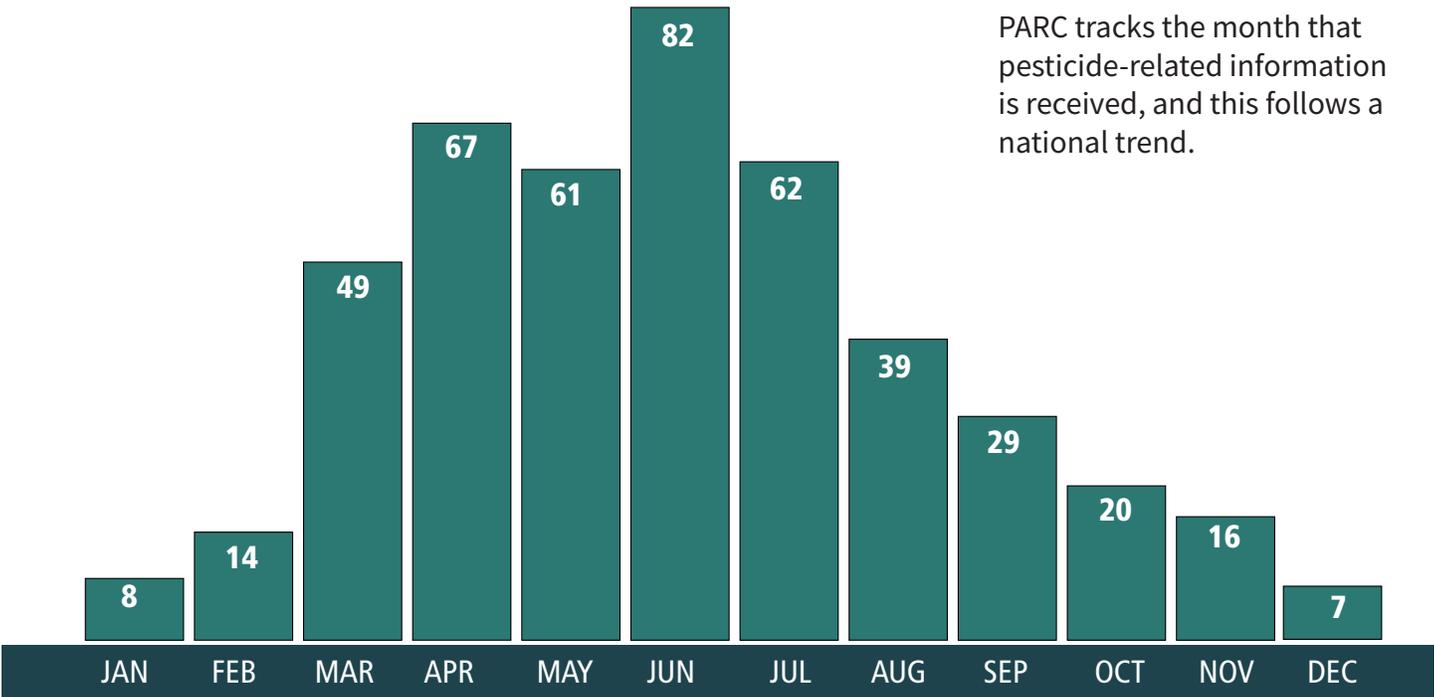
PARC receives pesticide-related concerns from PARC member agencies and 211info. Examples of PARC concerns include: forestry notifications; water quality; pesticide regulation; honey and bumble deaths; aerial applications and others.

- PARC receives a pesticide-related report from the Oregon Emergency Response System (OERS).
- The Oregon Department of Agriculture is the main source of PARC's pesticide-related incident information.

**Pesticide incidents by month reported to National Pesticide Information Center: 2009-17**



**PARC pesticide incidents by month, 2009-17**



PARC tracks the month that pesticide-related information is received, and this follows a national trend.

## » Incident location

PARC tracks the locations, by county, for all pesticide-related incidents. No PARC incidents occurred in Gilliam, Grant, Harney, Lake, Wasco, or Wheeler counties during this reporting period.

PARC was unable to identify the county for two PARC incidents. Oregon counties with the largest populations (in order) are: Multnomah, Washington, Clackamas, Lane, and Marion. It stands to reason that the highest populated counties would have the highest number of pesticide-related incidents.

COUNTY	FY '16	TOTAL %	FY '17	TOTAL %
Baker	3	3.2	1	1.2
Benton	3	3.2	3	3.7
Clackamas	6	6.5	5	6.2
Clatsop	1	1.1	0	0.0
Columbia	0	0.0	1	1.2
Coos	2	2.2	3	3.7
Crook	0	0.0	1	1.2
Curry	3	3.2	2	2.5
Deschutes	3	3.2	4	4.9
Douglas	5	5.4	2	2.5
Gilliam	0	0.0	0	0.0
Grant	0	0.0	0	0.0
Harney	0	0.0	0	0.0
Hood River	2	2.2	0	0.0
Jackson	6	6.5	6	7.4
Jefferson	0	0.0	1	1.2
Josephine	5	5.4	2	2.5
Klamath	1	1.1	3	3.7
Lake	0	0.0	0	0.0
Lane	8	8.6	3	3.7
Lincoln	0	0.0	3	3.7
Linn	3	3.2	4	4.9
Malheur	6	6.5	3	3.7
Marion	7	7.5	12	14.8
Morrow	0	0.0	1	1.2
Multnomah	12	12.9	6	7.4
Polk	1	1.1	0	0.0
Sherman	0	0.0	1	1.2
Tillamook	2	2.2	0	0.0
Umatilla	2	2.2	2	2.5
Union	1	1.1	0	0.0
Wallowa	0	0.0	1	1.2
Wasco	0	0.0	0	0.0
Washington	7	7.5	7	8.6
Wheeler	0	0.0	0	0.0
Yamhill	4	4.3	4	4.9
<b>Total</b>	<b>93</b>		<b>81</b>	

## » Incident sites

For a list of PARC's contributing factors, see **Appendix 2**.

There are approximately 100 contributing factors that may be assigned to a PARC incident. These factors are divided into eight broad categories: application/ incident sites (where did the incident happen); exposure sites (where did the exposure happen and only assigned when the incident and exposure sites differ); data sources for the incident; what was the intended target of the application; application factors; exposure factors; other factors; and remedial actions taken by a PARC member agency.

PARC tracks spills for which there is not application nor exposure site; there were 17. If no one reports adverse health effects, there is no exposure site. It is rare to know where bees or geese may have been exposed.

	Application sites	Exposure sites
Agriculture (e.g. farm, nursery)	51	10
Commercial (e.g. office park, retail)	5	1
Forestry	12	0
Golf course	1	0
Industrial	2	0
Lawn care	1	0
Mobile home / trailer	2	1
Multi-unit housing	6	2
Nursing home / care facility	2	3
Other	11	6
Park / municipal park	5	2
Road, Right of way, trail, non-ag	5	2
Single family home	32	32
Unknown	6	3
Vehicle	1	4
<b>Total</b>	<b>142</b>	<b>66</b>

## » Application targets

PARC tracks the intended target of pesticide applications in pesticide-related incidents. Concomitant with an agriculture site being the primary location for PARC incidents, an agricultural pest was the main target in PARC's pesticide-related incidents. A target is defined as what is the pesticide product's intended use e.g. weeds, insects, fungi, etc.

	Application targets
Agriculture	8
Community application (Japanese beetle, gypsy moth, etc.)	3
Forestry	8
Irrigation ditch	2
Multiple	1
Other	1
Other indoor insect pest	9
Other indoor pest (e.g. mold, bacteria, rodent)	5
Outdoor pest control (e.g. moss, mold, insect, rodent, disease)	43
Unknown	4
Vector (e.g. mosquito, rodent)	4
Vegetation / weed control	51
<b>Total</b>	<b>139</b>

## » Application factors

Application factors are those factors that may have led to a pesticide incident and are determined by PARC member agencies. Percent assigned during this reporting period.

	Number (n=175)	%
Application by minor	1	0.5
Application equipment failure	6	2.9
Drift	24	11.6
Excessive application of pesticide	2	1
Illegal pesticide used/illegal dumping of pesticide	2	1
Improper storage	3	1.4
Industrial accident	2	1
Intentional harm	3	1.4
Label reportedly not read	7	3.4
Licensed applicator not properly trained/supervised.	2	1
*Misapplication	31	15
Mixing of incompatible products	1	0.5
Spill/splash of liquid or dust (not involving application equipment failure)	17	8.2
Total Release Fogger used	1	0.5
Unlicensed applicator (when required)	8	3.9

\*Misapplication by ag operator: 10

\*Misapplication by forestry operator: 1

\*Misapplication by homeowner, indoors: 2

\*Misapplication by homeowner, outdoors: 8

\*Misapplication by pest control operator, outdoors: 10

## » Exposure factors

Exposure factors are those factors that may have led to people or animals being exposed to pesticides. These factors are not verified by PARC member agencies. Multiple exposure factors may be assigned in a single PARC incident.

	Number (n=175)	% assigned in PARC incidents
Chemical Sensitivity	5	2.4
Decontamination not adequate or timely	2	1
Exposure/symptoms (for people or animals)	105	50.7
Inadvertent animal exposure	17	8.2
Mixing & loading antecedents	2	1
Occupational exposure	16	7.7
Off-site movement/odor	58	28
Pediatric exposure of children < 6 years of age	4	1.9
People were in the treated area during application	4	1.9
Performing unauthorized activity	2	1
Required Notification/posting lacking or ineffective	4	1.9
Vegetation symptom consistent with formulation	3	1.4
Eye (required eye protection not worn/inadequate)	4	1.9
Gloves (required gloves not worn/inadequate)	2	1
Other (other PPE not worn/inadequate)	5	2.4
respirator (required respirator not worn/inadequate)	2	1

## » Occupational incidents

A number of PARC’s incidents happened in the workplace. An occupational incident is defined as an individual was performing an on-the-job activity when the exposure to pesticides was alleged. The Oregon

Occupational Safety and Health Administration (OR-OSHA), a subdivision of the Oregon Department of Consumer and Business Services, is the state agency responsible for investigating pesticide incidents that take place in the workplace. There were 16 occupational incidents from July 1, 2015, through June 30, 2017.

PARC #	EPA Reg. No.	Active ingredient(s)	Number of people involved	Medical treatment sought	Agency / Number of violations	Reason(s)
16-0027	5481-520	Bifenthrin	1	N	OR-OSHA/5	Lack of control measures, lack of training, lack of investigation procedures
16-0038	524-517	Glyphosate	1	Y	OR-OSHA/3	PPE stored in the pesticide storage container; lack of a chemical resistant apron, and unlabeled backpacks
16-0066	91899-1	ADBAC	4	Y; 2	ODA/4	Using an unregistered product, not properly licensed
	91899-2	Hydrogen peroxide			OR-OSHA/12	Lack of written hazard communication program, un labeled containers, lack of proper employee training, lack of eyewash/shower, lack of proper face/hand protection
*17-0186 (*CCBA)	11556-124	Beta-Cyfluthrin	30-49	Y	OR-OSHA/4	No SDS sheets, no information/training on hazardous chemicals in the workplace, no safety committee, no hazard communication program
	1021-1603	Pyriproxyfen			ODA/2	Perform pesticide application activities in a faulty, careless or negligent manner
	1021-2574	Esfenvalerate, piperonyl butoxide				
	432-1514	Deltamethrin				
17-0208	Unknown	Sodium hypochlorite	1	Y	OR-OSHA/1	Lack of SDS sheets
16-0089	Unknown	Pheromone	1	Y	OR-OSHA/0	
16-0126	21165-32	Pyrethrins, permethrin, piperonyl butoxide	1	Y	OR-OSHA/3	Employer did not regularly consult with employees on programs effectiveness; no medical evaluation for respirator; and no fit test for respirator
16-0140	Unknown	Bifenthrin	1	Y	OR-OSHA/0	Hazard letter issued
16-0283	1022-489	Oxine-copper	1	Y	OR-OSHA/2 ODA/0	Lack of training and lack of communication
16-0307	81927-14	Clopyralid	4	N	ODA/0	
	81927-26	Sulfometuron methyl				
16-0334	2217-833	Dicamba, 2,4-D, mecoprop, carfentrazone-ethyl	1	N	ODA/5	No pesticide applicator's license

Chart continued on next page

## » Occupational incidents (continued from previous page)

PARC #	EPA Reg. No.	Active ingredient(s)	Number of people involved	Medical treatment sought	Agency / Number of violations	Reason(s)
17-0176	9688-317-8845	ADBAC, cypermethrin	1	N	OR-OSHA/2 ODA/0	No SDS sheet and no advance notice of application
17-0025	34704-858	Bifenthrin	4	N	OR-OSHA/2	Lack of central posting information and not providing treated field location to employees
17-0040	100-953	Fludioxonil, cyprodinil	3	N	OR-OSHA/4	Lack of postings, lack of health hazard control measures, lack of display of REI information, and lack of pesticide safety information
	279-3426	Zeta-Cypermethrin				
	7969-199	Pyraclostrobin				
17-0066	Unknown	Myclobutanil	1	N	ODA/2	Pesticide application performed in a faulty, careless, or negligent manner
					OR-OSHA/13	Lack of pesticide safety information, lack of ag worker training, lack of hazard communication program, lack of emergency eyewash/shower
17-0086	9688-326	Tetramethrin	1	Y	ODA/2	Pesticide application performed in a faulty, careless, or negligent manner
					OR-OSHA/3	Employer did not inform employees of known health hazards, no SDS were accessible, and no safety committee established.

## » Animal incidents

From July 1, 2015, through June 30, 2017, PARC received 32 allegations or reports that animals had been negatively impacted by pesticide use. One incident involved the misapplication of the active ingredient chlorpyrifos to a creek, resulting in the death of crayfish. Seven incidents involved honey bees. The Oregon Department of Agriculture (ODA) developed a bee screen for which 59 pesticides are analyzed for in dead bees. While some samples were positive, it is difficult to determine a source of the honey bee's exposure. There were two geese kills from exposure to presumably zinc phosphide; samples were positive for the presence of phosphine gas. ODA investigated 27 of the 32 incidents, and as a result, issued seven Notices of Violations and nine Letters of Advisement.

## » Pesticide type

PARC tracks pesticides that are involved in incidents to examine for use trends. The U.S. Environmental Protection Agency (EPA) registers pesticide products (with the exception of products that do not require registration, such as 25(b) products) and assigns EPA registration numbers. Registration numbers allow one to uniquely identify a specific pesticide product. Data for the types of pesticides, e.g., insecticide, fungicide, insecticide, etc., are listed below.

	Number
25b	1
Antimicrobial	2
Disinfectant	1
Fumigant	1
Fungicide	26
Herbicide	130
Insect growth regulator	2
Insecticide	55
Insecticide / Acaricide	3
Moss Control	3
Other	1
Pheromone	1
Plant growth regulator	5
Rodenticide	9
Sanitizer	2
Wood Preservative	1

## » Restricted Use Pesticides (RUPs)

Restricted use pesticide products (RUP) are those products that may only be used by a certified pesticide applicator or under the direct supervision of a certified applicator. From July 1, 2015, through June 30, 2017, PARC identified 15 restricted use products involved in PARC incidents.

Product name	EPA Reg. No.	Type	Active ingredient(s)	Site used
CHLORPYRI-FOS 4E AG	66222-19	Insecticide	Chlorpyrifos	Ag
F9114 EC INSECTICIDE	279-3426	Insecticide	zeta-Cypermethrin	Ag
Cobalt Advanced	62719-615	Insecticide	Chlorpyrifos	Ag
CHLORPYRI-FOS 4E-AG	19713-520	Insecticide	Chlorpyrifos	Spill
Tordon 22K	62719-6	Herbicide	Picloram	Spill
Reaper	34704-923	Insecticide	Abamectin	Spill
DUPONT ASANA XL INSECTICIDE	59639-209	Insecticide	Esfenvalerate	Ag
LEVERAGE 360 INSECTICIDE	264-1104	Insecticide	beta-Cyfluthrin, imidacloprid	Ag
BRIGADE 2EC INSECTICIDE/MITICIDE	279-3313	Insecticide	Bifenthrin	Ag
F9114 EC INSECTICIDE	279-3426	Insecticide	zeta-Cypermethrin	Ag
MAGNACIDE H HERBICIDE	10707-9	Algaecide	Acrolein	Irrigation canal
Sniper	34704-858	Insecticide	Bifenthrin	Ag
F9114 EC INSECTICIDE	279-3426	Insecticide	zeta-Cypermethrin	Ag
STRIKE 100CP FUMIGANT	87994-5-53766	Insecticide	Chloropicrin	Ag
FUMITOXIN PELLETS	72959-2	Rodenticide	Aluminum phosphide	Spill

## » PEST introduction

Oregon Health Authority's Pesticide Exposure Safety and Tracking (PEST) program conducts surveillance of pesticide poisoning cases. PEST investigates potential cases of pesticide poisoning, classifies cases and analyses trends to help inform pesticide poisoning prevention efforts. For this report PEST focused on analysis of severity, chemicals most frequently associated with cases, case onset month, case age, case sex, race and ethnicity, and case county.

PEST surveillance relies on reports of potential cases from providers, PARC agency members such as ODA, OR-OSHA and OPC. PEST investigates these potential cases by reviewing medical records, conducting interviews and obtaining information about environmental sampling and pesticide application records from PARC member agencies.

PEST then classifies these cases for certainty and severity (discussed in more detail below). The PEST program follows guidelines for case classification established by the National Institute of Occupational Safety and Health (NIOSH). The case classification process identifies confirmed cases. As examples of unconfirmed cases, a pesticide exposure investigation may determine that the symptoms reported were due to some other cause or we may lack information about which pesticide was applied.

The PEST program collects information about the person such as onset date for the illness, age, sex, race and ethnicity, and county. Health information we collect includes diagnostic information, exposure dates, signs<sup>1</sup> and symptoms and information about hospitalizations. Information about the environmental exposure event includes date of the event, event site (such as a school or a road), target of the application (such as the interior of a building or a crop application), the crop being grown, equipment used, location of the pesticide application, chemical ID and EPA numbers associated with the pesticides used and results of any environmental sampling. Finally, the PEST program collects information about risk factors such as what the exposed person was doing when the exposure occurred, if the exposure was

occupational, the type of location where the exposure happened, how the person was exposed (such as indoor air or drift) and other "contributing factors" as defined by NIOSH. NIOSH contributing factors<sup>2</sup> focus on factors that may inform future pesticide label modifications and on occupational elements. This data first informs case classification for certainty and severity. For confirmed cases, the data then informs analysis of trends, patterns and risks of pesticide use in Oregon.

## » Oregon potential cases of acute pesticide illness and injury by certainty

NIOSH guidelines followed by the PEST program define confirmed pesticide cases as having a certainty classification of "definite," "probable" or "possible." These confirmed cases have at least two symptoms consistent with exposure to a known pesticide. For more information about investigation and case classification, please see our Pesticide Program Investigative Guidelines.

During funding year 2016<sup>3</sup>, PEST investigated 138 potential cases and confirmed 97. Of those 97 cases, there were 10 "definite" cases, 11 "probable" and 76 "possible" cases. Of at least 94 potential cases reported to PEST in funding year 2017<sup>4</sup>, there were 84 confirmed cases. Of these 84 cases, PEST classified 8 cases as "definite," two as "probable" and 74 as "possible." In funding year 2017, most potential cases that did not classify as confirmed cases (that is, "definite," "probable" or "possible") were not entered into our database so the non-case information is mostly absent from the count of cases we investigated. For this reason, we lack data on exactly how many potential cases were investigated.

An important note: the PEST program cannot classify a case as definite without associated medical records and cannot classify a case as probable without either medical records or environmental sampling. For this reason, many cases with symptoms consistent with the reported pesticide have a classification of "possible." See **Table 1** and note the first three columns represent confirmed cases.

<sup>1</sup>Signs are defined as a health effect documented by a health care provider

<sup>2</sup>NIOSH's Sentinel Event Notification System for Occupational Risk (SENSOR) program establishes contributing factors for state pesticide poisoning surveillance. SENSOR builds and maintains occupational illness and injury surveillance capacity within state health departments

<sup>3</sup>Report date: 7/1/2015-6/30/2016

<sup>4</sup>Report date: 7/1/2016-6/30/2017

**TABLE 1: OREGON POTENTIAL CASES OF PESTICIDE POISONING BY CERTAINTY**

	Definite	Probable	Possible	Total Cases	Suspicious	Unlikely	Insufficient Information	Exposed/Asymptomatic	Total PEST/PARC Cases <sup>6</sup>
FY 2016 <sup>3</sup>	10	11	76	97	2	13	22	1	3
FY 2017 <sup>4</sup>	8	2	74	84	1	9	0 <sup>5</sup>	0 <sup>5</sup>	0 <sup>5</sup>

Some PEST cases were not referred to PARC, for instance if a person had a concern about confidentiality. Considering only PEST cases which were also PARC cases, in funding year 2016<sup>3</sup> PEST classified one case as “definite,” 9 as “probable” and 45 cases as “possible.” See **Table 2**.

**TABLE 2: OREGON CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING BY CERTAINTY, PARC CASES ONLY**

	Definite	Probable	Possible	Total PEST/PARC <sup>6</sup> Cases
FY 2016 <sup>3</sup>	3	9	45	57
FY 2017 <sup>4</sup>	3	2	45	50

### » Oregon confirmed cases<sup>6</sup> of pesticide by poisoning by severity

The PEST program classifies confirmed cases<sup>6</sup> by severity. Severity ranges from fatal to low severity. Most cases of pesticide poisoning in Oregon have low severity. More recent improved surveillance has identified a higher number of moderate and severe cases, but the majority of recent cases are still low severity. For funding year 2016<sup>3</sup>, the PEST program identified six moderate severity cases and 91 low severity cases. No high severity or fatal cases were identified during this time frame. In funding year 2017<sup>4</sup>, PEST identified 2 moderate severity cases and 82 low severity cases, with no high severity or fatal cases in this timeframe. See **Table 3**.

**TABLE 3: OREGON CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING BY SEVERITY**

	Fatal	High	Moderate	Low	Total
FY 2016 <sup>3</sup>	0	0	6	91	97
FY 2017 <sup>4</sup>	0	0	2	82	84

Considering again only cases that were also cases for PARC, in funding year 2016<sup>3</sup> most confirmed cases were low severity, with only three moderate cases. In funding year 2017<sup>4</sup> all confirmed cases that were also PARC cases had low severity. See **Table 4**.

**TABLE 4: OREGON CONFIRMED CASES OF PESTICIDE POISONING BY SEVERITY, PARC CASES ONLY**

	Fatal	High	Moderate	Low	Total
FY 2016 <sup>3</sup>	0	0	3	54	57
FY 2017 <sup>4</sup>	0	0	0	50	50

<sup>5</sup>Only confirmed cases were entered into our database for FY2017

<sup>6</sup>NIOSH guidelines define confirmed pesticide cases as having a certainty of “definite,” “probable” or “possible”

## » Chemicals most frequently associated with confirmed cases<sup>6</sup> of pesticide poisoning in Oregon

### FUNDING YEAR 2016<sup>3</sup> CHEMICAL EXPOSURES

Of the 97 cases<sup>6</sup> identified in Funding Year 2016,<sup>3</sup> the PEST program most frequently identified sulfometuron (for 16 cases), mesulfuron (for 15 cases), imazapyr isopropylamine salt (for 15 cases), glyphosate-isopropylammonium (for 11 cases) and glycine, N-(phosphonomethyl)-, compound with N-methylmethanamine (1:1) (for 11 cases). See **Table 5**. These frequently used herbicides were often associated with aerial application to forestry operations. See **Table 6** for event site type showing where the application took place.

**TABLE 5: CHEMICALS MOST FREQUENTLY ASSOCIATED WITH CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING IN OREGON REPORTED TO PEST IN FY 2016<sup>3</sup>**

Chemical ID/ EPA PC Code	Chemical name	Type of pesticide	Frequency of associated confirmed cases
122001	Sulfometuron	Herbicide	16
122010	Metsulfuron	Herbicide	15
128829	Imazapyr, isopropylamine salt	Herbicide	15
103601	Glyphosate-isopropylammonium	Herbicide	12
103608	Glycine, N-(phosphonomethyl)-, compound with N-methylmethanamine (1:1)	Herbicide	12
067501	Piperonyl butoxide	Insecticide	6
069001	Pyrethrins	Insecticide	6
111601	Oxyfluorfen	Herbicide	5
128825	Bifenthrin	Insecticide	5
029802	Dicamba, dimethylamine salt	Herbicide	5
030019	2,4-D, dimethylamine salt	Herbicide	5

**TABLE 6: EVENT SITE FOR CHEMICALS MOST FREQUENTLY ASSOCIATED WITH CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING IN OREGON REPORTED TO PEST IN FY 2016<sup>3</sup>**

Chemical ID/ EPA PC Code	EVENT / APPLICATION SITE					Confirmed Cases
	Forest	Farm	Private Residence	Mobile home park	Other	
122001	16	0	0	0	0	16
122010	15	0	0	0	0	15
128829	15	0	0	0	0	15
103601	6	1	4	1	0	12
103608	12	0	0	0	0	12

### FUNDING YEAR 2017<sup>4</sup> CHEMICAL EXPOSURES

In funding year 2017<sup>4</sup> an exposure event at a childcare facility affected multiple people, and this significant event contributed to a large number of insecticide exposures during this timeframe (see following significant event section). The most frequent pesticides associated with cases<sup>6</sup> of pesticide poisoning included piperonyl butoxide (for 32 cases), deltamethrin (for 31 cases), beta-cyfluthrin (for 31 cases), prallethrin (for 30 cases), pyriproxyfen and esfenvalerate (for 29 cases). These most frequent pesticides were all insecticides. See **Table 7**. For the most frequent six pesticides used, most were associated with daycare as the application site (due to the one event that caused multiple cases). See **Table 8** for the event site where the applications took place.

**TABLE 7: CHEMICALS MOST FREQUENTLY ASSOCIATED WITH CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING IN OREGON REPORTED TO PEST IN FY 2017<sup>4</sup>**

Chemical ID/ EPA PC Code	Chemical name	Type of pesticide	Frequency of associated confirmed cases
067501	Piperonyl butoxide	Insecticide	32
097805	Deltamethrin	Insecticide	31
118831	Beta-cyfluthrin	Insecticide	31
128722	Prallethrin	Insecticide	30
129032	Pyriproxyfen	Insecticide	29
109303	Esfenvalerate	Insecticide	29
103601	Glyphosate-isopropylammonium	Herbicide	6
417300	Glyphosate	Herbicide	5
109702	Cypermethrin	Insecticide	5
069001	Pyrethrins	Insecticide	4
030053	2,4-D, butoxyethyl ester	Herbicide	4
128829	Imazapyr, isopropylamine salt	Herbicide	4
116004	Triclopyr, butoxyethyl ester	Herbicide	4

**TABLE 8: EVENT SITE FOR CHEMICALS MOST FREQUENTLY ASSOCIATED WITH CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING IN OREGON REPORTED TO PEST IN FY 2017<sup>4</sup>**

Chemical ID	EVENT / APPLICATION SITE					Confirmed Cases
	Day care facility	Service establishment	Multi-unit housing	Single family housing	Unknown	
067501	29	0	0	3	0	32
097805	29	1	0	0	1 <sup>7</sup>	31
118831	29	0	1	1	0	31
128722	29	0	1	0	0	30
129032	29	0	0	0	0	29
109303	29	0	0	0	0	29

### » Oregon confirmed cases<sup>6</sup> of pesticide poisoning by onset month

Pesticide poisoning happens more frequently during the warmer months as insects and other pests inflict more damage to crops, buildings and landscapes. September of funding year 2016 had the most cases that year, with 22 cases. In funding year 2017, May had the most cases with 38 (see following significant event section). Any large exposure event affecting multiple individuals can create an outsized increase for that month. See **Table 9**.

**TABLE 9: OREGON CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING BY MONTH OF ONSET**

	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
FY 2016 <sup>3</sup>	9	14	22	6	2	0	0	5	8	14	9	8	97
FY 2017 <sup>4</sup>	10	7	4	6	1	0	1	1	2	5	38	9	84

### » Oregon confirmed cases<sup>6</sup> of pesticide poisoning by age

Generally, pesticide exposures happen more often to adults, as many exposures happen due to applicator misuse. The age pattern in funding year 2016<sup>3</sup> reflects this typical pattern. In funding year 2016<sup>3</sup> the age range of

<sup>7</sup>This case was a community-wide application, but the exact event site was not known.

60-69 had the most cases (14 confirmed cases). This typical pattern did not hold for funding year 2017<sup>4</sup> due to the unusual large daycare exposure that caused multiple cases in children (see following significant event section). For this reason, the age range of age zero to four had the most cases, with 26 cases. In funding year 2017<sup>4</sup>, those age 60-69 experienced a more typical 12 cases. See **Table 10**.

**TABLE 10: OREGON CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING BY AGE**

	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-49	50-59	60-69	70-79	80+	Unk	Total
FY 2016 <sup>3</sup>	3	5	2	6	7	7	0	9	11	14	3	3	27	97
FY 2017 <sup>4</sup>	26	3	1	0	2	5	5	7	9	12	1	0	13	84

### » Oregon confirmed cases<sup>6</sup> of pesticide poisoning by sex<sup>8</sup>

Consistently over time, more females experience pesticide poisoning compared with males. In funding year 2016<sup>3</sup>, 52 females experienced pesticide poisoning, compared with 45 males. In funding year 2017<sup>4</sup>, 47 females experienced pesticide poisoning compared with 37 males. Other regions outside of Oregon have reported this phenomenon as well but the reasons for this dynamic are not well understood. In some cases, females have less training or do different types of work compared to male counterparts which partly explains why females have more pesticide exposures.<sup>1</sup> See **Table 11**.

**TABLE 11: OREGON CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING BY SEX<sup>8</sup>**

	Female	Male	Unknown	Total
FY 2016 <sup>1</sup>	52	45	0	97
FY 2017 <sup>2</sup>	47	37	0	84

### » Oregon confirmed cases<sup>6</sup> of pesticide poisoning by race

The PEST program did not consistently collect race data during funding years 2016<sup>3</sup> and 2017<sup>4</sup> with a majority of cases lacking race data. The PEST program cannot make any informed statements from this small amount of data. Recent efforts to collect race and ethnicity have improved. Oregon Health Authority initiatives require self-reported race and ethnicity data, so the PEST program has increased focus on conducting interviews for this purpose. See **Table 12**.

**TABLE 12: OREGON CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING BY RACE**

	Asian	Black	American Indian / Alaska Native	White	Unknown	Other	Total
FY 2016 <sup>3</sup>	0	1	0	5	91	0	97
FY 2017 <sup>4</sup>	0	0	0	3	81	0	84

### » Oregon confirmed cases<sup>6</sup> of pesticide poisoning by ethnicity

The PEST program also lacked enough ethnicity data for both funding year 2016<sup>3</sup> and funding year 2017<sup>4</sup> to understand disparities in pesticide poisoning by ethnicity. In funding year 2016<sup>3</sup>, the PEST program only had ethnicity data for 5% of cases while in funding year 2017<sup>4</sup> the PEST program had ethnicity data for 4% of cases. See **Table 13**.

**TABLE 13: OREGON CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING BY ETHNICITY**

	Hispanic	Not Hispanic	Unknown	Total
FY 2016 <sup>3</sup>	1	4	92	97
FY 2017 <sup>4</sup>	1	3	80	84

<sup>8</sup>This report intentionally reports on sex (not gender) as pesticides can medically impact males and females differently from a toxicological standpoint.

## » Oregon confirmed cases<sup>6</sup> of pesticide poisoning by county

During funding year 2016<sup>3</sup>, Lane county had the most pesticide poisoning cases with 18 cases that year. The next highest number of exposures for funding year 2016<sup>3</sup> occurred in Marion county with 12 cases that same year. Cases related to forestry herbicide applications contributed to higher numbers in Lane county that year.

During funding year 2017<sup>4</sup>, the most cases occurred in Coos county (31 cases), followed by Multnomah county with 11 cases. The daycare exposure during funding year 2017<sup>4</sup> occurred in Coos county and contributed to the much higher than usual pesticide cases for Coos county (see following significant event section). See **Table 14**.

**TABLE 14: OREGON CONFIRMED CASES<sup>6</sup> OF PESTICIDE POISONING BY COUNTY**

	FY 2016 <sup>3</sup>	FY 2017 <sup>4</sup>
Baker	1	0
Benton	0	2
Clackamas	8	2
Clatsop	0	4
Columbia	1	0
Coos	0	31
Crook	0	1
Curry	5	2
Deschutes	2	1
Douglas	8	0
Gilliam	0	0
Grant	0	0
Harney	0	1
Hood River	2	0
Jackson	5	1
Jefferson	0	0
Josephine	2	1
Klamath	2	2
Lake	0	0
Lane	18	2
Lincoln	1	0
Linn	4	4
Malheur	2	0
Marion	12	5
Morrow	0	1
Multnomah	8	11
Polk	0	1
Sherman	0	0
Tillamook	1	2
Umatilla	2	1
Union	0	0
Wallowa	0	0
Wasco	0	0
Washington	9	6
Wheeler	0	0
Yamhill	4	3
<b>Total</b>	<b>97</b>	<b>84</b>

## » Significant event: May 2017 Coos Bay Children’s Academy incident

### INTRODUCTION

On May 12, 2017, the Coos Bay Children’s Academy day care closed after children and employees reported symptoms following a pesticide application during the week of May 1. Concerned employees and parents notified the Coos (County) Health & Wellness Public Health Division during that week. Coos County informed the Oregon Department of Education’s Office of Childcare and sought advice from the National Pesticide Information Center. PARC learned about the incident through an article published in *The Oregonian* and mobilized all relevant agencies. Oregon Health Authority, Oregon Department of Agriculture and Oregon Occupational Safety and Health Administration each initiated investigations.

The focus of Oregon Health Authority’s investigation was to determine whether a causal association existed between the pesticide applications and the reported symptoms.

### RESULTS

Coos Bay Children’s Academy had 24 employees and an estimated 117 daycare attendees. Oregon Health Authority staff surveyed 49 individuals who reported symptoms and reviewed 17 medical records. Coughing was the most common symptom reported, followed by eye irritation and runny nose. Based on the questionnaire responses and medical record review Oregon Health Authority classified 30 of the children and adults as cases of acute pesticide poisoning (21% of the children and employees who visited Coos Bay

Children’s Academy during the week following the initial pesticide application). The cases are of “low” severity since symptoms were mild and resolved on their own after a short time.

Sixty percent of individuals classified with acute pesticide poisoning started experiencing their first symptom on Monday, May 1 (shortly after the first pesticide application on Saturday, April 29) followed by Tuesday and Wednesday in a clear decay pattern. There were no spikes in symptoms or cases on Thursday, May 4, after a second pesticide application. Thus, it is likely that the first pesticide application was largely responsible for the reported symptoms.

### AGENCIES’ RESPONSE

Oregon Department of Agriculture issued civil penalties and violations to Coos Bay Children’s Academy, the owner of the facility and the pesticide applicator for performing pesticide applications in a faulty, careless or negligent manner.

Oregon Occupational Safety and Health Administration issued civil penalties and violations to Coos Bay Children’s Academy for failure to comply with hazard communication rules requiring employers to train their employees to recognize chemical hazards and to take the necessary precautions to protect themselves, and failure to establish and maintain a safety committee for employees.

Pesticide Analytic and Response Center developed a plan to outreach to all Oregon state agencies, informing them how to report pesticide-related incidents and concerns to the Center.

Oregon Health Authority updated guidelines for investigating pesticide poisoning incidents and reminded local public health authorities of requirements to report pesticide poisoning incidents.

<sup>i</sup>Kasner E, Keralis M, Mehler L, Beckman J, Bonnar-Prado J, Lee S, et al. Gender Differences in Acute Pesticide-Related Illnesses and Injuries Among Farmworkers in the United States, 1998–2007. *American Journal of Industrial Medicine*. 2012; 55:571-583 (2012).

## » Operation of Pesticide Incident Phone Line

HB 3549 (2015 legislative session) required that the Pesticide Analytical and Response Center establish a pesticide incident telephone line for receiving, and facilitating the coordination of public entities' responses to pesticide-related complaints by the public indicating possible health or environmental effects. The bill also required that the Oregon Department of Agriculture report biennially to the Legislature on the operation of the pesticide incident telephone line, as required under Section 15 of the 2015 Act.

Effective June 29, 2015, the Oregon Department of Agriculture (ODA) entered into a Work Order Contract with 211info, on behalf of the Pesticide Analytical and Response Center (PARC). 211info is a nonprofit organization funded by state and municipal contracts, foundations, United Way donations and community partners in Oregon and Southwest Washington. 211info empowers Oregon and Southwest Washington communities by helping people identify, navigate and connect with the local resources they need.

Standard Operating Procedures were developed on the operation of the manned 24-hour hotline and beginning in January, 2016, 211info began taking pesticide-related telephone calls.

From July 1, 2015 through June 30, 2017, 211info received a total of 178 pesticide-related telephone inquiries and 45 of the inquiries were received outside of normal business hours (8 AM – 5 PM). PARC classifies these telephone calls as either a concern or an incident. Incidents are when an individual (s) allege or suspect that pesticide use has negatively impacted people, animals, or the environment. 167 of these calls were classified as a concern with 83 of them being about ODA's Asian Gypsy Moth eradication efforts conducted in Portland, OR. Examples of concerns include; caller seeking information about pesticides; information about pesticide regulations; information about a possible pesticide application; concerns about odors; Worker Protection Standard regulations; and information about aerial applications.

PARC classifies incidents as human, animal, environmental, or a mixture, based upon the pesticide incident information received. For the 11 incidents reported to 211info, six were classified as human, two as environmental, one as animal, and two as mixed. The Oregon Department of Agriculture investigated nine of these incidents, performing environmental sampling for evidenced of pesticide drift. ODA found violations of Oregon's State Pesticide Control Act in eight of these incidents. The Oregon Occupational Safety and Health Administration investigated two of these incidents and issued three Other Than Serious violations.

# Appendix 1

## » PARC member agencies' case referral criteria

**Background:** The Pesticide Analytical and Response Center (PARC) was created by executive order in 1978. With the passage in 1991 of Senate Bill 740, the program was reauthorized under the Oregon Department of Agriculture (ODA) as ORS 634.550. By legislation, membership of the governing board consists of representatives of eight state agencies, and one member of the public appointed jointly by the Director of Agriculture and the Director of Human Services.

The Center collects and shares information about pesticide-related incidents involving alleged impacts to human health, animal health, and/or the environment. By statute, PARC is mandated to perform the following activities with regard to pesticide-related incidents in Oregon that have suspected health or environmental effects:

- Collect incident information
- Coordinate and mobilize expertise for investigations
- Identify trends and patterns of problems
- Make policy or other recommendations for action

- Report results of investigations
- Prepare activity reports for each legislative session

In order to facilitate the timely transfer of incident information between PARC member agencies, this document was developed to document the statutory authority, pesticide-related jurisdiction(s), and/or areas of expertise for each member agency. The intended purpose of this document is to serve as a reference for representatives of PARC member agencies, and the PARC Coordinator, in the early stages of any PARC case; the user should refer to these criteria and provide referrals as indicated.

### Agencies current contact information (2020)

Pesticide Analytical and Response Center	
<p><b>Administrator:</b> Rose Kachadoorian</p> <p><b>Co-Chair:</b> Theodore Bunch Jr.</p> <p><b>Co-Chair:</b> Curtis Cude</p> <p><b>Contact:</b> Coordinator Theodore Bunch Jr. (503) 986-4562</p> <p>635 Capitol St. NE Salem, OR 97301</p>	<p><b>Referral Criteria:</b> PARC should be notified at (503) 986-6470 as soon as possible after any pesticide-related incident that is alleged to have had an impact on human and/or animal health, or the environment (air, soil, water).</p> <p><b>Resources/Programs:</b> By referral and coordination, PARC has the capacity to tap into resources from each of its member agencies.</p>

**Oregon Department of Agriculture: Pesticides Program**

**Contact:** Toby Primbs, Program Manager, (503) 986-4646

Oregon Department of Agriculture  
635 Capitol St. NE  
Salem, OR 97301

**Referral Criteria:** ODA Pesticide Division would like to be notified as soon as possible whenever a violation of Oregon’s Pesticide Control Law (ORS 634 & OAR 603) is suspected. This would include any suspected misuse, drift, or otherwise faulty, careless or negligent acts related to pesticide use, storage, distribution or disposal.

**Resources/Programs:** ODA has field staff positioned around the state with experience in pesticide application technology and regulation. As part of an investigation, ODA has access to laboratory services. ODA maintains a label for each pesticide registered in Oregon and a database of information about those products. ODA also maintains a database of information about pesticide-related licenses and licensees.

**Oregon Department of Fish & Wildlife**

**Contacts:** General Issues — Danette Faucera, Water Policy Coordinator, (503) 947-6092 or Spills — Art Martin, (503) 947-6082

Oregon Department of Fish & Wildlife  
4034 Fairview Industrial Drive SE  
Salem, OR 97302

**Referral Criteria:** ODFW would like to be notified as soon as practicable or within 24 hours of any suspected pesticide related poisoning of fish or wildlife. Pesticide spills should be reported to the Oregon Emergency Response System (OERS) who has a call down list and will contact the appropriate ODFW staff when necessary. OERS phone number is (800) 452-0311.

**Resources/Programs:** ODFW district biologists handle issues with pesticide poisoning or spills that affect fish and wildlife. ODFW biologists assist to identify potential fish and wildlife receptors and resources that are at risk; assess extent of damage to the resource(s); collect samples for analysis and to identify laboratories for analysis.

**Oregon Health Authority  
Public Health Division  
Center for Health Protection**

**Contacts:** Curtis Cude, (971) 673-0975; Crystal Weston, (971) 673-3285

Oregon Health Authority  
800 NE Oregon St., No. 640  
Portland, OR 97232

**Referral Criteria:** OHA must be notified within 24 hours by healthcare providers or local public health authorities in the event of confirmed or suspected case of pesticide poisoning.

**Resources/Programs:** The PEST Program is made up of portions of program analyst and research analyst positions, who can draw upon the expertise of toxicologists in the Environmental Public Health Section. Drinking water engineers and epidemiologists at OHA-Public Health may be available, as needed.

**Oregon Department of Forestry**

**Contact:** Nate Agalzoff, Incentives Field Support Coordinator, (503) 536-3348

Oregon Department of Forestry  
2600 State Street  
Salem, OR 97310

**Referral Criteria:** ODF would like to be notified any time there is a report or allegation of damage to natural resources, human health, or human property as a result of a forest pesticide application, spill, or other related activity. If the application is ongoing, immediate notification is requested. If it is over, ODF requests notification as soon as is practical.

**Resources/Programs:** ODF has field offices across the state. ODF field foresters administer forest practice pesticide rules, which deal with natural resource protection. ODF investigates incidents that may involve violations of the forest practices rules. ODF maintains a database of information on planned forest pesticide applications.

**Oregon Department of Environmental Quality**

**Contact:** Kate Jackson,  
Regional Liasion of the  
Western Region,  
(503) 975-0895

Department of Environmental  
Quality  
700 NE Multnomah St.  
Suite 600  
Portland, OR 97232

Eastern office:  
(541) 388-6146, Ext. 236  
Northwest Office:  
(503) 229-5474  
Western Office:  
(503) 378-8240, Ext. 227

**Referral Criteria:** If there is a spill, release, or other emergency response situation, DEQ should be notified through OERS by calling 800-453-0311. For nonemergency pesticide complaint, use the online complaint form: <https://ordeq.org/DEQpollutioncomplaints>.

**Resources/Programs:** DEQ has field staff available in district offices and a dedicated laboratory facility. DEQ regulates air, land and water in Oregon to protect the state’s environment.

**Office of the State Fire Marshal**

**Contact:** Michael Heffner,  
Assistant Chief Deputy,  
Emergency Response Services  
Branch, (503) 934-8030

Office of the State Fire  
Marshal  
3565 Trelstad Ave. SE, Salem,  
OR 97317

**Referral Criteria:** The OSFM prefers to stay in communication regarding pesticide-related incidents by participating in PARC meetings. Because their requirements are based on storage, they do not require notification of pesticide incidents. OFSM may respond to incidents on a case-by-case basis.

**Resources/Programs:** The OSFM can offer information about hazardous materials, including pesticides that are stored at facilities around the state including storage location, quantities and hazard type. Expertise is also available regarding application of the Oregon fire code to pesticide storage.

**Oregon Occupational Safety & Health Administration**

**Contact:** Garnet Cooke, (503)  
378-3274

Salem Field Office  
PO Box 14513  
1340 Tandem Ave. NE,  
Suite 160  
Salem, OR 97309

**Referral Criteria:** OR-OSHA is notified any time a pesticide-related incident or unreasonable exposure risk is occupational in nature. OR-OSHA must be notified of work-related fatalities and/or catastrophes within 8 hours of occurrence or employer knowledge, of work-related overnight hospitalization within 24 hours of occurrence or employer knowledge. Complaints are classified and responses initiated as follows:  
Imminent danger: Investigation initiated within 24 hours;  
Serious: Investigation initiated within 5 days;  
Other-than-serious: Investigation initiated within 30 days.  
OR-OSHA requests notification by phone contact with email follow-up.

**Resources/Programs:** OR-OSHA has field staff available to investigate occupational incidents, and a library of educational materials relevant to pesticide handling, storage, and application in agriculture.

**Oregon Poison Center**

**Contact:** Charisse  
Pizarro-Osilla, RN, Director,  
Oregon Poison Control Center  
(503) 494-2569

Oregon Poison Control Center  
3181 SW Sam Jackson Park  
Road  
Mail Code – CSB 550  
Portland, OR 97239

**Referral Criteria:** The OPC would like to be notified immediately at 1-800-222-1222 of any pesticide exposures for which assistance is needed in acute clinical management of the patient.

**Resources/Programs:** OPC staff is available for consultation and advice regarding clinical toxicology issues.

**Oregon Department of Transportation**

**Contact:** Will Lackey,  
Vegetation Management  
Coordinator, (503) 986-3010

Oregon Department  
of Transportation  
355 Capitol St. NE, MS 11  
Salem, OR 97301-3871

**Referral Criteria:** ODOT is notified of any pesticide-related incident that involves with Oregon’s state highway system.

**National Pesticide Information Center (NPIC)  
at Oregon State University**

A cooperative effort between OSU and the US EPA

Contact  
(800) 858-7378  
7:30 a.m. to 3:30 p.m. Pacific  
Time, Monday through Friday

Oregon State University  
333 Weniger Hall  
Corvallis, OR 97331  
[www.npic.orst.edu](http://www.npic.orst.edu)

**Referral Criteria:** NPIC is not notified about pesticide-related incidents unless incident managers/consultants need access to specific information or resources.

**Resources/Programs:** NPIC’s “user-friendly” scientists can communicate technical pesticide-related information to the general public, health care providers, and local, state and federal agencies. They help callers find assistance with emergency treatment, pesticide cleanup, disposal, and laboratory analysis. If an incident or question requires more technical expertise than the specialist can provide. OSU faculty are available for consultation.

**Oregon Institute of Occupational Health Sciences  
(formerly known as CROET)**

**Contact:** Fred Berman,  
Director, Toxicology  
Information Center,  
(503) 494-7366  
or (800) 457-8627

3181 SW Sam Jackson Park  
Road, L606  
Portland, OR 97239

**Referral Criteria:** The Institute would like to be contacted by anyone who has a need for scientifically based information relevant to the environmental, human and animal toxicology of pesticides.

**Resources/Programs:** The Institute is not notified about pesticide-related incidents unless incident managers/consultants use the Toxicology Information Center, a special-use library with access to a variety of occupational safety and health and environmental information resources, including those related to the use of pesticides. The Institute also has on staff a toxicologist and an industrial hygienist who are prepared to answer questions related to the use of chemicals (including pesticides) in the home and workplace.

## Appendix 2

### » PARC Contributing Factors (CFs) and Definitions

#### A) PARC Contributing Factors (CFs) and Definitions

Application /incident and exposure sites

This category is mutually exclusive; only one site may be coded.

##### 1. Private residence

1a. Single family home: Private, detached residence usually with front/back yards; driveway and attached carport or garage.

1b. Multi-unit housing (apartment): Housing structure containing more than one living unit for families or persons.

1c. Mobile home/trailer: A large trailer, fitted with parts for connection to utilities that can be installed on a relatively permanent site and that is used as a residence.

1d. Housing authority building: A housing development that is publicly funded and administered for low-income persons or families.

**2. School:** The buildings, other structures, playgrounds, athletic fields, and parking lots of a school and any other areas on the school property that are accessed by students on a regular basis.

##### 3. Institution

**3a. Nursing home/care facility:** A structure that serves as living quarters/care for the elderly or the chronically ill, and which is staffed and equipped to care for them.

**3b. Hospital:** A structure where medical, surgical, or psychiatric care and treatment for the sick or the injured takes place; this includes outpatient facilities.

**3c. Homeless shelter:** A structure that serves as a temporary residence for homeless people or emergency shelter for those in need.

**4. Hotel/motel:** A structure where the provision of paid lodging on a short-term basis takes place.

##### 5. Vehicle

**6. Forestry:** A site where the harvesting of trees and/or growing and tending of trees (silviculture) occurs as a commercial activity.

**7. Agricultural (e.g. farm, nursery):** A site where the growing of plants (excluding forestry) or raising of livestock for foodstuffs or other products takes place. This includes, but is not limited to: Christmas trees, fruit, grains, vegetables, dairy, poultry and egg, horses, cattle, game, fur production, worm, pet breeding, apiaries and aquaculture facilities. Included are nurseries and greenhouses.

**8. Commercial (e.g. office park, retail):** A site where activity is focused on, but not limited to mercantile exchange, including: retail settings, office parks, and service stations.

**9. Road, right-of-way, trail, Non-Ag:** A strip of land that is public land, private land, or has been granted through an easement or other mechanism, use for transportation purposes, such as a trail, driveway, rail line or highway.

##### 10. Public/municipal park

**11. Industrial (e.g. manufacturing):** A site where the main activity is the production or repair of tangible economic goods. This includes but not limited to: factories, chemical processing facilities, and machine shops.

**12. Golf course:** An outdoor series of linked grass fields, each consisting of a teeing ground, fairway, rough and other hazards, and a green with a flagstick (pin) and cup, all designed for the game of golf.

**13. Construction:** Site where structures are in the process of being made, including, but not limited to: houses, office parks, school, etc.

**14. Other:** Used when a site doesn't fit into any of the above categories

#### B) Data Sources for Incidents

This category is NOT mutually exclusive; there may be more than one source.

**1. OPC Fax:** A report from a Poison Control Center, usually Oregon Poison Center, which details the conversation between clinical staff & callers seeking advice (as recorded by the PCC staffer) on the medical management of an incident reported as pesticide poisoning.

**2. Reporter Interview with PEST:** A standardized report on the exposure pathway of a reported pesticide exposure, as described, by the person (or guardian) reporting exposure, to OHA's PEST Program staff.

**3. Official reports from PARC member agencies that pertain to the incident in question:**

3a. ODA Report

3b. OR OSHA Report

3c. ODF Report

3d. ODFW Report

3e. SFM Report

3f. DEQ Report

3g. OHSU/Dr. Berman

3h. Other

**4. Medical Record:** An electronic or paper compendium of a single patient's medical history and care across time.

4a. human

4b. animal, from a veterinarian

**5. Insufficient environmental data:** an agency did not conduct environmental sampling of application/exposure site.

**6. Environmental data sufficient for regulatory decision:** The results of agency-conducted environmental sampling was sufficient for agency decision-making.

**7. OERS Report:** A standardized report issued by the Oregon Emergency Response System regarding a reported pesticide release and/or exposure.

**8. News media:** online, newspapers, magazines, etc.

**9. No return call to PEST**

**10. ODOT:** Oregon Department of Transportation

**11. USFW:** United States Fish and Wildlife

**12. EPA Region 10**

**C) Intended Targets**

This category is mutually exclusive; there may be only one target.

**1. Bed bugs:** Used when the intended target of the pesticide application in question is the insect *Cimex lectularius*.

**2. Other indoor household insect pest:** household insect/arachnid pests - Used when the intended target of the pesticide application in question are insects (besides bedbugs) or spiders.

**3. Other indoor pest:** Used when the intended target of the pesticide application in question, is an indoor pest other than an insect or spider – e.g. mold, bacteria, mice, rats

**4. Vegetation/weed control:** Used when the intended target of the pesticide application in question is a weed or other undesired plant.

**5. Human:** Used when a pesticide product is applied to humans e.g. DEET mosquito repellent

**6. Outdoor pest control:** Used when the intended target of the pesticide application in questions is an outdoor pest e.g. moss/mold/insect/rodent/disease/etc

**7. Forestry:** Used when the intended target of the pesticide application in question is a tree(s) for silviculture/forestry purposes.

**8. Agriculture:** Used when the intended target of the pesticide application in question is a site where the growing of plants (excluding forestry) or raising of livestock for foodstuffs or other products takes place. This includes but is not limited to: Christmas trees, fruit, grains, vegetables, dairy, poultry and egg, horses, cattle, game, fur production, worm, pet breeding, apiaries and aquaculture facilities. Included are nurseries and greenhouses.

**9. Roadside/Right-of-Way:** Used when the intended target of the pesticide application in question is unwanted vegetation in and around a strip of land that is used for transportation purposes, such as a trail, driveway, rail line or highway.

**10. Community Application (Japanese beetle, gypsy moth):** Used when the intended target of the pesticide application in question is government-mandated eradication of invasive species or for public health purposes.

**11. Irrigation ditch:** Used when the intended target of the a pesticide application is either the water in an irrigation ditch or the vegetation in an irrigation ditch

**12. Non-native/invasive fish:** Used when the intended target of the pesticide application is an invasive fish/animal

**13. Vector e.g. mosquito/rodent:** Used when the intended target of the pesticide application in question may transmit a pathogen to a host

**14. Other**

**D) Application Factors**

This category is NOT mutually exclusive; there may be more than one application factor. Application factors are agency-verified.

**1. Spill/splash of liquid or dust (not involving application equipment failure):** The unintentional leak or spill of pesticide material from its container from any cause. The leak or spill could have occurred at the time of exposure or prior to the exposure.

**2. Application equipment failure:** Improper preparation, assembly, maintenance, or failure of application equipment. This code's appropriate for nozzles plugging, valves not tightened properly, spray lines splitting, o-ring failure, leaking backpack sprayers, or malfunctions such as fogger spraying to the side or aerosol can nozzle malfunctioning.

**3. Mixing of incompatible products:** e.g. bleach & ammonia

**4. Improper storage leading to release:** Pesticide stored contrary to label, leading either to spontaneous release or to environmental conditions causing release (e.g. storage of aerosols in heated vehicle).

**5. Label reportedly not read**

**6. Excessive application of pesticide:** Pesticide applied above the label rate and/or if an excessive number of products were used.

**7. Drift:** commercial-Agriculture-forestry-vector control - Movement of pesticides that were applied by an individual functioning in one of these occupational capacities, away from the treatment site. Pesticide spray, mist, or fumes are carried from the target site by air.

**8. Drift:** originating from application by resident - Movement of pesticides that were applied by a private resident, away from the treatment site. Pesticide spray, mist, or fumes are carried from the target site by air.

**9. Misapplication by homeowner, indoors.**

**10. Repeated incident/violation by applicator:** Factor attached to two or more incidents involving applications by the same individual.

**11. Misapplication by homeowner, outdoors.**

**12. Misapplication:** vector control operator

**13. Misapplication:** use of a cancelled product

**14. Misapplication pest control operator, indoors.**

**15. Intentional harm**

**16. Misapplication:** pest control operator, outdoors

**17. Misapplication:** Forestry operator

**18. Misapplication:** agricultural operator

**19. Misapplication by /Right of Way/non-Agriculture:** An application of a pesticide by an individual functioning in one of the specified capacities in a manner that contradicts either the label language for that pesticide or current agency regulations.

**20. Application by minor**

**21. Improper storage within reach of child:** Pesticide left in such a way that a reasonable adult concludes that a child was able to access it

**22. Gaseous release (from fumigant use):** Individual reporting exposure to gas because: A) of entry into treated area (no placarding; temperatures slowed; incorrectly gauged fumigation time; individual thought enough time had passed); B) the gas had moved through application structure (raceways, piping) or through tunnels and caused exposure; or C) failure to use prescribed PPE.

**23. Unlicensed applicator (when required):** Used when the applicator in question is neither licensed (as required) nor working under the supervision of a currently licensed applicator, as determined under current ODA regulations.

**24. Licensed applicator not properly trained/supervised:** In accordance with current agency regulations.

**25. Industrial accident**

**26. Impaired applicator:** Used when the incident in question reportedly took place because the applicator was under the chemical influence of the pesticide(s) in question

**27. Gaseous release (from fumigant deactivation):**

Individuals reporting fumigant exposure from A) unused fumigant remaining at site (not activated by application), and/or B) improper disposal of materials/equipment, which resulted in explosion.

**28. Illegal pesticide used/illegal dumping of pesticide:**

Used for incidents where the pesticide(s) in question was either used when not registered with ODA (and therefore, illegal for use in Oregon) or disposed of in a manner contrary to its label or ODA/ODF/DEQ regulation.

**29. Total release fogger used:** Sometimes called “bug bombs,” these are pesticide products designed to fill an area with insecticide and often are used in homes and workplaces to kill cockroaches, fleas, and flying insects.

**E) Exposure Factors**

This category is NOT mutually exclusive; there may be more than one exposure factor. Exposure factors may or may not be agency verified.

**1. Required Notification/posting lacking or ineffective:**

Applications for which verbal or written (and posted in conspicuous area) notification is required by label language for that pesticide or current agency regulations.

**2. People were in the treated area during application:**

Attached to incidents where people were present in an area under application likely led to the incident

**3. Inadequate ventilation of treated area before re-entry:**

Attached to incidents where inadequate ventilation of treated area is likely to have led to the symptoms reported by people who entered that area.

**4. Early re-entry:** Attached to incidents where people entered a treated area (without required PPE) before the passage of the Restricted Entry Interval (REI) stated on the label for the pesticide used.

**5. Contact with treated article:** For incidents reportedly involving physical contact with a treated item e.g. mosquito net treated with permethrin.

**6. Mixing & loading antecedents:** Attached to incidents where actions/activities done to prepare a pesticide for application or to load it into application equipment likely led to the incident

**7. Occupational exposure:** Used when the person reporting exposure in question was engaged in an on-the-job activity for which either she/he was earning a wage/salary or for a job that she/he was voluntarily performing.

**8. PPE Eye:** Used when the PPE specified is either not used (or not used correctly) as directed by the formulation’s label or current PARC agency regulation.

**9. PPE Gloves:** required gloves not worn/inadequate.

**10. PPE respirator:** required respirator not worn/inadequate.

**11. Performing an unauthorized activity.**

**12. PPE Other:** other PPE not worn/inadequate.

**13. Decontamination not adequate or timely:** Used when the exposure in question may have occurred because either the decontamination was as not as specified on the label or because too much time elapsed between exposure and when appropriate decontamination occurred.

**14. Exposure/symptoms:** When a person or the treating health care provider reports signs and/or symptoms that they attribute to the pesticide release in question.

**15. Label insufficient to protect public health or non-target health.**

**16. Chemical sensitivity**

**17. Inadvertent animal exposure:** Used when the animal exposure in question occurred to domestic pets (often dogs) or wildlife (often geese) that were NOT the intended target of the application.

**18. Veterinary product exposure:** Used when a person reports exposure to a pesticide formulation intended for use on animals.

**19. Vegetation symptom consistent with the formulation:** Used when ODA/ODF personnel report plant damage that is consistent with the effects of the pesticide in question.

**20. Off-site movement/odor reported.**

**21. Pediatric exposure of children < 6.**

**F) Other Factors**

This category is NOT mutually exclusive; there may be more than one ‘other’ factor.

**1. Neighbor-to-neighbor conflict:** Incident between two or more residential addresses involving (but not limited to) report of off-site movement of pesticide.

**2. Residential - Agricultural Interface:** Incident reportedly occurring where one party is an agricultural interest and the other a residential interest.

**3. Group exposure  $\geq 3$  or more people:** Used when three or more people report symptoms that they (or a health care provider) attribute to the same pesticide release or application.

**4. Residential - Forestry Interface:** Incident reportedly occurring where one party is an agricultural interest and the other a residential interest.

**5. Site with repeated reports of exposure/symptoms:** Address or geographic location where two or more PARC incidents have been reported.

**6. No public health department access to other ingredients, because of confidential business information:** Attached to incidents where the manufacturer of the pesticide formulation in question, citing confidential business information, refuses to provide the chemical make-up of that formulation's 'other ingredients' to the Oregon Health Authority.

**7. Medical treatment sought:** Used when a person reporting exposure is treated by (or reports seeking treatment from) a health care provider who's licensed by the State of Oregon to perform medical care.

**8. Pesticide poisoning diagnosed or suspected by HCP, but not reported, per OAR 333-018-0015 (mandatory reporting).**

**\*6. OR-OSHA Hazard Letter**

**7. ODA Letter of Advisement**

**8. No violations documented:** used for incidents where no PARC agency has found violations of the either pesticide label or the agency's regulations

\* Used when a PARC agency has issued this official regulatory action regarding the incident in question.

Incident notable because?

**1. Bumble bee death**

**2. Honey bee death**

**3. Multi-unit housing and notification lacking/not required**

**4. Worker Protection Standard-related**

**5. Unaware of PARC member agency's regulations**

**6. Aerial application**

**7. Other**

## G) Remedial Actions

Remedial actions are those taken by individual state agencies at the conclusion of their investigation. There may be more than one remedial action; they are NOT mutually exclusive.

**1. Referral to community-based mediation source**

**\*2. ODF Citation**

**\*3. ODA Citation**

**\*4. Agency Letter Ordering**

**\*5. OR-OSHA Citation**