

What Do Pesticides Have To Do With COVID-19?

Wednesday, January 27, 2021 at 4:00 pm ET



National Nurse-Led Care Consortium

The **National Nurse-Led Care Consortium (NNCC)** is a membership organization that supports nurse-led care and nurses at the front lines of care.

NNCC provides expertise to support comprehensive, community-based primary care and public health nursing.

- Policy research and advocacy
- Program development and management
- Technical assistance and support
- Direct, nurse-led healthcare services

Speakers

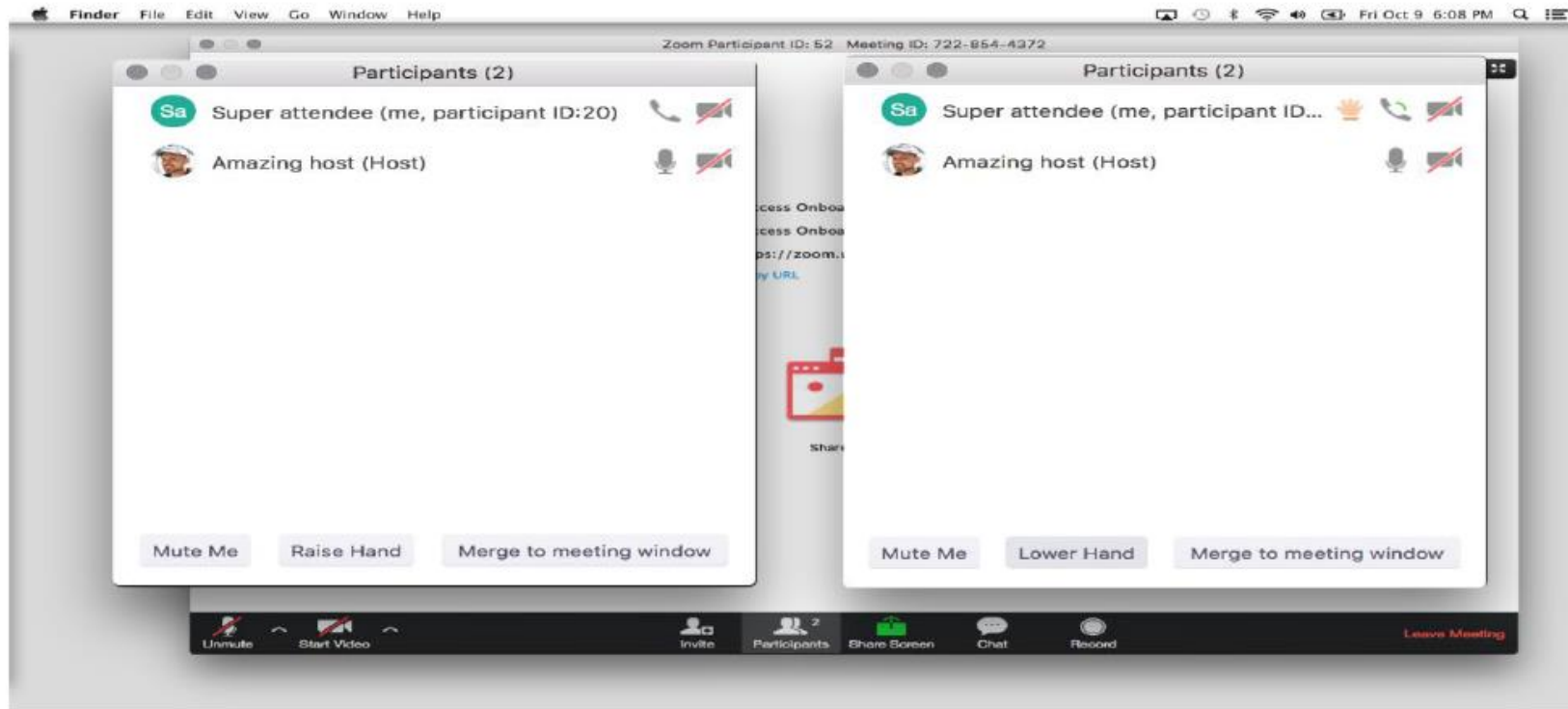


Moderator
Jillian Bird, MSN, RN
Nurse Training Manager
National Nurse-Led Care Consortium



Presenter
Diana Simmes
Pesticide Medical Education Director
PERC-med

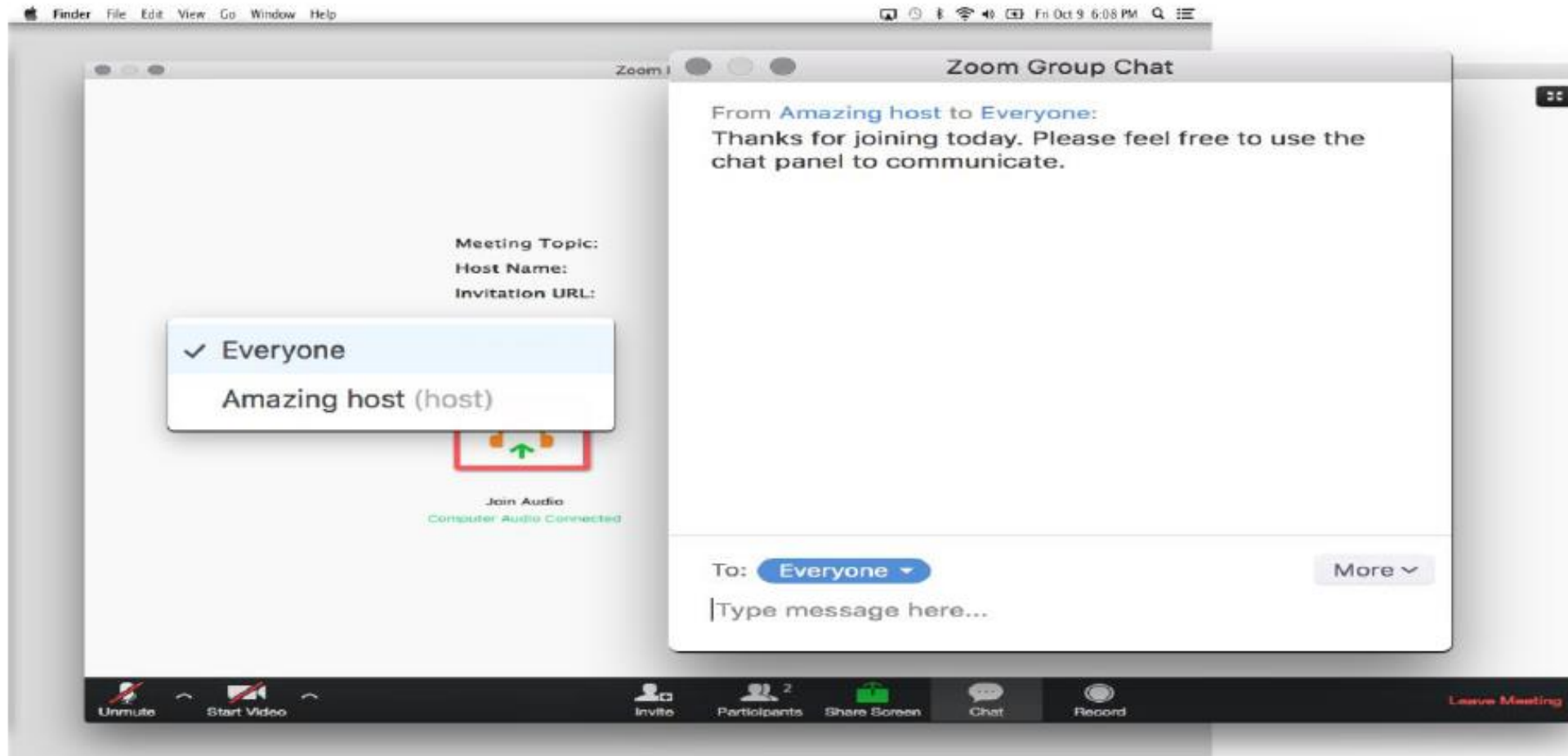
Housekeeping Items



Housekeeping – Zoom Meeting viewer interaction



Housekeeping Items



Housekeeping – Zoom Meeting viewer interaction



Steps to Receive Free CE Credit

NNCC will review attendance list after webinar is complete.

Participants who attend entire live presentation qualify for CE credit

- **REQUIRED:** attend at least **55 minutes** of presentation
- **REQUIRED:** access & connect to presentation slide-deck
- Phone-in-only participants **DO NOT** qualify

Completion of a quiz will be required to receive CE credit.

Questions can be directed to: jbird@phmc.org

What Do Pesticides Have To Do With COVID-19?

Diana R. Simmes, MPH
University of California, Davis
Oregon State University



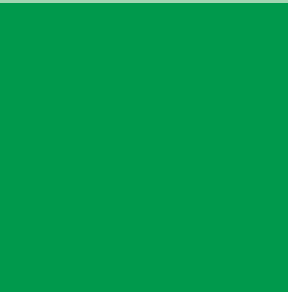
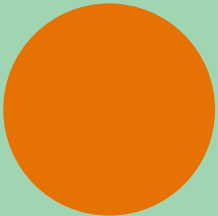

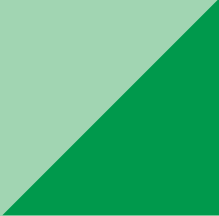



PERC-med Mission

To help health care providers prevent, recognize and treat pesticide-related health conditions through education, resources and technical assistance.



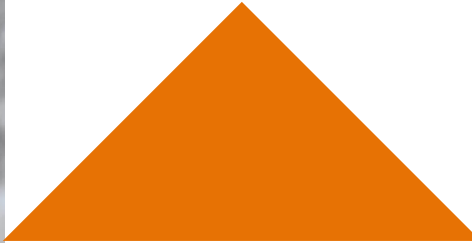
Your PERC-med Team

- 
- 
- 
- Pesticides Overview
 - Pesticide Related Illnesses
 - Diagnostic Support
 - *Recognition and Management of Pesticide Poisonings*
 - COVID-19 Context
 - Antimicrobial Pesticides
 - Healthcare Provider Reporting
 - Messages and Case Study Example
 - Resources and Q&A
- 
- 

Pesticides 101: What are Pesticides?

Any substance or mixture of substances intended for preventing, destroying repelling, or mitigating any pest.





Pesticides 101: What are Pests?

Significant public health pest examples:

- Cockroaches
- Mosquitos
- Rats and mice
- Body and head lice
- Microorganisms
 - *SARS-CoV-2 (proposed)*
- Reptiles and birds
- Various mammals

Commonly Used: Under Recognized As Pesticides

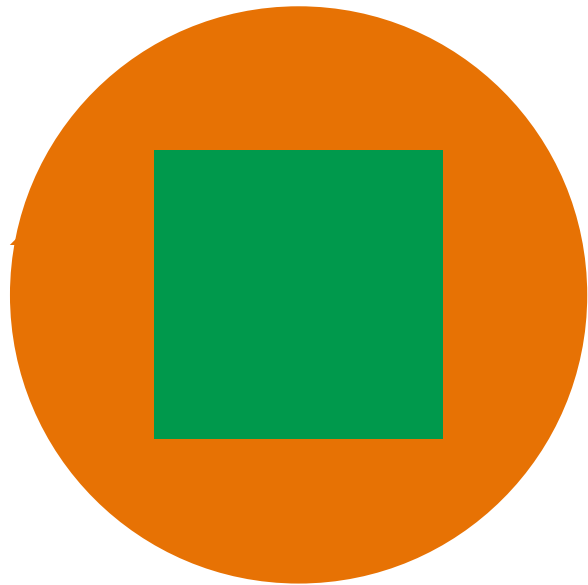


Bug repellents
Pet flea collars
Bathroom mold removers
Weed killers
Antimicrobial wipes



All images are Getty Images.

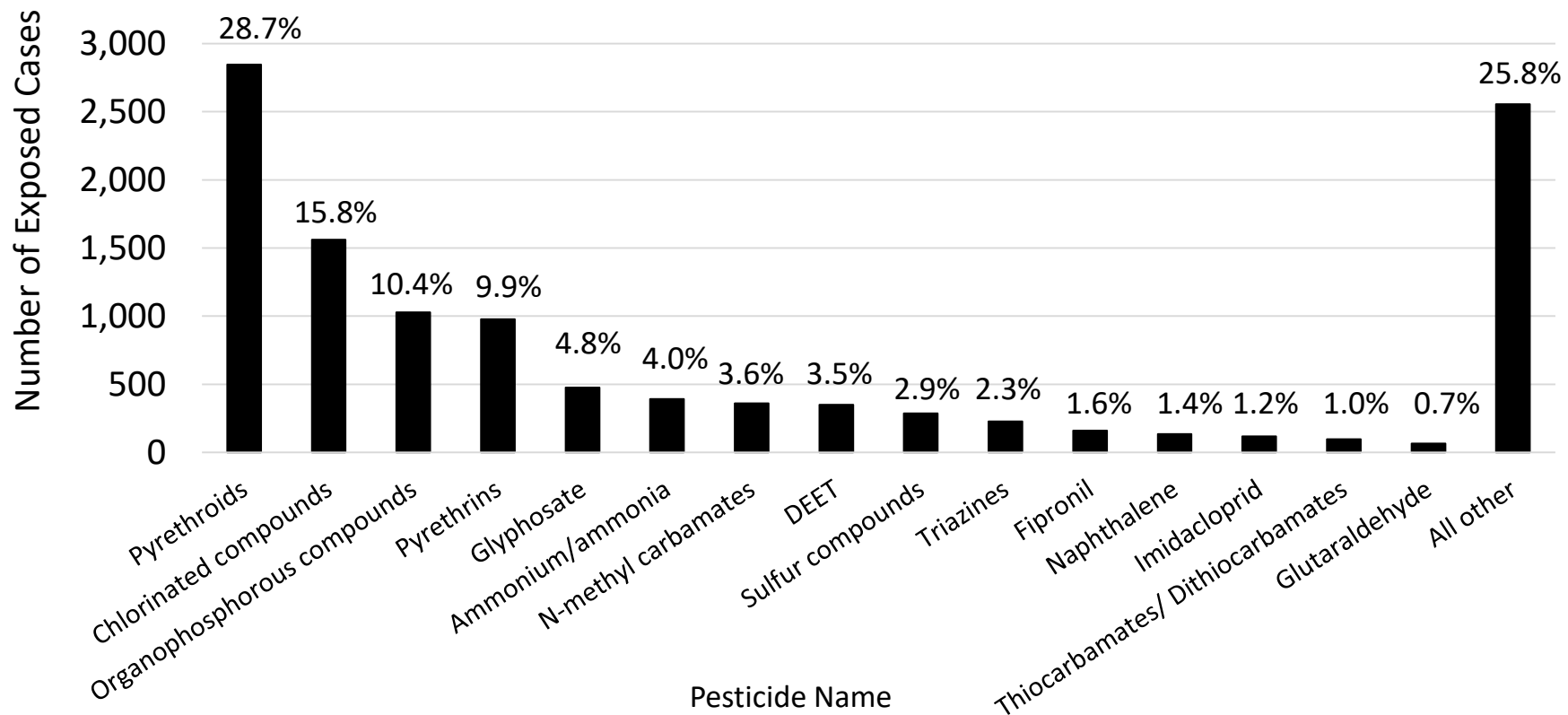
General Pesticide Data



Usage of pesticide in the U.S. is over 1.1 billion pounds annually.

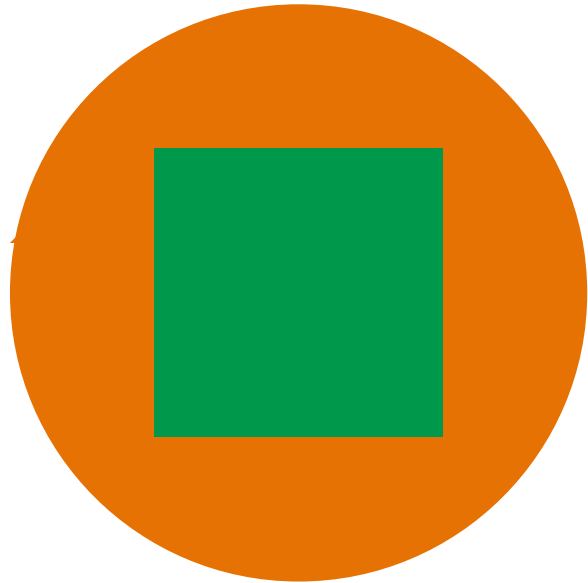
There are over 17,000 registered pesticide products on the market.

Pesticides Most Often Implicated in Acute Occupational Pesticide Related Illness and Injury Cases and Number of Cases, Sensor-Pesticides Program, 2005-2009 (n=9,906 individuals)



Source: Kasner and Calvert, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, as cited in Recognition and Management of Pesticide Poisonings 6th Edition, U.S. Environmental Protection Agency, 2013.

Pesticide Related Illness Data



Underreporting issues include:

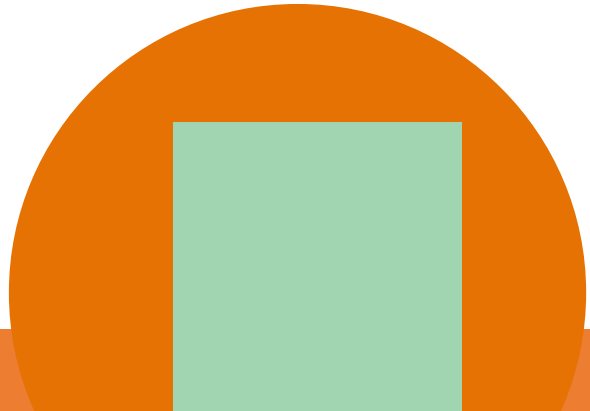


- Difficulty with diagnosis
- Incomplete reporting
- Symptoms not being recognized as a poisoning

Pesticide Exposures Most Commonly Reported to National Poison Data System According to the 2010 Annual Report (all age groups = 109,495)

Age Group	Child <5 Years	6-12 Years	13-19 Years	> 20 Years	Unknown Age	All Age Groups
Total Pesticides/ Disinfectants	50,968	5,640	4,019	40,072	8,796	109,495



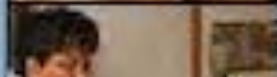
Data Notes: American Association of Poison Control Centers

- National Poison Data System (NPDS) records data from the 57 U.S. poison centers in near real-time
 - 2.4 million human exposures reported to NPDS of which 90,037 (3.8%) were exposed to some type of pesticide
 - Peak exposures reported in July typically
- 
- 
- 

United States Environmental
Protection Agency
Office of Pesticide Programs



Recognition and Management of Pesticide Poisoning



Recognition and Management of Pesticide Poisonings

"Like many illnesses linked to environmental exposures, pesticide poisonings remain commonly under-diagnosed due in large part to barriers in seeking care and diagnosis of pesticide poisonings."

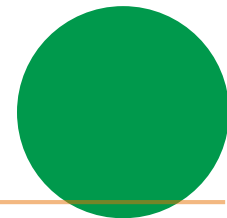
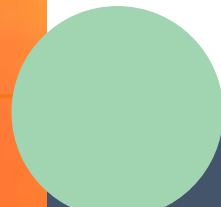


Pesticide: Not Routinely Included in Healthcare Provider Training

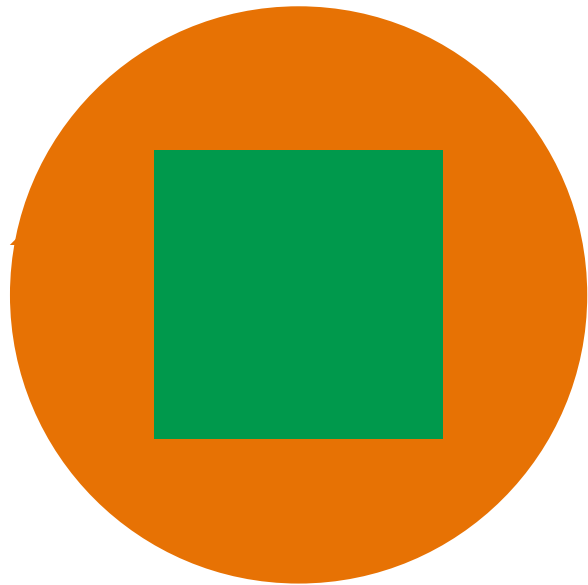
- Survey of NP program directors 2/3 saw need for greater emphasis on environmental health
- 75% of medical schools require only ~7 hours of environmental health content over 4 years

Major Challenges Include

1. The magnitude of pesticide use, and the settings of pesticide application, are under-recognized by many health care providers and public health professionals.
2. Pesticide related illnesses are under reported and requirements vary considerably across the U.S.
3. At risk vulnerable populations



Occupational Groups At Increased Risk of Pesticide Exposure

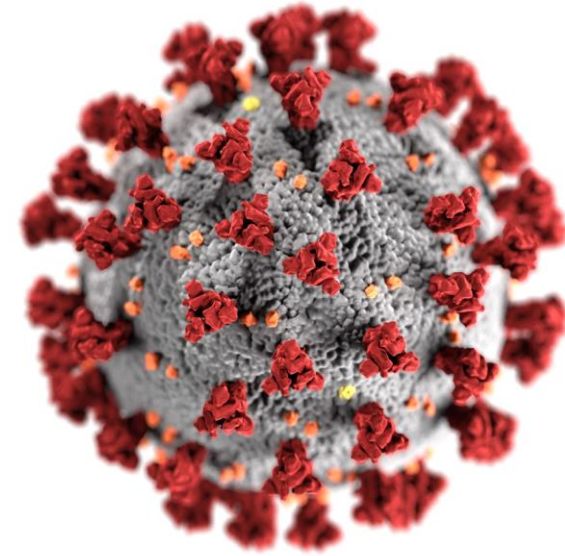


- Farmworker
- Building maintenance
- Hospitality
- Forestry
- Wood treatment
- Golf Course
- Healthcare

Agriculture accounts for nearly 90%
of pesticide usage



Pesticides in the Context of COVID-19



Disinfectants Are Antimicrobial Pesticides



Increased demand & use

Misinformation

Precautions



CDC – Morbidity and Mortality Weekly Report (April 24, 2020)

Calls to U.S. poison centers about cleaner and disinfectant exposures increased by 20%*

**Prevent COVID-19 Spread
and Clean Safely :**

- Follow label directions
- Don't mix chemicals
- Wear protective gear
- Use in a well-ventilated area
- Store chemicals out of reach of kids

* Jan-March, 2020

Knowledge and Practices Regarding Safe Household Cleaning and Disinfection for COVID-19 Prevention United States, May 2020

About 1 in 3* adults used chemicals or disinfectants unsafely while trying to protect against COVID-19

Stay safe while using household cleaning and disinfectant products



Always read instructions



Wear protective gear



Do not mix chemicals

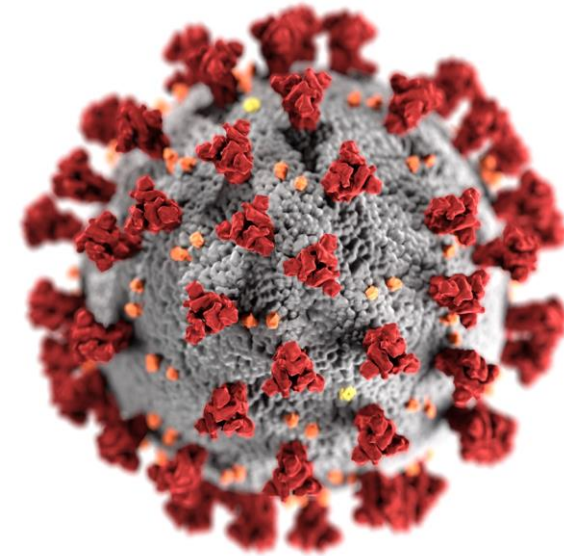
*According to a nationally representative survey of 502 U.S. adults—May 4, 2020

EPA List N: What Is It?

Disinfectants to control SARS-CoV-2 on surfaces, **not** humans

Expected to be effective because:

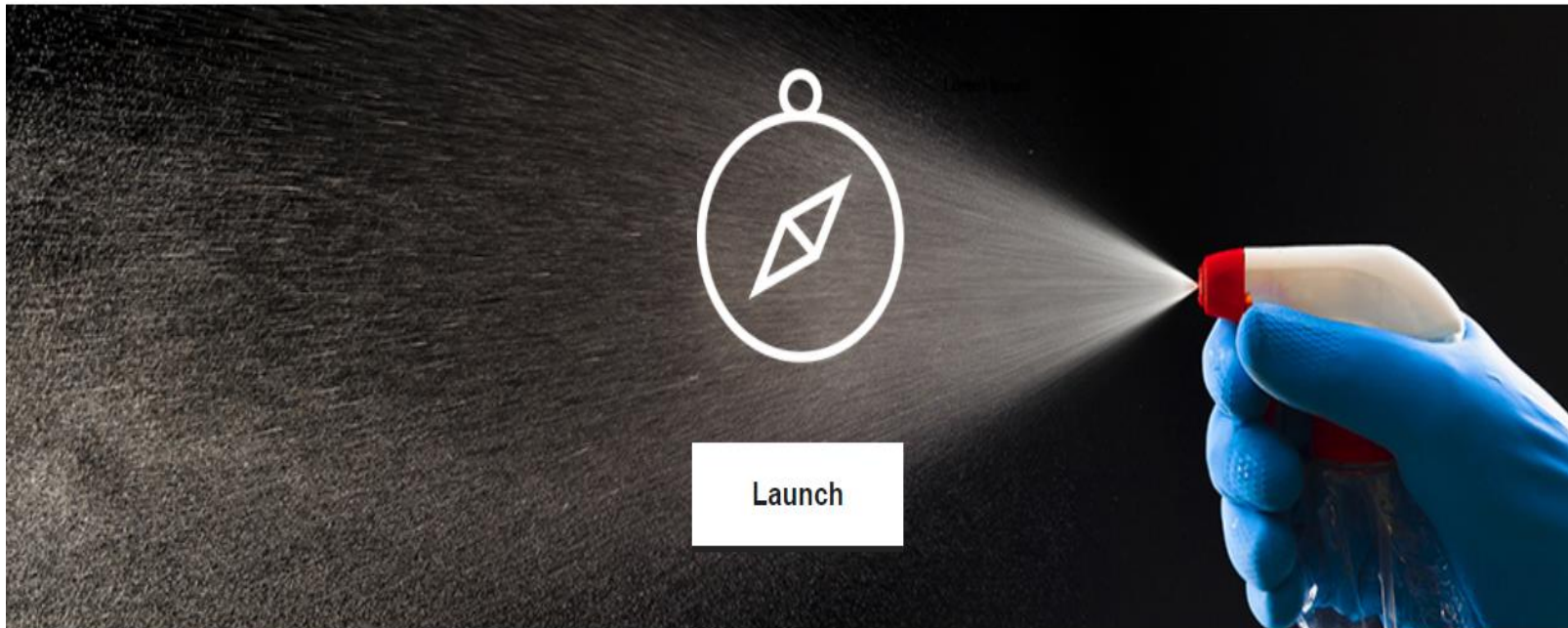
- Effective against harder-to-kill viruses
- Approved to disinfect human coronavirus
- Tested against SARS-CoV-2 virus



List N Tool: COVID-19 Disinfectants

[More Information](#)

[Feedback](#)



All products on this list meet EPA's criteria for use against SARS-CoV-2 (COVID-19). These products are for use on surfaces, NOT humans.

Why Report?

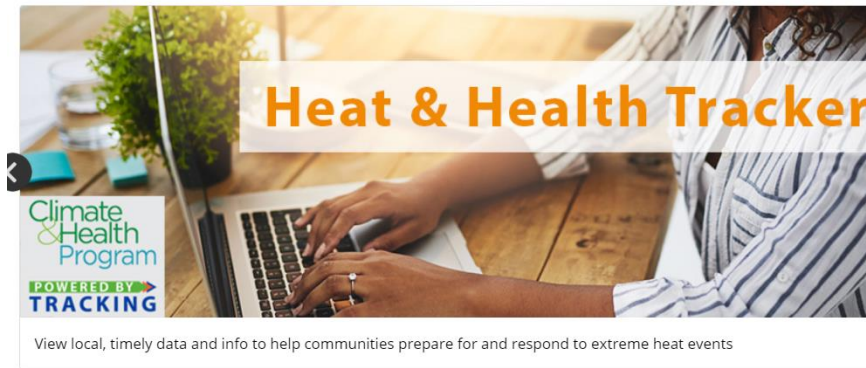
Surveillance Information Can:

- Identify at-risk-populations
- Inform policy
- Prevent future pesticide illnesses
- Identify emerging pesticide issues
- Identify occupational exposure risk



National Environmental Surveillance

National Environmental Public Health Tracking



Heat & Health Tracker

Climate & Health Program
POWERED BY TRACKING

View local, timely data and info to help communities prepare for and respond to extreme heat events



About Tracking



Tracking staff uses their expertise to help solve environmental and health issues across the United States.



Success Stories



Data & Statistics

Explore information and data on the Tracking Network

Tracking Terminology

Tracking, Tracking Program, Tracking Network: What's the difference?

Success Stories

Learn about Tracking Program successes

Publications

Scientific publications, reports...

State & Local Tracking Programs

Learn more about Tracking's 26 grantees

Resources

Fact sheets, online training, publications...

Partners

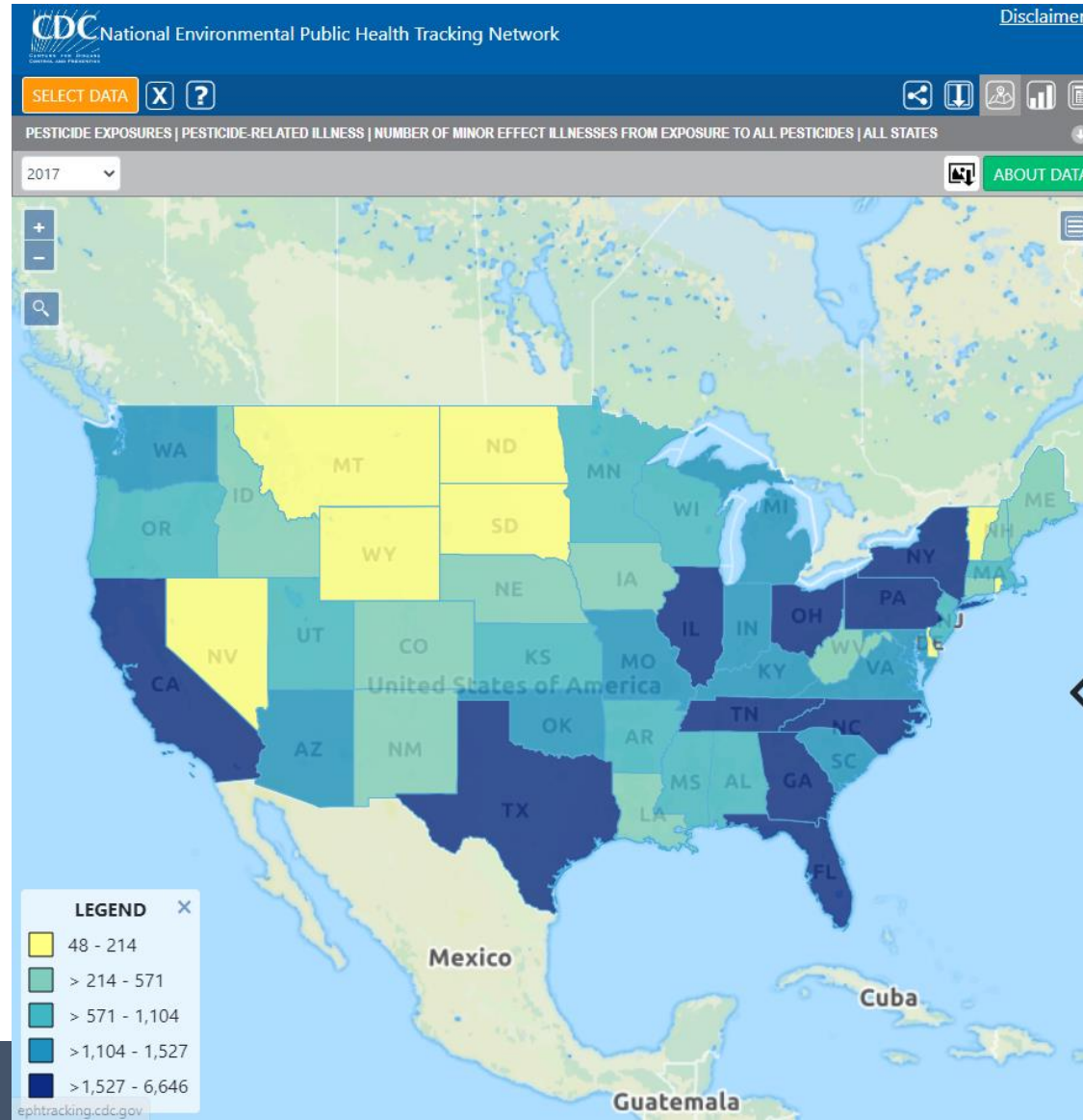
Learn more about Tracking Program partners

Connect with Us

Contact information

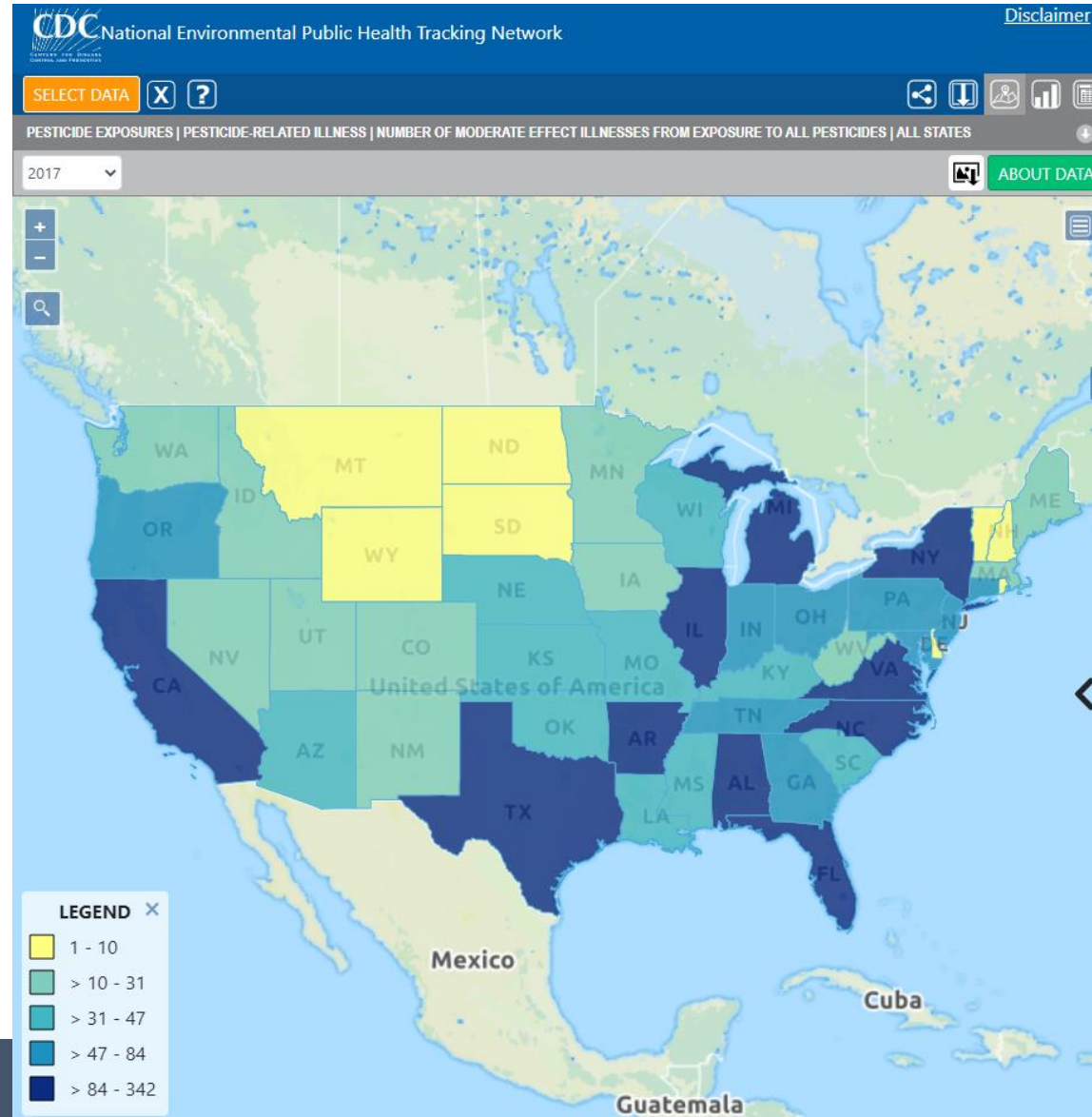
CDC National Environmental Public Health Tracking Network Data Explorer

Number of **Minor** Effect Illnesses from Exposure to All Pesticides, All States



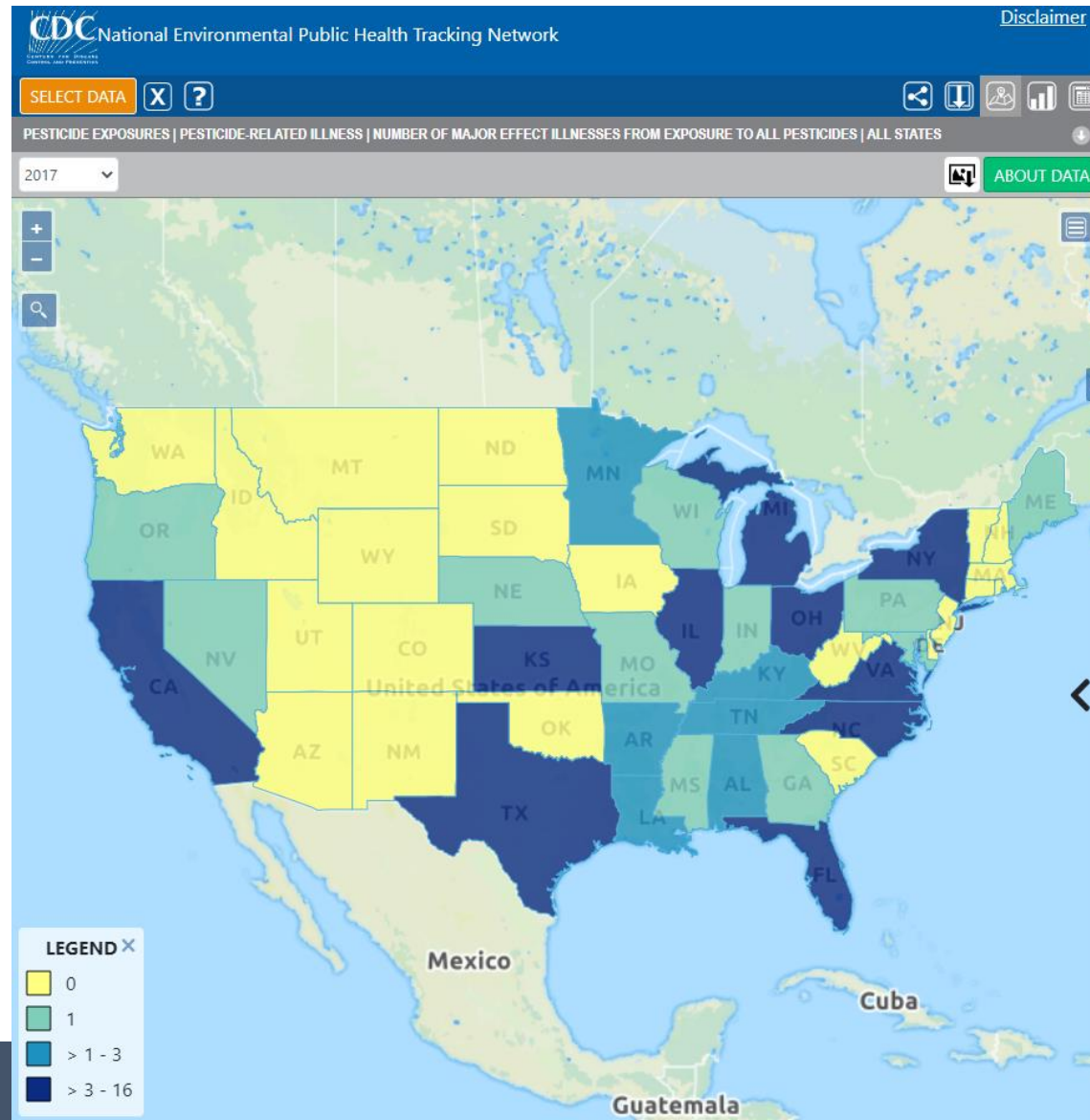
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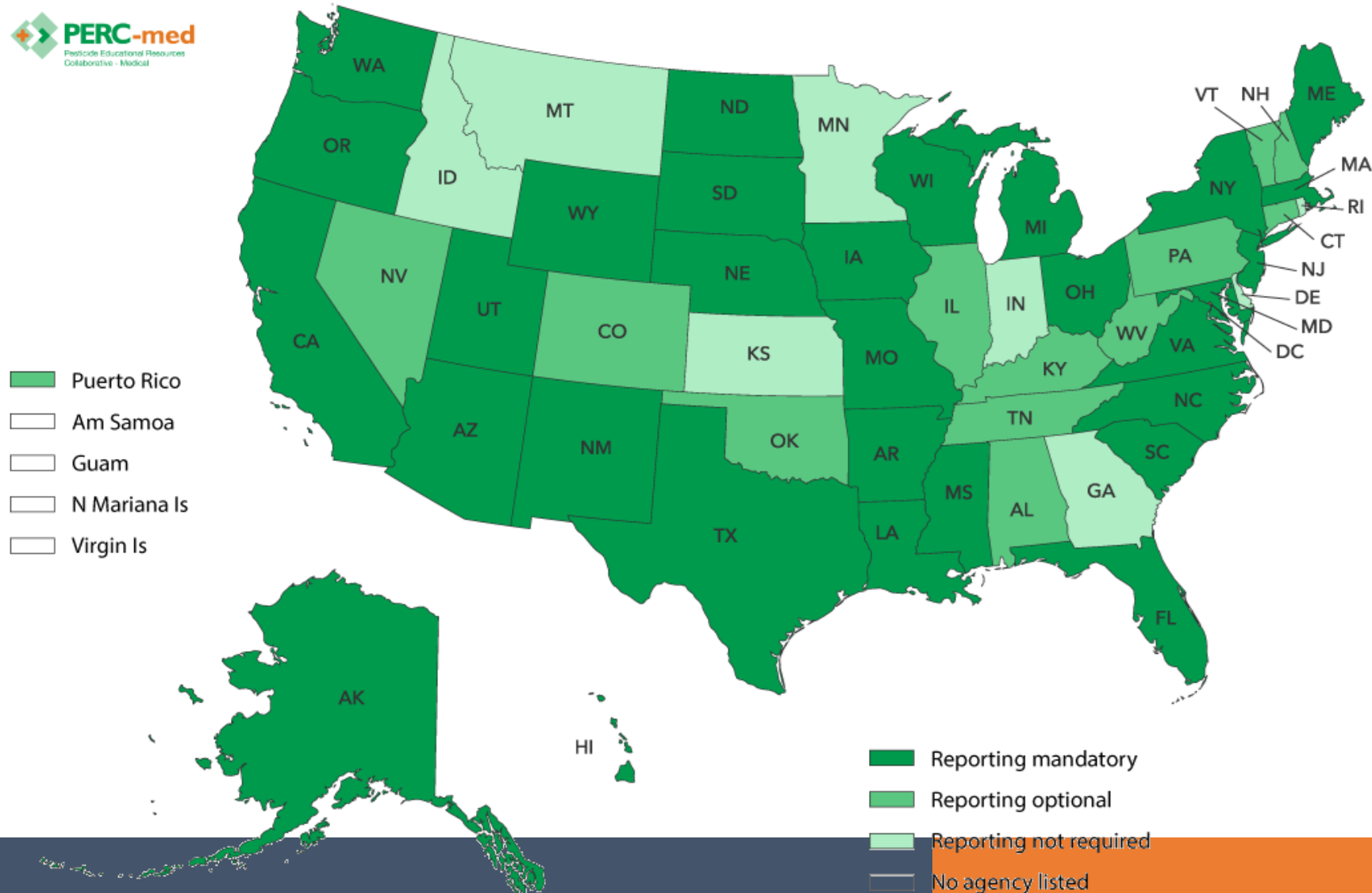


CDC National Environmental Public Health Tracking Network Data Explorer

Number of **Major** Effect Illnesses from Exposure to All Pesticides, All States



Pesticide Reporting Requirements for Healthcare Providers Vary Considerably



Example: Oregon Has Mandatory Pesticide Reporting

Home About ▾ Status ▾ Resources Reporting Email Updates PERC Home

Search...



Reporting Pesticide Exposures

Some states require health care providers and laboratories to report pesticide or chemical exposures. If your state does not require reporting, consider contacting your [State Pesticide Regulatory Agency](#) or the [National Pesticide Information Center](#).

State Pesticide Exposure Reporting:

State:	Reporting Requirements:	Report To:
Oregon	<p>Is reporting mandatory? Yes</p> <p>Who must report? Physicians, Hospitals, Laboratories, Other Health Professionals</p> <p>Timeframe to report exposure: 24 hours</p> <p>What to report: Any suspected or confirmed illness or condition related to pesticides</p>	<p>Oregon Health Authority Pesticide Exposure Safety and Tracking Program</p> <p>971-673-0482 877-290-6767</p> <p>Reporting web site</p>

Example Messages and Resources





Northwest
PEHSU
Pediatric Environmental
Health Specialty Units



Safer Disinfectant Use During the COVID-19 Pandemic



Using disinfectants on surfaces in your home or workplace can kill disease causing germs (bacteria and viruses), but they may also have health risks. For example, many common disinfectants (like bleach, many disinfectant wipes) have chemicals in them that can cause or worsen asthma.



If no one is sick at home:

Clean surfaces in your home with an all-purpose cleaner or soap, and a microfiber cloth (available online, in grocery stores and at big box stores). This will get rid of most of the germs on a surface and avoids excess exposure to disinfectants.

Disinfect after cleaning surfaces that you touch when returning from the outdoors, prior to washing hands.

If someone in your house is sick or suspected to be sick:

Clean surfaces, then disinfect using one of the safer disinfectants from the EPA's Design for the Environment antimicrobial pesticide list.

Look for these safer active ingredients:

- ▶ Citric Acid
- ▶ Hydrogen Peroxide
- ▶ L-lactic acid
- ▶ Ethanol
- ▶ Isopropanol
- ▶ Peroxyacetic acid
- ▶ Sodium Bisulfate.

Apply to the surface and leave glistening wet for the time listed on the product label.

If you can't access safer products

If you don't have access to a microfiber cloth, wash sponges or towels after every surface cleaned:

- ▶ Clean sponges by washing in the dishwasher, or soaking for one minute in 1/2 teaspoon of bleach, or microwaving non-metallic, soaking wet sponges for one minute.
- ▶ Wash towels in a basin or washing machine.

If you only have access to bleach or quaternary ammonia-based disinfectants:

- ▶ Dilute disinfectants per the package instructions;
- ▶ Do not combine disinfectants; and
- ▶ Be sure to ventilate the area as well as possible (open windows, turn on fans).



Public Messaging

Precautions for Disinfectant Wipes

- “Keep Out of Reach of Children”
- Do not use on skin or body
- Not a baby wipe, face wipe, or hand wipe
- Some for food-contact surfaces, may require rinsing
- Wash hands after use
- Be aware of PPE requirements
- They dry out during use – be careful to follow “contact time”



General Messaging to Reduce Pesticide Exposure

- Always keep pesticides in their original containers
- Protection matters: use appropriate PPE
- Read and follow the label directions
- For COVID-19 disinfectants consult EPA's list N

Clinical Context: Dependent On

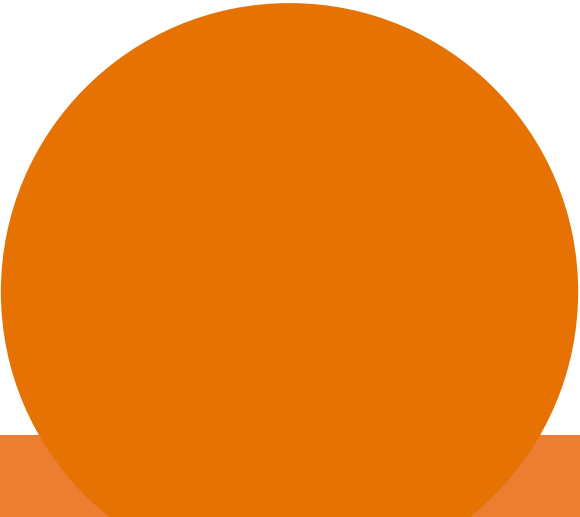



- Active Ingredient
- Duration
- Quantity
- Exposure Route
- Health Status



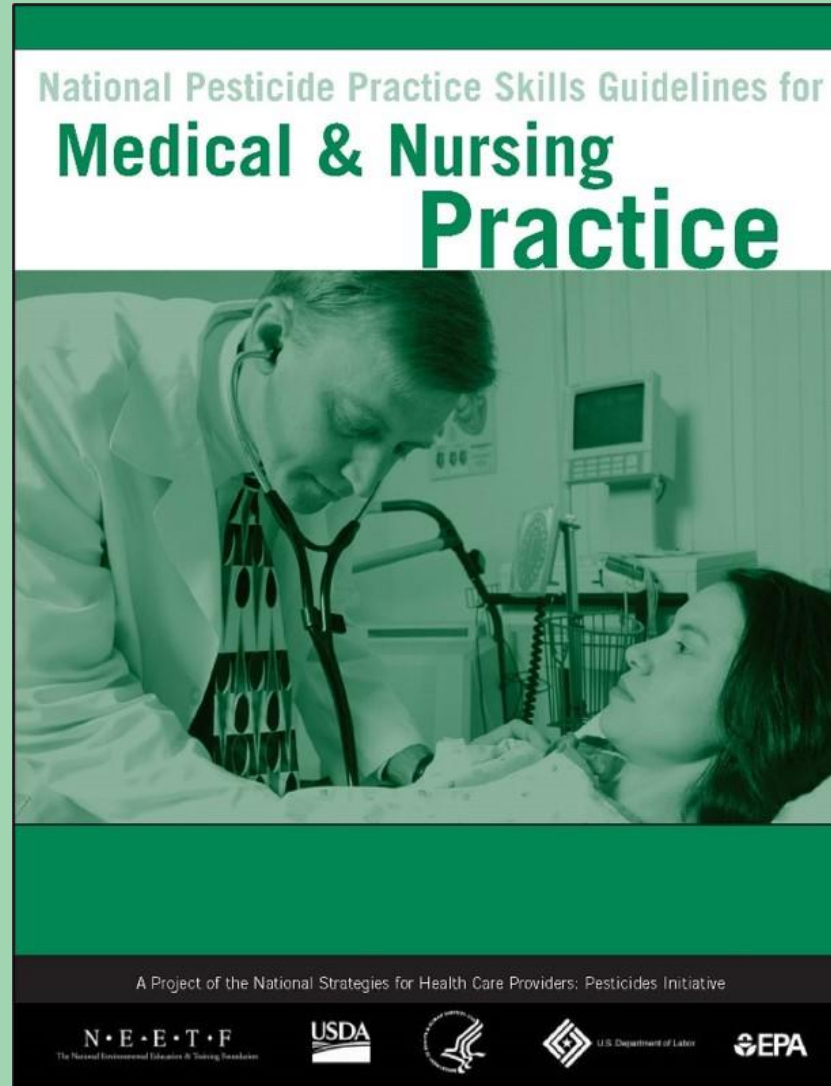


Clinical Context (Continued)

Pesticide poisoning symptoms may be confused with:

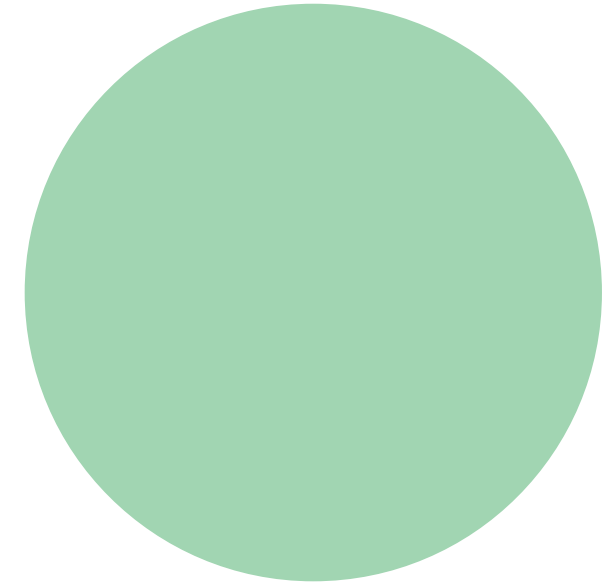
- Flu
 - Food poisoning
 - Heat Illness
 - Hangover
- 
- 
- 
- 

Medical and Nursing Practice Guidelines



National Strategies: Practice Skills

- Taking environmental history
- Knowledge of Key Health Principles
- Awareness of Community & Individual Pesticide Risk Factors
- Clinical Management of Pesticide Exposure
- Reporting Exposure & Supporting Surveillance Efforts
- Providing Educational Guidance & Education to Patients



Case Study

- Developed by Pesticide Health Education Medical Education Database (PHEMED)
- PI: Matthew Keiffer, MD, MPH
- University of Washington
- Continue rollout on PERC-med website

LICE SHAMPOO OVEREXPOSURE



AGE CONSIDERATION

- Vulnerability of Children
- Biological
- Behavioral
- Sociocultural Issues

POSSIBLE LEGAL ISSUES

- Effectiveness of EO 13045
- EPA
 - Children's Health Policy
 - EPA Ban
- National Agenda

POSSIBLE SOCIAL ISSUES

- Substandard Housing
- Poor Diet
- Inadequate Health Care
- Exposure to Take Home Toxins

REPORTING ADVERSE EFFECTS

- Poison Control Center
- Other Community Resources
- Emergency Room
- Health Care Providers

A 3 year old Hispanic male was brought to the local emergency room by his Mother after experiencing a seizure in his home. Prior to this event, the child was discovered with the contents of a half-filled 2 ounce bottle of Lindane lice shampoo which he retrieved from the medicine cabinet in his home. His mother noted that the contents were on his cheek and chin, and he was trying to spit out the liquid; thus she induced vomiting by sticking her finger in his throat. She called her local poison control center and was told that the product can cause seizures; but that her child probably did not ingest enough to be at risk. She was advised to give him fluids to dilute the lindane that was ingested. About an hour later, the child fell on the bathroom floor and immediately began seizing (body stiffened, eyes rolled back in head, jaw shut tight, foamed at mouth); this seizure lasted for about 4 to 5 minutes.

ASSESSMENT AND PREVENTION

- Determining Exposure
- Acute Symptoms of Exposure
- Long Term Effects
- Precautions

ABOUT LINDANE SHAMPOO

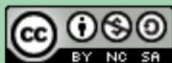
- Pharmacological Properties
- Purpose
- When to Use
- Contraindications

SOURCES OF EXPOSURE

- Ingestion
- Absorption

TREATMENT

- Neurological Problems
- Dermatological Problems
- Gastrointestinal Problems
- Long Term Effects



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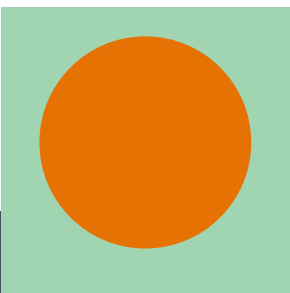
Photo credit: "[mb] Medicine Cabinet" by Merrick Brown is licensed under [CC BY-NC-SA 2.0](https://creativecommons.org/licenses/by-nc-sa/2.0/)

Original case study by:

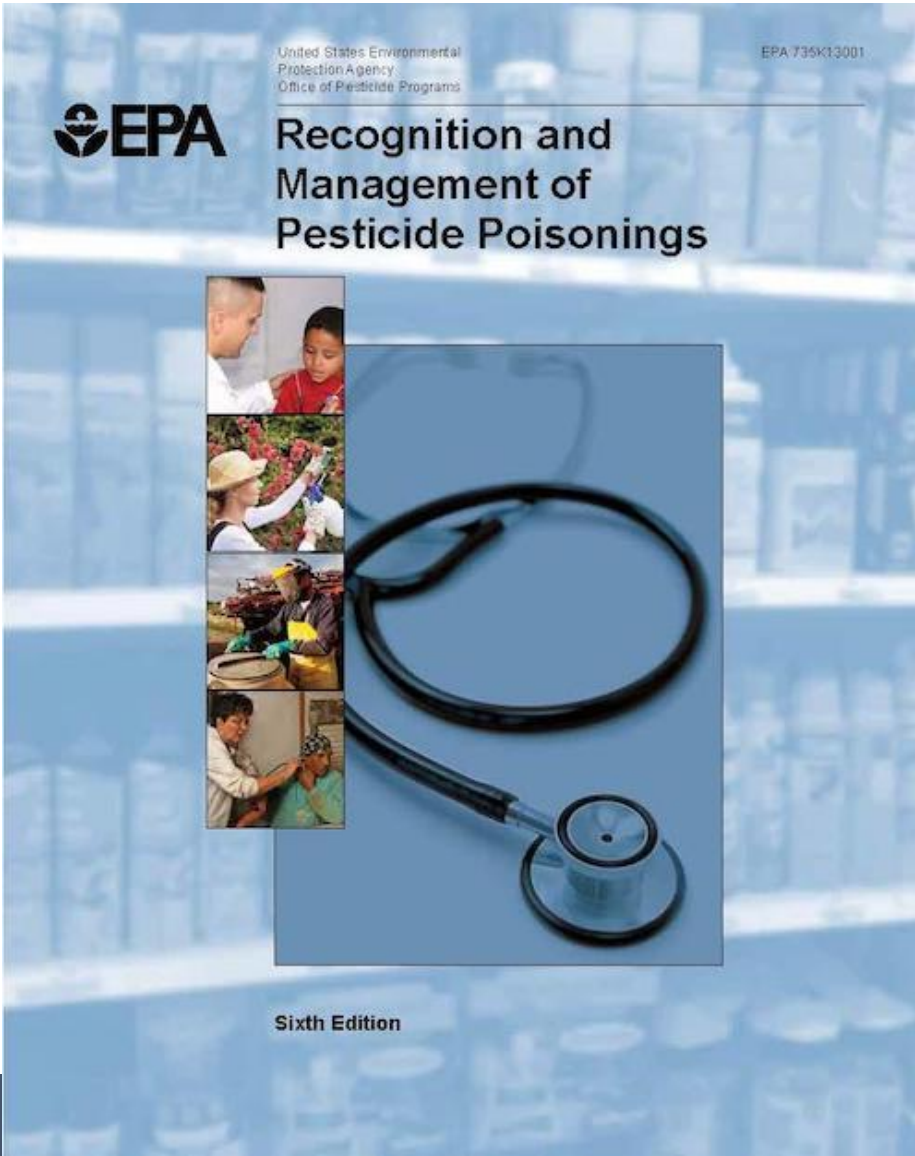


Key Resources

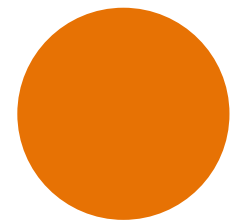
- Recognition and Management of Pesticide Poisonings
- Medical & Nursing Practice Skills
- PERC-med website
- EPA List N for COVID-19
- National Pesticide Information Center



Recognition and Management of Pesticide Poisonings -- 6th Edition



Provides consensus recommendations for treating patients with pesticide-related illnesses or injuries.



RECOGNIZING ACUTE PESTICIDE POISONING IN CHILDREN

Poison Control Center data shows over 35,000 calls related to pesticide exposure concerns for children ≤ 5 years old (2018). Most serious acute poisonings occur after unintentional ingestion, although poisoning may also follow inhalational exposure (particularly from fumigants) and/or significant dermal exposure, such as in drift events. Misuse, such as violating label instructions, may also lead to overexposure. It is well recognized that pesticide poisonings are likely to be underreported because of difficulty with diagnosis, incomplete reporting and symptoms not being recognized as a poisoning. High risk children may include those who:

- | | | | |
|-----------|---|-----------|---|
| 01 | spend time where pesticides are applied or stored | 02 | live next to agricultural land where pesticides are sprayed |
| 03 | work in agriculture or on family farms | 04 | live in households with someone who works with or around pesticides |

PESTICIDE TOXICITY: SIGNS AND SYMPTOMS

Pesticides are toxic by design. **Insecticides** and **rodenticides** are the pesticide types most commonly associated with acute pediatric poisoning. Warfarin type rodenticides in the form of pellets, grains or blocks are also a significant ingestion risk for young children. Many insecticide chemical classes designed to be neurotoxic for insect pests have been shown to be neurotoxic in humans, such as the cholinesterase inhibiting organophosphate and carbamate insecticides and the pyrethroids. Human toxicity varies by the pesticide product's active ingredient(s) and formulation (solvents, carriers). As such, signs and symptoms are broad and may include:



SKIN

irritation, rash, contact dermatitis, blistering, sweating



EYES

lacrimation, conjunctivitis, diplopia, Miosis



CARDIAC

brady/tachycardia, arrhythmias, hypo/hypertension



RESPIRATORY

nasal congestion, airway irritation/cough, dyspnea, asthma exacerbation or wheezing, pulmonary edema



GI

anorexia, nausea, vomiting, diarrhea, abdominal pain, salivation



NEUROLOGICAL

skin paresthesias, muscle twitching, tremor, weakness or incoordination, dizziness, lethargy, confusion, seizures, CNS depression, coma

Recognizing Acute Pesticide Poisoning In Children

Example: National Pesticide Information Center

USING DISINFECTANTS AND WIPES AGAINST COVID-19



WHAT ARE THEY?

Disinfectants kill viruses, bacteria, and fungi on surfaces. Products on EPA's "List N" are expected to control COVID-19. To see if your product is on List N, look for the EPA Registration Number on your label. If you have questions, call NPIC M-F 8am-12pm PT at 800-858-7378.

HOW DO I USE THEM?



Disinfectants may not work on unlisted surfaces. Follow your label carefully.



Follow the contact time (how long the surface must stay wet).



Pre-clean surfaces with soap and water first.

CAN I USE THEM ANYWHERE?

Do not use wipes on food. Only use on food contact surfaces if the label says so.

Check for rinsing instructions on the label.

Do not let children (under age 18) use disinfectant wipes.

Do not use them to clean hands.

Do not use as baby wipes.



HOW DO I MINIMIZE RISK?



Never mix cleaning products. Leave them in their original container.



Wear protective gear like gloves, masks, and eyewear. Do not reuse disposable gear if contaminated with disinfectant.



Wash hands after use.



Always follow the label, including listed surfaces and contact times.



Store out of reach of kids.





Open windows and use fans to ventilate. Step away from odors if they become too strong.


PERC-med Resources

pesticideresources.org/med

- Exposure Assessment (RMPP)
- CME partnerships
- Population specific
- Case studies
- Education materials
- Collaboration & technical assistance



Paraquat Poisoning: One Sip Can Kill

WHAT IS PARAQUAT?	HOW PARAQUAT WORKS	SYMPTOMS
<p>Paraquat is used for weed control and defoliation in both agricultural and non-agricultural settings. It is one of the most widely used herbicides in the world. Paraquat is classified by the U.S. Environmental Protection Agency as a Restricted Use Pesticide due to its high toxicity. There are no homeowner uses and not allowed in residential areas.</p>	<p>The extent of poisoning depends on the amount, route, and duration of exposure as well as the person's health status. It damages the lining of the mouth, stomach, and intestines on contact. After paraquat enters the body, it is distributed to all areas of the body. It causes toxic chemical reactions throughout many parts of the body, primarily the lungs, liver, and kidneys.</p>	<p>IMMEDIATE symptoms after ingestion of LARGE amounts:</p> <ul style="list-style-type: none">• Pain and swelling of the mouth and throat likely• Followed by gastrointestinal symptoms (e.g. nausea, vomiting, abdominal pain, diarrhea)• Severe GI symptoms may result in dehydration, electrolyte abnormalities, and low blood pressure
<p>There is no antidote for paraquat ingestion. Paraquat should NEVER be put into unmarked containers or used at home.</p>	<p>DANGER - ONE SIP CAN KILL</p>  <p>PELIGRO - UN SORBO PUEDE MATAR</p>	<p>In general, within a FEW hours to a FEW days:</p> <ul style="list-style-type: none">• Acute kidney failure• Confusion• Coma• Fast heart rate• Injury to the heart• Liver failure• Lung scarring

PARAQUAT POISONING PREVENTION

Examples of Clinician-Facing Materials

Pesticide Reporting Requirements

<http://pesticideresources.org/med/index.html> (PERC-med home)

<http://pesticideresources.org/med/reporting.html> (PERC-med reporting table)

<https://oehha.ca.gov/pesticides/education-and-training>

Examples of Patient-Facing Educational Materials

1. Protect Your Health. Read the label (top 3 safety tips)
<http://npic.orst.edu/outreach/labelinfographic.jpg>
2. Using disinfectants against COVID 19
<http://npic.orst.edu/outreach/covid-infographic.pdf>
3. Let's talk about pesticides in your home
<http://npic.orst.edu/outreach/pesticideinfographic.pdf>
4. Using disinfectant wipes at home and school
<http://npic.orst.edu/outreach/amicroinfographic.pdf>

Helping the
medical
community
prevent,
recognize, and
treat **pesticide-**
related
illnesses and
injuries.



PERC-med

Pesticide Educational Resources
Collaborative - Medical

pesticideresources.org/med

**Contact: Diana Simmes, MPH
drsimmes@ucdavis.edu**

The Pesticide Educational Resources Collaborative - Medical is a cooperative agreement (agreement #X-83935901) between the U.S. EPA's Office of Pesticide Programs and University of California Davis Extension, in collaboration with Oregon State University.



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Any Questions??

Please **submit questions** via the question pane in your zoom control panel.

Meeting Topic: Care Coordination: Understanding the Team Based Care & Rev
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- Email **Jillian Bird** at jbird@phmc.org
- **Stay up to date** on the latest CE opportunities by subscribing to our [Nursing Practice and Transformation Newsletter](#)

Pennsylvania's Healthcare Mosaic: Advocacy & Equity in Action Virtual Conference

ADVOCACY & EQUITY IN ACTION
Pennsylvania's Healthcare Mosaic Conference, March 1-5, 2021

KEYNOTE SPEAKERS

 Sheldon D. Fields Associate Dean for Equity & Inclusion Penn State University	 Susan B. Hassmiller Senior Adviser for Nursing Robert Wood Johnson Foundation	 Roberta Waite Associate Dean Drexel University
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- Hosted by the PA Action Coalition's Nurse Diversity Council in partnership with Penn State College of Nursing- March 1-5, 2021
- Entire conference virtual and conducted through Zoom
- **[Registration and agenda posted here!](#)**
- Sponsorship opportunities available

Partnering for the COVID Vaccine Lessons from the Flu-LEAD Project

Wednesday, February 10, 2021 at 1:00 pm ET



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