

Work-related Pesticide Exposures, 2006-2011

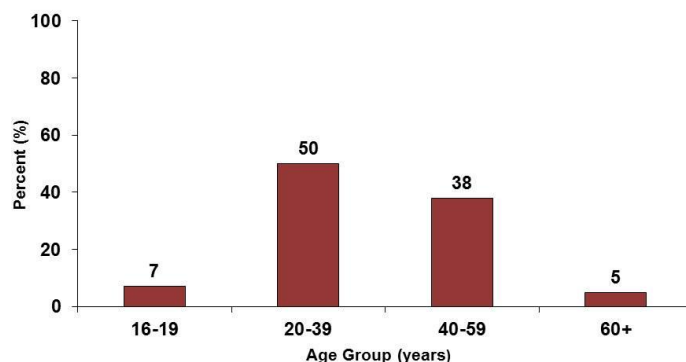
Pesticides are among the few chemicals produced that are specifically designed to kill and cause harm. They are used throughout the world to produce food, fiber, and forest products by controlling pests and diseases, and to regulate plant growth. In the U.S., approximately one billion pounds of pesticide active ingredients are used annually. Although pesticides are generally used for beneficial reasons, improper use can cause much unintentional harm to people, including injury, illness, and death.¹ Exposure to pesticides can lead to both short- and long-term health effects. Chronic exposures can increase the risk of developing chronic diseases such as prostate cancer, asthma, and Parkinson's Disease.² Workers who handle pesticides, such as farmworkers, fumigators, and pesticide applicators are at greatest risk for exposure. The Environmental Protection Agency (EPA) estimates that 20,000-40,000 work-related pesticide poisonings occur each year.¹ Pesticide exposures are of major concern in Georgia, particularly with agriculture being the main driver of the state's economy, contributing over \$65 billion annually to the state's \$786.5 billion economy.³ In 2012, there were 42,257 farms in Georgia with an average size of 228 acres.⁴

The number of acute work-related pesticide-associated illnesses and injuries reported to poison control centers is one of the occupational health indicators for fundamental occupational health surveillance recommended by the National Institutes for Occupational Health and Safety (NIOSH) and the Council of State and Territorial Epidemiologists (CSTE). Data for work-related pesticide poisonings occurring in Georgia during 2006-2011 were obtained from the American Association of Poison Control Centers (AAPCC) and the Georgia Poison Center (GPC). Pesticides included disinfectants, fungicides, fumigants, herbicides, insecticides, repellents, and rodenticides. Cases of illness or injury were considered work-related if the exposure reason was listed as occupational or the exposure site was at the workplace. Persons less than 16 years of age were excluded as well as persons who were not Georgia residents or had no known effect from the exposure. Cases in which the exposure reason was intentional or malicious were also excluded. Poison control centers capture only a small proportion of occupational pesticide-related illness cases, an estimated 10%; therefore, data presented here are underestimates of the true number of exposures.

This data summary characterizes work-related pesticide-associated illnesses and injuries reported in Georgia during 2006-2011.

- There were a total of 9,711 pesticide poisoning exposures (about 1,600 annually) among persons aged 16 years and older reported to the Georgia Poison Center (GPC) during 2006-2011
- Half of work-related pesticide poisonings were among males ages 20-39 years (Figure 1)

Figure 1. Percent of Work-Related Pesticide Poisonings Reported to Georgia Poison Center by Age Group, 2006-2011



Source: Georgia Poison Center (GPC) Data
*Cases with age unknown were excluded from analysis

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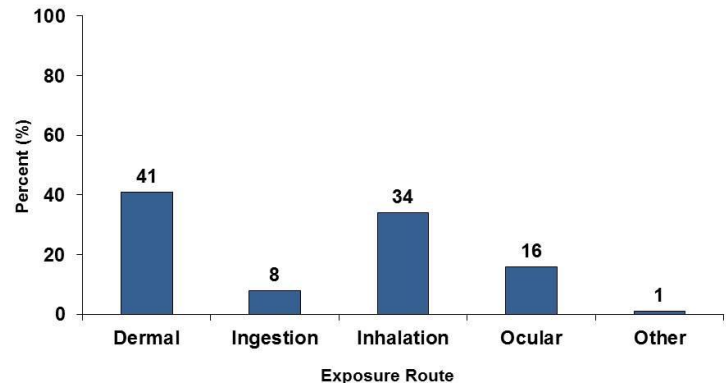
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- About 783 work-related pesticide poisoning exposures were reported in Georgia during 2006-2011, an average of 130 pesticide poisonings per year
- The majority (64%) of work-related pesticide poisonings occurred among males
- The most common routes of exposure for work-related pesticide poisoning were dermal (41%) and inhalation (34%) (Figure 2)
- The most common exposure effect or symptom reported was eye irritation/pain (n = 99), followed by dermal irritation/pain (n = 78), and coughing/choking (n = 51) (Table 1)

Figure 2. Percent of Work-Related Pesticide Poisonings Reported to Georgia Poison Center by Route of Exposure, 2006-2011



Source: Georgia Poison Center (GPC) Data
*Cases with route unknown were excluded from analysis

Table 1. Most Common Exposure Effects Reported, Work-Related Pesticide Exposures, Georgia, 2006-2011

Exposure Effects	Number Workers Reported
1. Ocular Irritation/Pain	99
2. Dermal Irritation/Pain	78
3. Cough/Choke	51
4. Nausea	34
5. Erythema/Flushed	32
6. Throat Irritation	30
7. Headache	26
8. Difficulty breathing	24
9. Vomiting	23
10. Red Eye/Conjunctivitis	21

Source: Georgia Poison Center (GPC) Data
*Exposure effects reported are not mutually exclusive

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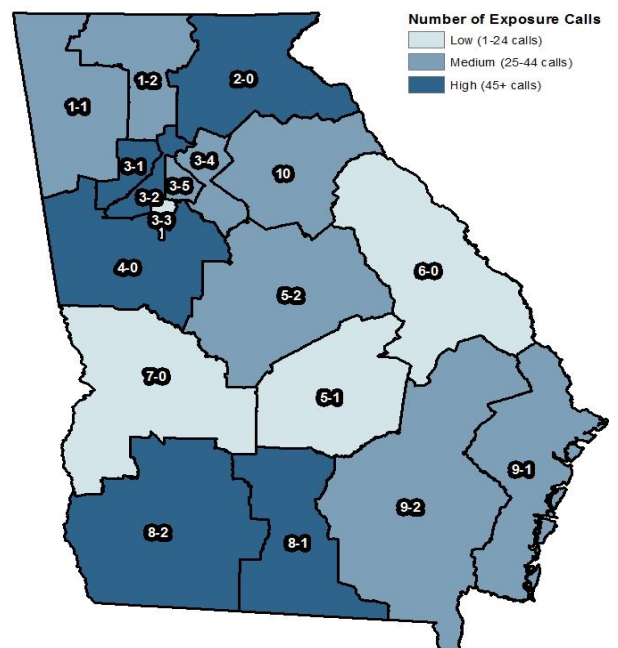
Table 2. Most Common Substances Reported, Work-Related Pesticide Exposures, Georgia, 2006-2011

Substance	Category	Number workers exposed	% of total cases
1. Disinfectant industrial cleaner	Disinfectant	114	15.7
2. Pyrethroid	Insecticide	100	13.8
3. Hypochlorite disinfectant	Disinfectant	94	12.9
4. Unknown insecticide/pesticide	Insecticide	46	6.7
5. Other/unknown disinfectant	Disinfectant	38	5.2
6. Organophosphate	Insecticide	33	4.5
7. Carbamate	Insecticide	29	4.0
8. Pyrethrin	Insecticide	26	3.6
9. Chlorine water/shock treatment	Disinfectant	26	3.6
10. Paraquat/diquat combination	Herbicide	24	3.3
11. Unknown mothball or moth repellent	Repellent	24	3.3

Source: Georgia Poison Center (GPC) Data

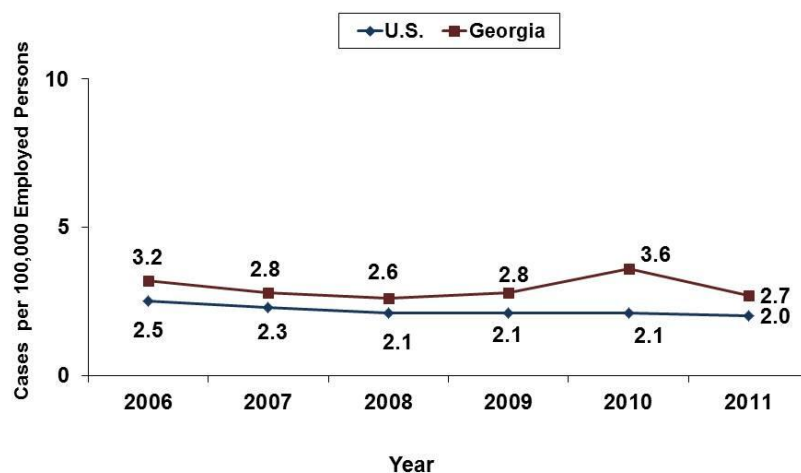
- Disinfectant industrial cleaners, pyrethroids, and hypochlorite disinfectants were the three most commonly-reported pesticide substances in which ill workers were exposed (Table 2)
- The number of pesticide poisoning exposures reported were highest in five Public Health Districts: 2-0 North, 3-1 Cobb-Douglas, 3-2 Fulton, 4-0 LaGrange, 8-1 South, and 8-2 Southwest (see Map)
- Disinfectant industrial cleaners were the most common pesticide substances involved in work-related poisonings in north Georgia and metro Atlanta, while in south Georgia, the most common substances were pyrethroids

Work-related Pesticide Poisonings Reported to Georgia Poison Center, by Public Health District, 2006-2011



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Figure 3. Annual incidence rate of reported pesticide poisonings, Georgia and U.S., 2006-2011



Source: American Association of Poison Control Centers

- The annual incidence rate of work-related pesticide poisonings in Georgia declined from 3.2 per 100,000 employed persons in 2006 to 2.7 per 100,000 in 2011 (Figure 3)
- Georgia's rate of reported work-related pesticide poisonings was slightly higher than the U.S. rate during 2006-2011
- In 2010, Georgia had the 9th highest incidence rate of reported work-related pesticide poisonings in the nation
- Georgia had the 18th highest incidence rate of reported work-related pesticide poisonings in the nation during 2011 (Table 3)

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Table 3. Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers, 2011

Rank	State	Employed Persons ¹	Cases ²	Rates ³
1	Wyoming	0.29	16	5.52
2	New Mexico	0.86	45	5.24
3	South Dakota	0.42	18	4.28
4	North Dakota	0.38	16	4.24
5	Iowa	1.57	66	4.20
6	Oregon	1.82	73	4.02
7	Utah	1.24	46	3.70
8	Kentucky	1.86	67	3.60
9	Idaho	0.70	25	3.56
10	Nebraska	0.96	34	3.53
11	Alaska	0.34	12	3.51
12	Oklahoma	1.66	56	3.38
13	Arkansas	1.25	40	3.21
14	Montana	0.47	14	3.00
15	Washington	3.13	91	2.91
16	Maine	0.64	18	2.80
17	Alabama	2.01	55	2.74
18	Georgia	4.26	116	2.72
19	North Carolina	4.15	112	2.70
20	Hawaii	0.62	16	2.58
21	West Virginia	0.74	19	2.56
22	Missouri	2.81	71	2.52
23	South Carolina	1.94	49	2.52
24	Minnesota	2.76	68	2.46
25	Louisiana	1.84	45	2.45

Source: American Association of Poison Control Centers

¹Number of employed persons age 16 and older, in millions

²Annual number of incident cases

³Annual incidence rate per 100,000 employed persons age 16 years or older

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For questions or concerns about pesticide poisonings or exposures contact the Georgia Poison Center at: <http://www.georgiapoisoncenter.org/>.

More information about occupational pesticide injury and illness surveillance can be found at: <http://www.cdc.gov/niosh/topics/pesticides/>.

More information about Georgia Occupational Health Surveillance can be found at: <http://dph.georgia.gov/georgia-occupational-health-and-safety-surveillance-program>.

References

1. Centers for Disease Control and Prevention (October 2005). Pesticide-Related Illness and Injury Surveillance: A How-to Guide for State-based Programs. Cincinnati: NIOSH, Publication Number: 2006-102.
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