

ACUTE PESTICIDE-RELATED ILLNESS AND INJURY

Information for Providers in North Carolina

WHAT TO REPORT

Pesticides are widely used in both occupational and non-occupational settings. While they have many useful functions, they also have the potential to cause [acute](#) and [chronic](#) adverse health effects.

Pesticide exposure and related illness and injury represent a significant public health concern in North Carolina. Populations vulnerable to exposure include **children** and **outdoor workers in the agricultural sector**, such as pesticide applicators and migrant farmworkers.

The North Carolina Division of Public Health conducts surveillance of acute pesticide-related illness and injury cases, which are **legally reportable** in North Carolina.

North Carolina [10A NCAC 41F.0101 - .0103](#) requires physicians to report any confirmed or suspected cases of acute pesticide-related illness and injury. Physician assistants, nurse practitioners, and other medical professionals are also encouraged to report.

Symptoms of acute pesticide-related illness or injury may include:



respiratory



gastrointestinal



neurological



and cardiovascular symptoms.

Acute injury may also present as:



irritation of the skin or



injury to the eye.

Severe cases may result in hospitalization or death.

HOW TO REPORT

- If a pesticide poisoning is suspected, call North Carolina Poison Control at **1-800-222-1222** or complete the reporting form to share information directly with NCDHHS — <https://survey.dph.ncdhhs.gov/surveys/?s=A4JCN3ECEC>
- Cases must be **reported immediately** if conditions result in **death**.
- Otherwise, reports should be made **within 48 hours** of diagnosis.
- Report **patient information**, **product name**, and **EPA registration number**, if possible.



Successful reporting ensures accurate, complete data on acute pesticide-related illness and injury in North Carolina. This data, in turn, is used to inform public health action and [EPA risk assessments](#) aimed at preventing pesticide poisonings, updating safety measures for handling pesticides, reducing health disparities, and protecting the health of those who live and work in our state.

Most acute pesticide-related illness and injury reports and cases for 2017-2021 were non-occupational (1212 of 1346 cases).

What pesticides were used? (N=979)*	<ul style="list-style-type: none"> • Insecticides (68.5%) • Herbicides/algicides (9.0%) • Insect repellent (8.3%) 	Children <12 years old accounted for 14.8% of non-occupational cases (N=1208). Children are particularly vulnerable to acute pesticide poisoning due to behavioral factors and a higher body burden of pesticide chemicals. Particular attention should be paid to pesticide use and storage in proximity to children.
Where were they used? (N=630)	<ul style="list-style-type: none"> • Applied to building surfaces or structures (45.1%) • Applied to skin and/or hair and clothing (14.6%) 	
How were they applied? (N=871)	<ul style="list-style-type: none"> • Pressurized cans (31.1%) • Manual placement (21.4%) • Total release foggers or aerosol bombs (17.3%) 	
*Some individuals were exposed to more than one type of pesticide. Pesticide type was unknown for 269 (21.6%) pesticides associated with non-occupational cases.		

There were 129 occupational cases over the 2017-2021 period. Most of these cases occurred among adult males aged 20-69 (72.4%, N=97).

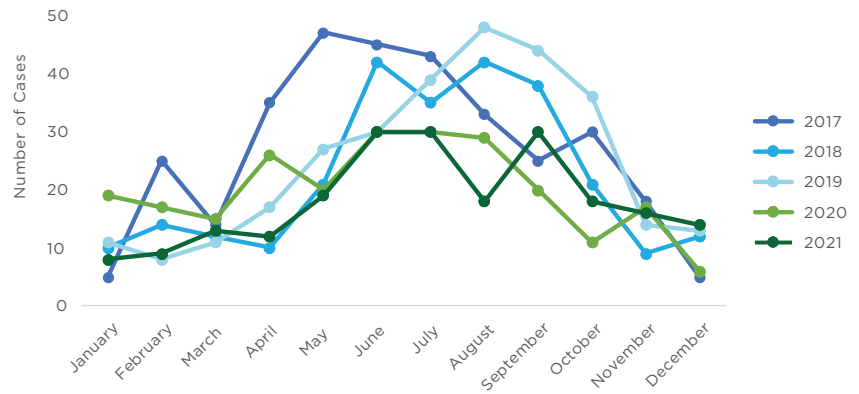
What types of workers were most at risk? (N=107)	<ul style="list-style-type: none"> • Building and grounds cleaning and maintenance (47.7%) • Farming, fishing, and forestry (11.2%)
What types of pesticides were involved? (N=116)	<ul style="list-style-type: none"> • Insecticides (45.7%) • Herbicides/algicides (34.5%)
What factors contributed to exposure? (N=152)*	<ul style="list-style-type: none"> • Inadequate PPE or PPE not being worn (28.3%) • Spilling or splashing of liquid or dust (17.8%) • Inadequate or untimely decontamination (11.8%)
*Some individuals had more than one contributing factor. Factors contributing to exposure were unknown for 31 (16.9%) occupational cases.	

Among occupational cases reporting their ethnicity, **21.2% described their ethnicity as Hispanic**. Comparatively, 10.2% of the general population of North Carolina identifies as [Hispanic or Latino](#). This, in combination with results showing a relatively high proportion of cases work in agriculture (11.2%, N=116), suggests disproportionate incidence of acute pesticide poisoning among **farmworkers**, a population known to be vulnerable to pesticide exposure and related illness and injury. These statistics are likely underestimates, as [underreporting](#) is a known issue among this population due to barriers to care including cost, lack of insurance, transportation challenges, frequent relocation, and fear of loss of employment. Thus, pesticide-related illness and injury represents a significant **health equity issue** in our state.

IMPACTS OF THE COVID-19 PANDEMIC

Surveillance data for 2017-2021 illustrated a decline in pesticide-related illness and injury reports in 2020 and 2021, which can likely be attributed to the COVID-19 pandemic. **Case counts were approximately 33% lower in 2021 compared to 2017.** This reveals a need for renewed reporting of reportable

conditions such as acute pesticide-related illness and injury to pre-pandemic levels and suggests room for improvement in reporting during future public health emergencies.

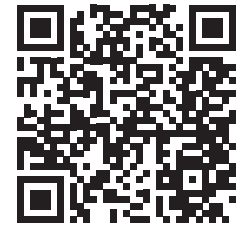


INCREASING RATES OF DIAGNOSIS

Misdiagnosis is also common as acute pesticide-related illness and injury symptoms are often similar to those of other illnesses such as [heat-related illness](#) or [green tobacco sickness](#). Promoting training among health care providers to improve diagnosis of environmental and occupational health issues may increase rates and accuracy of reporting.

ACTION ITEMS FOR PROVIDERS

- Report suspected pesticide poisonings to the **North Carolina Poison Control at 1-800-222-1222**, scan the QR code, or visit <https://survey.dph.ncdhhs.gov/surveys/?s=A4JCN3ECEC> to report.
- Ask patients with associated symptoms questions about chemicals used, especially during the late spring, summer, and early fall months
- Ask patients about occupation and industry to evaluate possible pesticide exposures
- Improve awareness and diagnosis of environmental and occupational health issues among healthcare professionals through training
- Inform patients or families that they can report suspected pesticide violations to the NC Department of Agriculture & Consumer Services, Structural Pest Control and Pesticide Division, (919) 733-3556.



For additional information, visit: <https://epi.dph.ncdhhs.gov/oe/pest/surv.html>



For assistance managing exposures to hazardous substances, please call North Carolina Poison Control:

1-800-222-1222

In case of a life threatening emergency,
dial 9-1-1 immediately.

