

**2002 ANNUAL
PESTICIDE POISONING
SURVEILLANCE REPORT**

Pesticide Exposure Surveillance Program

Division of Health Protection
&
Environmental Health
Iowa Department of Public Health

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Table of Contents

Pesticide Exposure Surveillance Program Overview	3
Incident Report Sources	3
Pesticide Exposure Categories	4
Class of Pesticides	4
Products Named in the Reports by EPA Registration Number	5
Pesticide Exposures by Month	7
Gender & Age Comparison	8
Health Care for Exposures	9
Mode of Pesticide Exposure	10
Human Health Effects of Pesticide Exposures	10
Environmental and Geographic Location of Exposure	11
Counties Reporting Pesticide Exposures in 2002	12
Conclusions & Recommendations	13
Appendix A: Case Classification Definitions	14
Appendix B: County Map of Iowa Pesticide Exposures	15

**2002 Annual Pesticide Exposure
Surveillance Report: Iowa
January 1, 2002 through December 31, 2002**

The following is a report of the conditions or laboratory findings that yield evidence of reportable conditions of pesticide exposure as reportable to the Iowa Department of Public Health (IDPH) described in Iowa Administrative Code Rule 641.

Pesticide Exposure Surveillance Program Overview

The United States Government and the general public are concerned with adverse human health effects from exposures to pesticides. To address these concerns, the Pesticide Exposure Surveillance Program within the Division of Health Protection and Environmental Health of the Iowa Department of Health (IDPH) monitors, collects, and analyzes pesticide exposures in accordance with Iowa Administrative Code Rule 641. Information gathered by the surveillance program is disseminated to governmental agencies, the public, and health care professionals. IDPH submits its findings to the Iowa Department of Agriculture on an annual basis.

The goal of the Pesticide Exposure Surveillance Program is to reduce statewide morbidity and mortality experienced by employees, emergency responders, and the general public due to the release of pesticides. Another of the program's aims is to reduce the incidence of pesticide exposures and illnesses by educating the public about situations that may lead to exposures and subsequent adverse health effects. IDPH also strives to educate health care professionals about the importance of accurate, complete, and timely reporting of pesticide exposures.

Incident Report Sources

IDPH received reports from the following sources: the Iowa Statewide Poison Center, Department of Agriculture and Land Stewardship, county and private hospitals, county and city public health agencies, private physicians and/or clinics, laboratories, and media reports.

Pesticide Exposure Categories

During 2002 there were **155** pesticide exposure reports received by IDPH. Suspected pesticide exposures, 64 (42%) accounted for the largest number of pesticide exposure reports. Of the 155 pesticide exposure reports received by IDPH, 5 (3%) were from confirmed cases. Ten (6%) reports received by IDPH contained insufficient information. Categories of defined exposure from January 1-December 31, 2002 are listed in **Table 1.0**.

Table 1.0 Categories of Pesticide Exposure 2002

	<u>Total</u>	<u>Percent</u>
Confirmed Pesticide Exposures	5	3%
Probable Pesticide Exposures	28	18%
Possible Pesticide Exposures	48	31%
Suspect Pesticide Exposures	64	42%
Not a Case (Insufficient Information)	10	6%
Total 2002	155	100%

The terms used to describe the definitions of classifications (confirmed, probably, possible, suspect and asymptomatic, insufficient information, and unrelated) are described in **Appendix A**. These classifications are assigned definitions from the State of Oregon Pesticide and Analytical Response Center. See **Appendix A** for case definitions.

Class of Pesticides

Insecticides accounted for 93 (60%) of the pesticide exposure reports in 2002. Herbicides were named in 46 (36%) of the reports. Fungicides were 5 (3%) of the pesticide exposure reports. A total of 10 (6%) pesticide exposure reports were of an unknown origin. **Table 2.0** offers a complete breakdown of pesticide exposures by class in 2002. **Table 2.1** chronicles the products named in the pesticide exposure reports by EPA Registration Number.

Table 2.0 Class of Pesticide of Exposures 2002

	<u>Total</u>	<u>Percent</u>
Insecticide	93	60%
Herbicide	46	30%
Fungicide	5	3%
Rodenticide	1	1%
Unknown	10	6%
Total 2002	155	100%

Table 2.1 Pesticides Named in 2002 Pesticide Exposure Reports By EPA Registration Number

Of the 155 pesticide exposure reports received by IDPH, only 94 (61%) contained EPA Registration Numbers. The most commonly reported product in 2002 was Roundup® Concentrate Weed & Grass Killer Herbicide from Monsanto 12 (13 %). The second most commonly reported product was 2, 4-D® Herbicide 7 (7%).

Product Name	EPA Registration Number	Total 2002	Month of Exposure
2, 4-D®	228-139	8	May (4), June (3), Sept.
Acme All Round Dust for Fruit, Flowers & Vegetables	33955-393	1	July
Aquathol Granular Aquatic Herbicide from Elf Atochem	4581-201	1	June
Bicep® II from Ciba-Geigy	100-710	1	May
Capture® 2 EC Insecticide-Miticide	279-3069	4	April (2), May (2)
Carbamate Fungicide	299-388-AA	1	March
Crossbow™ Herbicide from Dow Agrosiences	62719-260	1	June
Cygon™ American Cyanamid Company	769-948	1	May
Cy-Kick Crack & Crevice® Pressurized Residual	499-470	1	Jan.
Daconil 2787 Flowable Herbicide	15724	1	April
Diazinon 4E (Indoor-Outdoor Insecticide)	28293-229-65525	2	Jan., July
Diazinon Ultra Insect Spray from Scotts Company	239-2643D	3	May, June, Aug.
Dimethenamide Technical from Sandoz	55947-141	1	May
Dual® II	100-712	1	April
Dursban	4-207	1	Sept.
Easy Gardener Deer & Rabbit Repellant with XP-20®	67527-00043-46420	1	April
Ecolab® isi 30	944-021-1667	1	April
Enforcer® Flea Spray for Homes	40849-53	1	Jan.
Force® 1.5G from Zeneca Agro	10182-130	1	May
Frontline® Plus for Dogs from Merial	65331-5	1	July
Hartz® 2 in 1 Flea Shampoo for Dogs	2596-22	1	Nov.
Hot Shot® Ant Killer Plus from United Industries	9688-79-8845	1	Sept.
Hot Shot® Complete Treatment Bug Killer from Spectrum Group	5748-77	1	June
Hot Shot® Fogger III Spectrum Group	478-126-8845	2	Aug., Dec.
Insect Fogger F-V-S from Pet Chemicals	11715-178-ZD-4758	1	June
Killzone® Ant & Roach Killer-Chase Products	498-127	1	May
Lorsban™ 4E	62719-220	1	Aug.
Mustang® 1.5 Insecticide from EMC	279-3126	1	May
Ortho® Bug-B-Gone Insect Killer from Scotts Company	239-2630	1	July

Product Name	EPA Registration Number	Total 2002	Month of Exposure
Ortho® Home Defense Indoor & Outdoor Insect Killer	239-2663	2	June, Sept.
Ortho® Hornet & Wasp Killer From Scotts Company (Discontinued in 2000)	239-2390-B	1	June
Ortho® Weed B Gon	239-2499	3	April, May (2)
Ovitrol® Plus ii	2724-471	1	May
Patrol Residual Insecticide from Micro International Chemicals	12310-27	2	July, Sept.
Prowl® 3.3 EC Herbicide from American Cyanamid	241-337	2	April, May
Pyrethrin	499-310	4	Jan. (1), May (2), June (1), Sept. (1)
Raid® Ant & Roach Killer	4822-126	1	April
Raid® Flea Killer Plus-Fogger	4822-229	2	Aug., Nov.
Raid® Flying Insect Fogger	4822-284	1	April
Raid® House & Garden Bug Killer (Aerosol)	4822-283	2	July, Sept.
Raid® Max Roach Killer 7 from SC Johnson	4822-518	1	Dec.
Roundup® Concentrate Weed & Grass Killer from Monsanto	71995-26	12	April, May (3), June (2), July, Aug. (2), Oct. (2), Dec.
Roundup® Weed & Grass Killer Ready to Use	71995-23	2	May, June
Scimitar® GC Insecticide form Zeneca (Discontinued 2000)	10182-400	1	Sept.
Select® 2 EC Herbicide from American Cyanamid	10182-004	1	June
Sergeants® Flea & Tick (Conagra Pet Products)	2517-67	1	March
Sevin® 5	8590-120	1	Sept.
Stinger® Herbicide	62719-73	1	May
Tempo® 20 WP Insecticide (Before 1992) from Bayer	3125-377	1	Jan.
Tempo® 0.01 % Dust Insecticide from Bayer	3125-429	2	July, Aug.
Tempo® SC Ultra from Bayer	3125-498	1	April
Tordon™ RTU from Dow Agricultural	464-510	2	Aug., Dec.
Touchdown® Herbicide from Zeneca Agro	10182-449	1	June
Treflan™ Herbicide from Dow Agricultural	1471-143	1	May
Warrior® T. Insecticide from Zeneca	10182-434	1	July
Weed & Feed from Chas. H. Lilly	802-588	1	June
Total		94/155	
		(61%)	

Note: Without record of the United States Environmental Protection Agency (EPA) registration number (required on the labels of chemical products) it is often difficult to know the exact agents implicated in the incidents reported in 2002. The reporters have indicated that this is often difficult to obtain because the packaging is often not available at the time of reporting. This EPA registration number was again requested from the reports as incident/exposure information for 2003.

Pesticide Exposures by Report Month 2002

During 2002 the most frequent number of exposures were reported during May. The fewest pesticide exposure reports were reported in February. On average, there were 13 pesticide exposures reported to IDPH a month. **Figure 3.0** provides a breakdown of pesticide exposures by month.

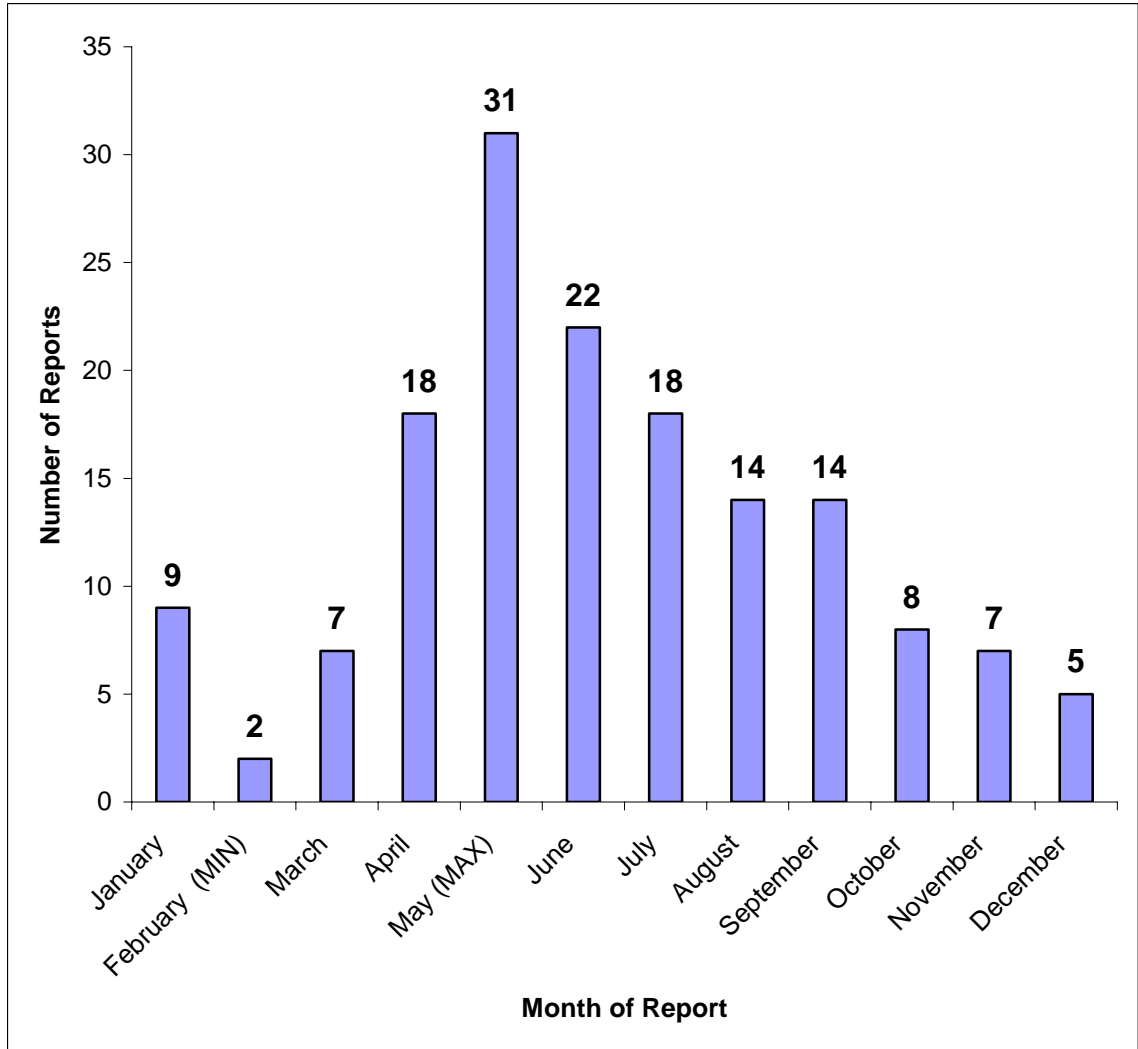


Figure 3.0 Pesticide Exposures by Report Month 2002

Gender/Age Comparisons of Exposure

The gender classification for exposure of investigated reports includes 86 (55%) males and 69 (45%) females. In general, males were more frequently reported as exposed to pesticide-related incidents than females, likely a result of occupational risks exposure for males aged 20-50 years of age. The mode age group was Unknown >20, 72 (46%). Exposures by range of age extend from 10 months to 77 years of age. The two most frequently reported age groups investigated for pesticide exposures were Unknown>20 and 0-2. **Table 4.0** details the range of age groups reported in 2002 on pesticide exposure reports.

Table 4.0 Gender/Age Comparisons of Pesticide Exposures 2002

<u>Age Group</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
0—2	11	9	20
3—6	8	5	13
7—11	1	3	4
12—19	4	2	6
20-30	4	6	10
31-50	8	10	18
51-64	6	2	8
65-75	2	1	3
76->86	0	1	1
Unknown >20	42	30	72
Total 2002	86	69	155
	55%	45%	100%

Health Care for Pesticide Exposure

Phone consultations accounted for 96 (62%) of the pesticide exposure reports. Emergency Rooms were 22 (14%) and hospitalization and doctor's office and clinic visits each accounted for approximately 12% of the health care for pesticide exposure sought by individuals. **Figure 5.0** illustrates the type of health care sought for pesticide exposures in 2002.

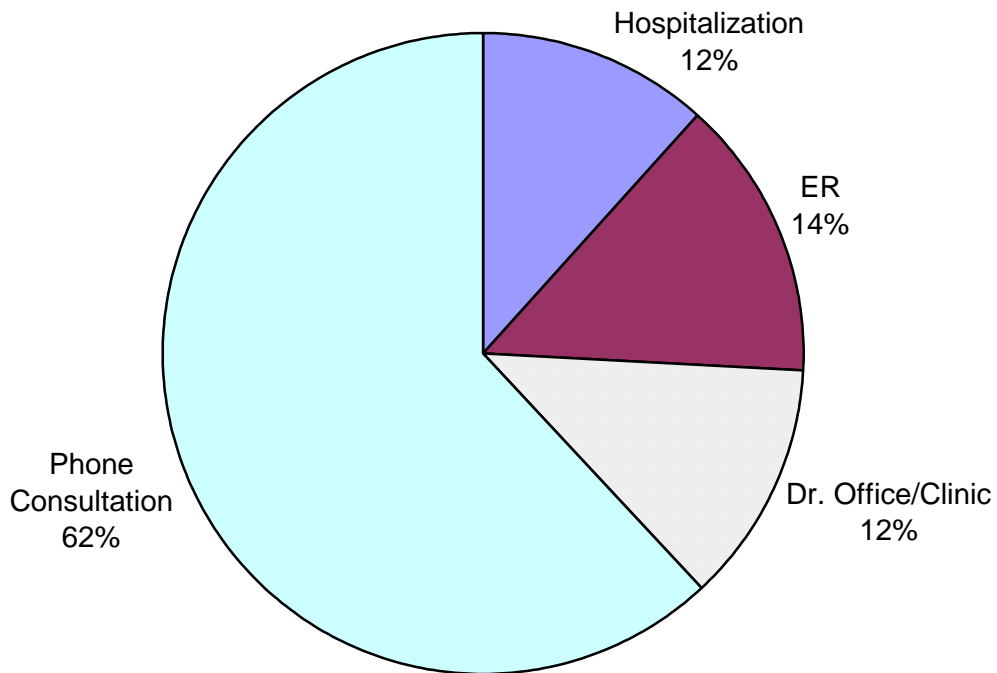


Figure 5.0 Health Care for Pesticide Exposure in 2002

Modes of Pesticide Exposure

Dermal exposures accounted for 103 (66%) of reports received by IDPH. The next most common mode of exposure was inhalation 40 (26%). Inhalation exposures accounted for 11 (7%) of the pesticide exposure reports. **Table 7.0** lists the modes of pesticide exposure in further detail.

Table 7.0 Mode of Pesticide Exposure 2002

	<u>Total</u>	<u>Percent</u>
Dermal	103	66%
Inhalation	40	26%
Ingestion	11	7%
Undetermined	1	1%
Total 2002	155	100%

Human Health Effects of Pesticide Exposure

The most common human health effect reported on the pesticide exposure reports in 2002 was eye irritation/skin irritation or rash 115 (65%). The next most common health effects were respiratory symptoms 33 (18%). **Table 6.0** gives a total breakdown of human health effects reported in 2002.

Table 6.0 Health Effects Symptoms Reported from Pesticide Exposures 2002

	<u>Total</u>	<u>Percent</u>
CNS	18	10%
Eye Irritation/Skin Irritation	115	65%
Respiratory Symptoms	33	18%
Ingestion/Nausea and Vomiting	12	7%
	178	100%

(Note: some pesticides have more than one symptom)

Note: The relationship between the reported exposure and illness was determined based on the known toxicology of the identified pesticide products, evidence from the health effects on the people by the investigative agencies, and information from reports.

Environmental and Geographic Location of Exposure

The home or in the immediate surrounding area of the residence (house, lawn, garage, and garden) accounted for 116 (75%) of the pesticide exposures in 2002. Twenty-four (15%) of the pesticide exposure reports in 2002 were related to farm occupations. Other occupations accounted for 24 (15%) of the pesticide exposure reports received by IDPH. See **Figure 8.0**.

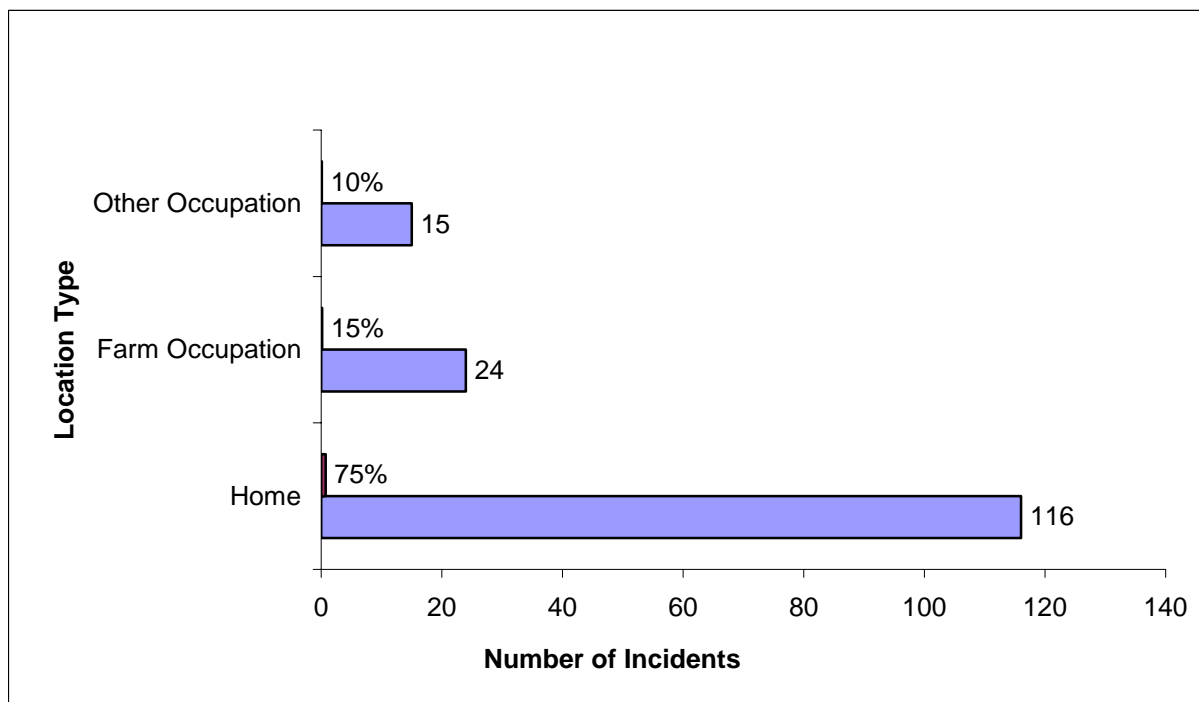


Figure 8.0 Location of Exposure

Counties Reporting Pesticide Exposures for 2002

The 155 reported pesticide exposures extended across Iowa's 99 counties. During 2002, 67 (77%) counties reported at least one pesticide exposure, whereas 32 (33%) counties reported no incidences of pesticide exposure. Polk County, a densely populated county, reported the most number of pesticide exposures at 19 (12 %). Story County reported 8 (5%), Blackhawk and Woodbury Counties each reported 7 (5%), and Linn County 6 (4%) of the pesticide exposure reports. In 3 (2%) reports the county of residence was unknown. **Table 9.0** lists reported pesticide exposures by county. See **Attachment B** for a map of 2002 Iowa pesticide exposures by county.

Table 9.0 Counties Reporting Pesticide Exposures for 2002

Number of Pesticide Exposure Reports	County
19	Polk
8	Story
7	Blackhawk & Woodbury
6	Linn
5	Johnson & Pottawattamie
4	Buena Vista
3	Carroll, Clayton, Dubuque, Iowa, Jasper, Lee, Marion & Wapello
2	Appanoose, Benton, Cass, Cerro Gordo, Clay, Clinton, Des Moines, Dickinson, Hardin, Henry, Keokuk, Mahaska, Muscatine, Plymouth, Scott & Webster
1	Allamakee, Audubon, Boone, Bremer, Buchanan, Butler, Cedar, Cherokee, Clarke, Crawford, Dallas, Davis, Fayette, Fremont, Greene, Grundy, Guthrie, Humboldt, Ida, Jackson, Jefferson, Louisa, Lyon, Marshall, Mills, O'Brien, Poweshiek, Ringgold, Sac, Sioux, Tama, Union, Van Buren, Winnebago & Worth
0	Adair, Adams, Calhoun, Chickasaw, Decatur, Delaware, Emmet, Floyd, Franklin, Hamilton, Hancock, Harrison, Howard, Jones, Kossuth, Lucas, Madison, Mitchell, Monona, Monroe, Montgomery, Osceola, Page, Palo Alto, Pocahontas, Shelby, Taylor, Warren, Washington, Wayne, Winneshiek & Wright

Conclusions & Recommendations

The vast majority of the reported pesticide exposures in 2002 were related to insecticides and herbicides. The highest incidence of pesticide exposures occurred during the late spring and early summer months. In addition, 75% of the pesticide exposures were more likely to happen in the home or in the immediate areas surrounding the residence (ex: lawn, garden, garage, or garden). Agricultural and Occupational pesticide exposures occurred in the other 25%. The 2002 annual report also highlights the fact the most people seek phone consultations and do not seek medical attention for pesticide exposures.

In the future, more needs to be done to protect the public from pesticide exposures. Firstly, educating the public about correct pesticide usage is paramount due to the fact that 75% of pesticide exposures occur in the home. This education component should include a media and social marketing campaign to dissemination to the public. To further this objective, IDPH is currently in the process of designing and distributing an informational brochures about pesticide exposures to health care professionals and the general public to help educate a greater number of Iowans about the proper usage of pesticides.

Secondly, IDPH proposes developing a pesticide exposure report form for more accurate, complete, and timely reports. This will help reduce the number of reports received by IDPH that do not contain demographic information or the pesticide's EPA Registration Number. A new emphasis on reporting will also encourage health care professionals to report all pesticide exposures to IDPH, as required by Iowa Administrative Code Rule 641.

Appendix A: Case Classification Definitions

Note: Adapted and Lifted from the State of Oregon Pesticide and Analytical Response Center

The following terms are used to describe the evaluation of the casual relationship between the reported exposure event and any illness. The determination is based upon objective evidence of the presence of pesticides and the known toxicology of the identified active ingredients (commonly accepted symptoms and temporal relationship).

Confirmed:	Illness definitely caused by reported pesticide exposure; requires positive biological or environmental tests.
Probable:	Illness likely caused by reported exposure; objective evidence of exposure and symptoms that convincingly fit reported exposure.
Possible:	Illness may be caused by reported exposure; symptoms generally consistent with identified product(s); exposure scenario possible, objective evidence inconclusive.
Suspect:	Relationship between reported exposure and illness uncertain; evidence and symptoms are subjective and inconclusive, but pesticides cannot be ruled out.
Asymptomatic:	No illness or injury reported (e.g., exposed individual never was ill because of prompt decontamination).
Unrelated:	Reported illness not related to reported exposure; other cause found for symptoms, the reported exposure scenario, or symptoms do not plausibly fit with what is known about the pesticide(s) or with their use in the area.
Insufficient Information:	Inadequate information to classify in any of the above categories (e.g., report received too long after the event for reliable testing or investigation).

Appendix B:
County Map of 2002 Iowa Pesticide Exposures

