Data Brief: Poisonings from Pesticides & Antimicrobial Cleaners

NOVEMBER 2021

Abstract

This pesticide data represents reports of poisoning to the Minnesota Poison Control Center (MPCC) for the years 2019, 2020, and from January through May 1, 2021 from the Toxic Exposure Surveillance System (TESS).

The household cleaning data represents reports of poisoning to the Minnesota Poison Control Center (MPCC) for the years 2019, 2020, and from January through June 30, 2021 from the Toxic Exposure Surveillance System (TESS).

Background

Pesticides include natural and man-made substances such as insecticides, herbicides, fungicides, disinfectants, and rodenticides. They are used to help control, destroy, and repel destructive pests such as insects, weeds, plant disease organisms, germs, and rodents; however, many of these substances are also toxic to people. Responsible management of both pests and pesticides is essential to public health, safety, and environmental protection.

Per the United State Environmental Protection Agency (EPA), products used to kill viruses and bacteria ***on surfaces*** are registered as antimicrobial pesticides (https://www.epa.gov/pesticide-registration/what-are-antimicrobial-pesticides). Sanitizers and disinfectants are two types of antimicrobial pesticides. The Food and Drug Administration (FDA) regulates hand sanitizers, antiseptic washes, and antibacterial soaps for use ***on people***.

Pesticides require special care and handling. For example, training of pesticide applicators includes training for applying antimicrobial pesticides (including those registered by the EPA), provided to workers who mitigate indoor mold, and work on HVAC issues and cooling towers to prevent microbial growth.

The purpose of this data is to take a brief look at both pesticide poisonings and household cleaner poisonings that have occurred in Minnesota over 2.5 years, as a consideration for the continued need for special training for antimicrobial pesticide applicators and the need for education and outreach activities.

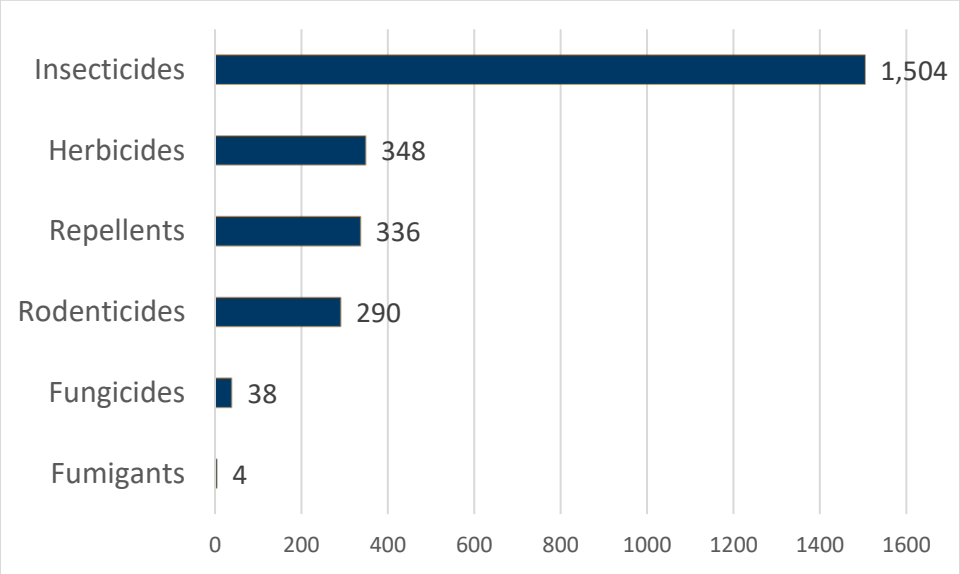
Methods

This data was requested from the Minnesota Poison Control Center (MPCC) in May of 2021, for the period from January 1, 2019 to May of 2021, the date of the request. It includes all calls received around pesticides and household cleaners.

Pesticide exposures

Note: Occupationally-related exposures are gleaned from file notes—there is no formal documentation of these exposures.

Pesticide type and number of exposures



There were a total of 2,520 exposures to pesticides reported to MPCC for 2019 (1,207), 2020 (1,119), and the first four months of 2021 (194).

Occupational-related calls comprised 4.1% (103 cases) of all exposures and numbers of calls decreased over time (2019=55 cases; 2020= 42 cases; and through May 1 of 2021, six cases).

Fungicide poisonings comprised 38 of the overall calls and four calls were related to fumigant exposures.

Calls about insecticide poisoning were the most common, at 1,504 insecticide-related calls. The greatest number within the insecticide category were 492 calls from the borate/boric acid type of insecticide, followed by:

430 Pyrethroid

272 “other” including insect growth regulators, molluscicides, and nematicides

130 Pyrethrin

Of the 2,520 total pesticide exposures reported to MPCC for this timeframe,

<1% of these exposures resulted in adverse reactions

15.71% of these cases were treated in a health care facility

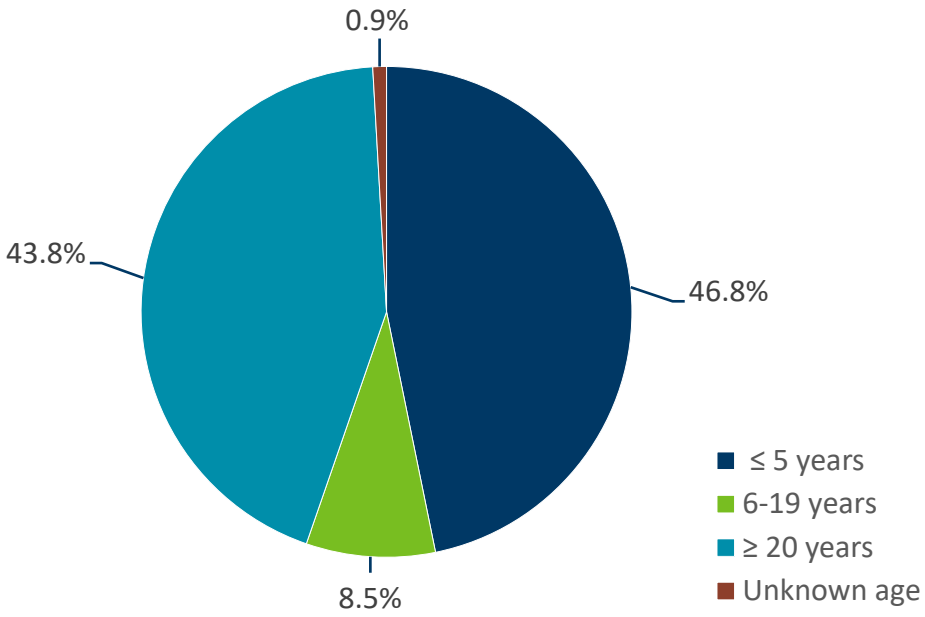
94.8% exposures were unintentional

3% were intentional

1.2% were “other” intention*

**Note that "other intention" refers to categories like adverse reaction, contamination/tampering, malicious intentions, or instances when the story is so vague that the pharmacist couldn't find a category for it.*

Most pesticide exposures occur in young children and in adults



For many of the calls to MPCC, the end effects remain "unknown." However, while there were no known deaths resulting from these exposures called into MPCC during this timeframe, **2.38% or 60 cases resulted in moderate or major effects.**

Most effect levels for pesticide exposures are "unknown"

Effect levels	Percentage
No effect	12.02%
Minor effect	17.54%
Moderate effect	2.06%
Major effect	0.32%
unknown	68.06%

Household cleaner exposures

Exposures to household cleaning products accounted for 8,340 exposure-related calls to MPCC for the time period of 2019, 2020, and part of 2021 (at 6 mo).

Of the 8,340 total household cleaner exposures reported to MPCC for this timeframe:

0.36% of these exposures resulted in adverse reactions

19.45% of these cases were treated in a health care facility

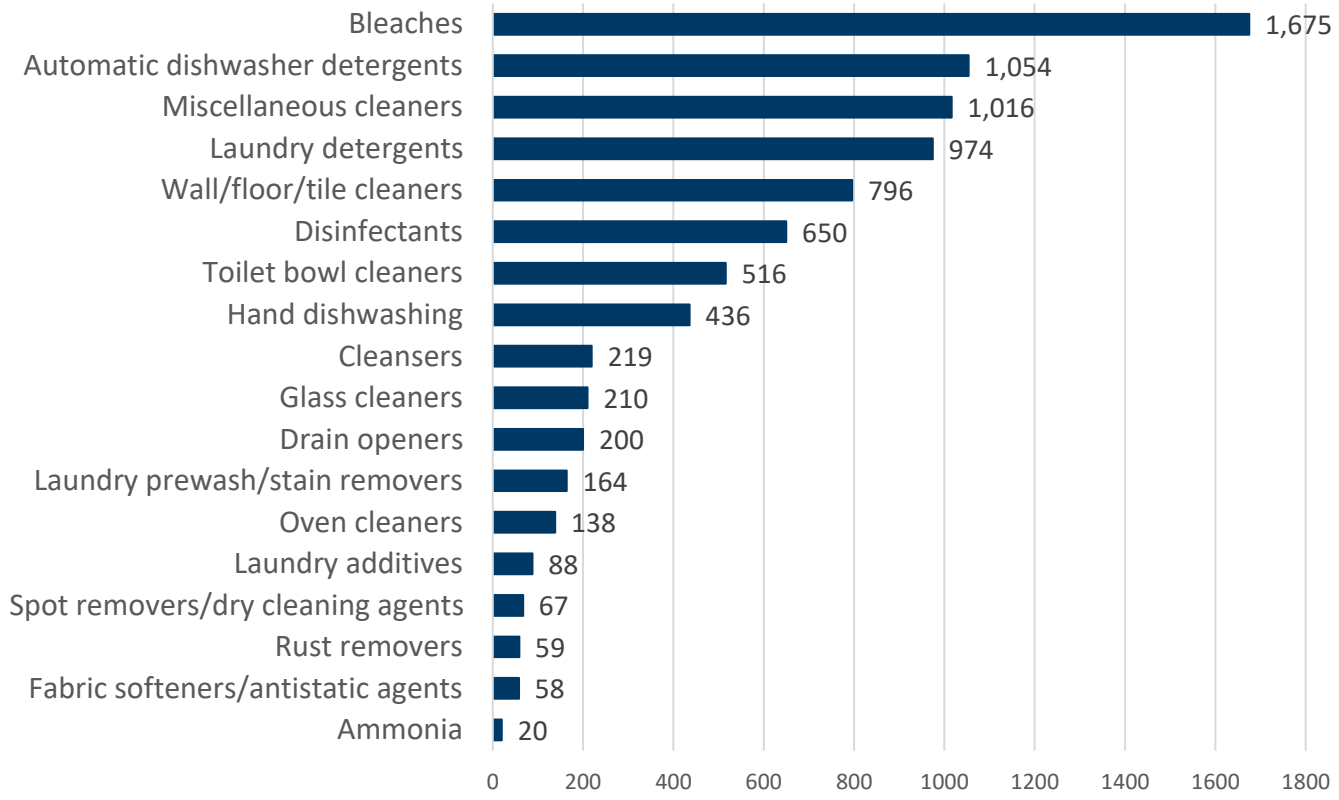
91.6% exposures were unintentional

6.9% were intentional

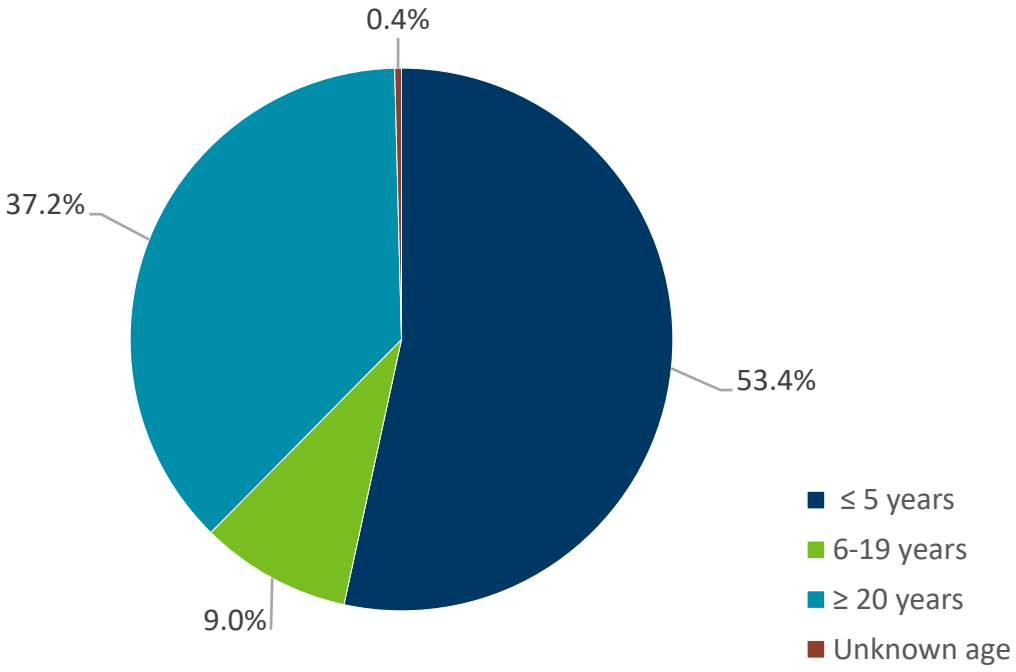
1.0% were “other” intention

0.5% “unknown” intention

Household products and exposures 2019- May 2021



Most pesticide exposures to household cleaning products occur in children ages 5 and under



Most effect levels for household cleaning product exposures are "unknown"

Effect levels	Number	Percentage
No effect	856	10.26%
Minor effect	2482	29.76%
Moderate effect	249	2.99%
Major effect	27	0.32%
Deaths	5	0.06%
unknown	4721	56.61%

Household Cleaning Exposures

8,340 exposures reported to MPCS 2019 (3,193), 2020 (3,577), and 6 months of 2021 (1,570).

1,675 Bleaches

1,054 Automatic dishwasher

1,016 Miscellaneous cleaners

974 Laundry detergents

5 deaths

1 Alkali drain opener

1 Granular laundry detergent

1 Liquid laundry detergent

2 alkali miscellaneous cleaners

Data

Recommendations

The University of Minnesota Extension Service provides education for anyone who use pesticides at home, on farms, in buildings, and managing natural resources and landscapes.

The goal of Category I training[1] is to balance industry standards, pesticide regulations, and ultimately, public and environmental health practices designed to protect applicators, users of buildings and others.

Acknowledgements

A special “thanks” to the Minnesota Poison Control Center (MPCC) whose staff provides poison exposure assessment and management techniques to the public and to health care professionals from across the state. MPCC provides various programs designed to promote awareness and prevention of unintentional and intentional exposures; and to improve patient management to those exposures. These programs range from children’s safety camp participation for the public to lectures for health care professionals.

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References

Antimicrobial Pesticides, Category I, Pesticide Applicator Safety Education Manual: 2010 : Indoor mold, HVAC, and cooling towers;

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