

**Master Gardener Volunteer  
Horticulture Happy Hour**

Session will begin at 4 PM

**Pesticide Safety Basics for the Home Gardener**



**Jen Andon**  
Program Manager, Master Gardener Volunteer Program,  
The Ohio State University

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**Housekeeping**

- Schedule, registration, recordings and handouts available: [go.osu.edu/mgvlearn](https://go.osu.edu/mgvlearn)
- Scheduled through March 31st
- One (1) hour of Continuing Education
  - Please double check with your CC on how to enter hours if you're doing so for the first time.

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**Housekeeping**

- Next Horticulture Lunch and Learn
- Wednesday, February 9th from 12-1 PM

**"The Art of Grafting"**  
with Paul Snyder, Operations Manager Secrest Arboretum,  
The Ohio State University

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**Friendly Reminders!**

- Please use Q&A box (not chat) to ask questions which will be addressed at the end of the presentation
- Would really appreciate your responses to the poll at the very end!!

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**Horticulture Happy Hour February 3rd, 2021**

Jen Andon

- Currently serves as the Program Manager for the Master Gardener Volunteer Program at The Ohio State University.
- Received her B.S. in entomology, with a minor in plant pathology from OSU in 2003 and her M.S. in turfgrass entomology in 2008.
- Was a research technician for 13 years conducting field trials on turfgrass insect pests.
- In 2016, she joined the Pesticide Safety Education Program as Program Manager.

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Pesticide Safety  
Basics for the  
Home Gardener

Jennifer Andon  
MGV Program  
The Ohio State University



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# Pest?

Do I have a pest?

YES !!!




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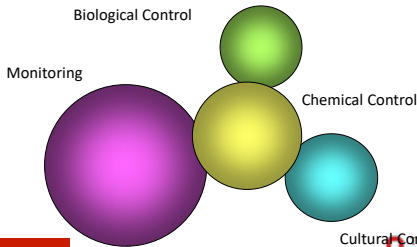
# Our Definitions of pest may differ..

- Lawn full of clover
- A few white grubs
- It all depends on your tolerance of pests...



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# IPM - Integrated Pest Management



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# IPM Tools

- Biological control- (parasites, parasitoids, pathogens)
- Cultural control- alter conditions (resistant cultivars, crop rotation)
- Mechanical control- physical, hand weeding, dethatch, exclusion, barriers
- Chemical control- pesticides



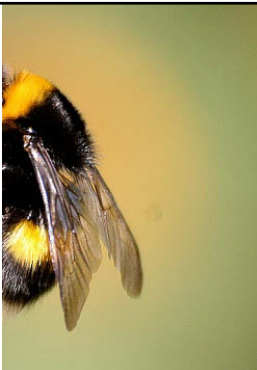
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# Keep in Mind:

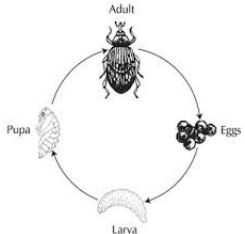
- **Must Identify the pest**
- The vast majority of arthropods are not pestiferous
- Vary rarely can you completely eradicate a pest, nor is it necessary



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# Understanding Pest Biology:

- There are specific times in a pests' life cycle in which it is more susceptible to pesticides
- Application timing may be crucial
- Please reach out to your Extension Educator if you need guidance



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## What is a Pesticide:

- Any substance that repels, controls, limits or eliminates a pest
- Any substance used as an insect growth regulator, plant growth regulator, defoliant or desiccant



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## Types of Pesticides:

- Herbicides kill weeds (includes weed N ' feed)
- Insecticides kill insects
- Acaricides kill mites/spiders
- Fungicides kill fungi
- Molluscicides kill mollusks
- Rodenticides kill rodents
- Antimicrobials kill bacteria, viruses...

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## Mode of action:

The way in which the pesticide causes physiological disruption to the target pest

## Active Ingredient:

Active ingredients are the chemicals that control the pest and must appear on the pesticide label.



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## Pesticide Registration

- Pesticides must be registered by the EPA

## AND

- Pesticides must be registered by the State of Ohio (ODA)

**BUT WAIT!!**

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## What about Minimum Risk Pesticides? (25b Products)

- Products that pose little to no risk to human health or the environment
- Exempt from regulations under FIFRA
  - Not evaluated by EPA for risk assessment
  - No validation of product performance
- Products active & inactive ingredients must be listed in 40 CFR 152.2

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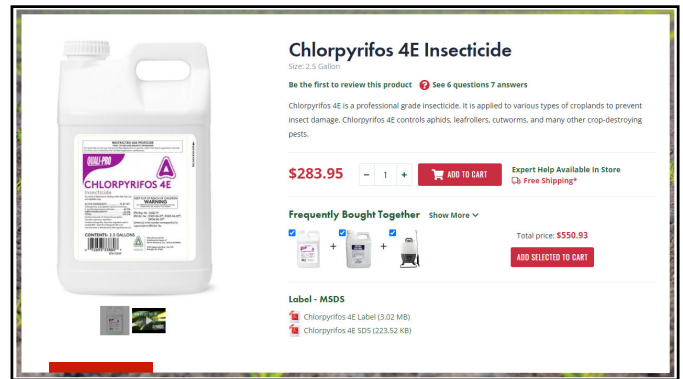
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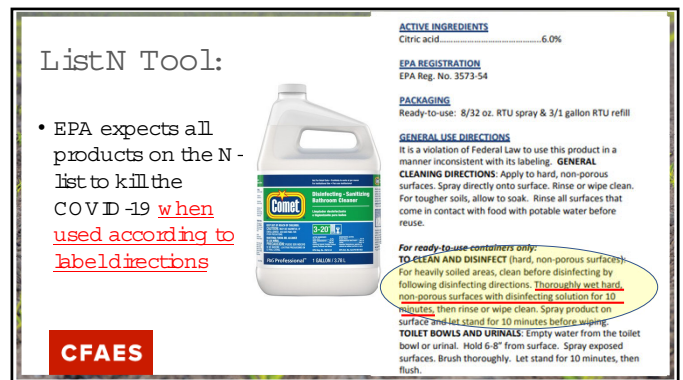
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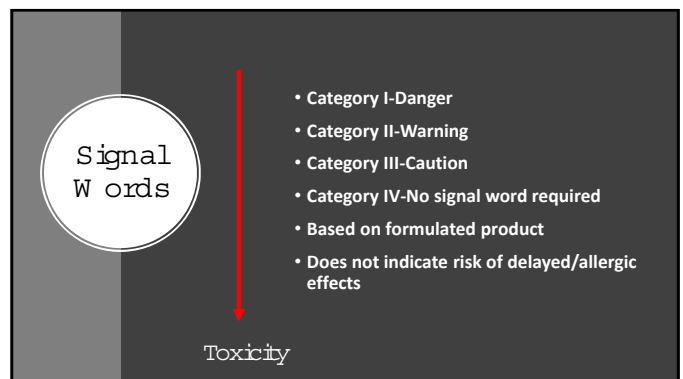
**Pesticide Product Search**  
December 22, 2021 [Pesticide Health](#)

Pesticide Products Registered in Ohio through 6/30/2022  
Updated November 29, 2021

Search:   Show  entries

REG NO	RESTRICTED USE	PRODUCT BRAND NAME	PRODUCT STATUS	OH COMPANY NO	COMPANY	LABEL ADDRESS	CITY STATE ZIP	AGENT
1130-15-37549	NO	MERITZ PLUS GERMICIDAL SOLUTION	DISCONTINUED	2708	MEDLINE INDUSTRIES LP	ONE MEDLINE PL	MUNDELEIN IL 60060-4486	MEDLINE INDUSTRIES INC
264-756	NO	MERIT 75% CONCENTRATE INSECTICIDE	APPROVED	588	BAYER CROPSCIENCE LP	800 N LINDBERGH BLVD	ST LOUIS MO 63167	BAYER CROPSCIENCE LP
432-1332	NO	MERIT 2F INSECTICIDE	APPROVED	89157	BAYER ENVIRONMENTAL SCIENCE	5000 CENTREGREEN WAY STE 400	CARY NC 27513	BAYER ENVIRONMENTAL SCIENCE
432-1334	NO	MERIT 75 WP INSECTICIDE	APPROVED	89157	BAYER ENVIRONMENTAL SCIENCE	5000 CENTREGREEN WAY STE 400	CARY NC 27513	BAYER ENVIRONMENTAL SCIENCE

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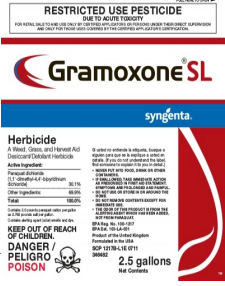


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**Danger**

- Highly Toxic
- Poison/Skull and Crossbones
  - acute illness through oral or inhalation
- LD<sub>50</sub> 0-50
- Few Drops to 1 tsp




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**Warning**

- Moderately Toxic
- LD<sub>50</sub> 50-500
- 1 tsp - 1 oz

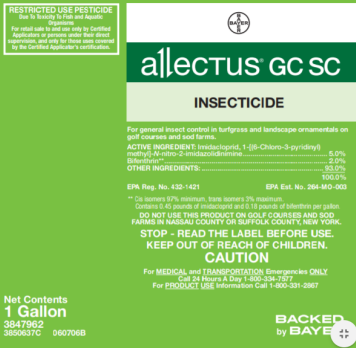


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**Caution**


- slightly toxic
- LD<sub>50</sub> 500-5000
- 1 oz to 1 lb/pint



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**Restricted use Designation**

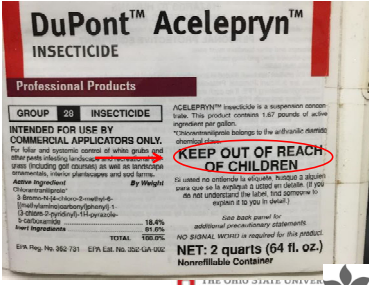


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**No Signal Word Required**

- Practically Non-Toxic
- LD<sub>50</sub> >5000
- Over 1 Pint or pound
- Precautionary statement required



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**ai= carbaryl (carbamate)**

Sevin RTU : 5%  
Sevin SL : 43%



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### Specimen Label

**Dow AgroSciences**

# Entrust®

**Naturalyte® Insect Control**

\*Trademark of Dow AgroSciences LLC

A Naturalyte® insect control product formulated for control of lepidopterous larvae (worms or caterpillars), leafminers, thrips, and red imported fire ants.

Group	5	INSECTICIDE
Active Ingredient:		
in mixture of spinosyn A	80%	
Other Ingredients	20%	
Total	100%	

Contains 80% active ingredient on a weight basis.

EPA Reg. No. 62719-282

**OMRI**

### Specimen Label

**Dow AgroSciences**

# Conserve®

**SC Turf and Ornamental**

**INSECT CONTROL**

\*Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

For control of listed pests such as thrips, lepidopterous larvae, foliage feeding worms, fire ants and other listed pests infesting apple and other pome fruits, artichoke, asparagus, banana, brassica (cole) leafy vegetables, bulb vegetables, bushbeans, cardoon, citrus, commercial aquatic plants, cucurbit, dates, fruiting vegetables, grape, herbs, leafy vegetables, leaves of legume vegetables, leaves of root and tuber vegetables, lettuce, ornamentals (perennial and woody) growing outdoors, in nurseries or in greenhouses, pepper, petiole, plantain, pomegranate, popcorn, root and tuber vegetables, spearwort, spices, stone fruits, strawberry, sweet corn, tree nuts, tropical tree fruits, tree farms or plantations and turfgrass

Group	5	INSECTICIDE	UNIVERSITY
Active Ingredients:			
in mixture of spinosyn A and	11.6%		
Other Ingredients	88.4%		
Total	100.0%		

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## Ohio is a Site-Specific State

- The site to which you are applying must be on the pesticide label
- The pest in which you are controlling does not have to be listed on the label

**If you are applying pesticides to fruits or vegetables, ensure the host plant is listed on the label**

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**Peppers, Bell (3 day phi)**

Insects Controlled	Rate of Application	Method of Application
Cabbage looper	4.0 to 8.0 fl oz	Apply using sufficient water to obtain uniform coverage.
Corn earworm	(0.1 to 0.2 lb AI)/A	Apply with ground equipment using a minimum of 10.0 gal of finished spray/A or a minimum of 2.0 gal/A by aircraft.
Cutworms		
Flea beetle		
Pepper weevil		
Vegetable leafminer	8.0 oz	
European corn borer	(0.2 lb AI)/A	


Maximum rate per application is 8.0 fluid ounces of product (0.2 pound active ingredient) per acre.  
Minimum retreatment interval is 5 days.  
Seasonal maximum application rate is 32.0 fluid ounces of product (0.8 pound active ingredient) per acre.

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**MERIT 75WP**  
INSECTICIDE

Look for the bee hazard icon in the  Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

**This product can kill bees and other insect pollinators.**

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar. Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives or off-site to pollinator attractive habitat can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at: <http://pesticidestewardship.org/PollinatorProtection/Pages/default.aspx>.  
Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state, go to [www.aapco.org/officials.html](http://www.aapco.org/officials.html). Pesticide incidents should also be reported to the National Pesticide Information Center at: [www.npic.orst.edu](http://www.npic.orst.edu) or directly to EPA at: [beekill@epa.gov](mailto:beekill@epa.gov)

**DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

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**Acelepryn & Ference...**

**Accelepryn®**  
INSECTICIDE

**Ference®**  
INSECTICIDE

**INSECTICIDE**

For foliar and systemic control of listed insect pests in or on golf courses, sports and recreational turf, lawns and ornamental plants and shrubs, and in residential areas on and around residential, commercial and institutional properties and major plantings.

EPA Reg. No. 120-1486

Active Ingredient: 10.0%  
Other Ingredients: 90.0%  
Total: 100.0%

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## The Dose makes the poison

"All substances are poisons; there is none which is not a poison. The right dose differentiates a poison from a remedy!"  
— Paracelsus

- 1 cup of coffee = ☺
- 3 cups of coffee = ☹
- 8 Red Bulls = ☹☹

**"THE DOSE MAKES THE POISON"**

APPLE SEEDS   PEARs   POTATOES   COURGETTES

CONTAIN AMYGDALIN  
\*5 mg/kg of seeds

CONTAIN FORMALDEHYDE  
\*0.05 mg/kg

CONTAIN SOLANIN  
(poisonous) \*0.05 mg/kg

CONTAIN CUCURBITACIN  
(poisonous) \*0.05 mg/kg

ALL OF THE FOOD ITEMS ABOVE CONTAIN NATURAL CHEMICALS THAT ARE TOXIC TO HUMANS. HOWEVER, THEY ARE USUALLY PRESENT IN VERY SMALL AMOUNTS, FAR BELOW THE HARMFUL DOSE.

**JUST BECAUSE A CHEMICAL IS PRESENT, DOES NOT MEAN THAT IT IS HARMFUL IN THE AMOUNT PRESENT.**

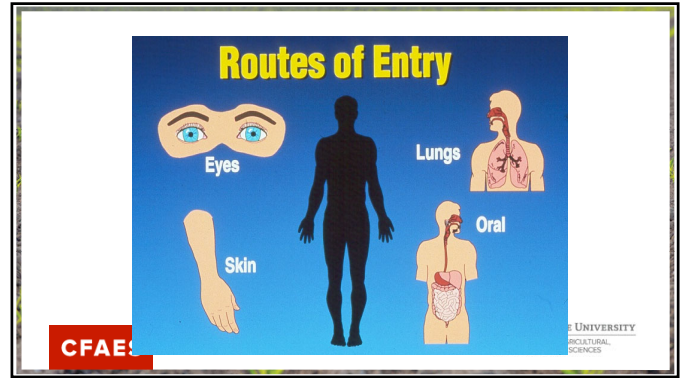
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Wear your PPE!



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### Personal Protective Equipment (PPE)

All pesticide handlers (mixers, loaders, and applicators) must wear long-sleeved shirt and long pants, socks, shoes, and chemical-resistant gloves. All pesticide handlers must wear a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with any N, R, P or HE filter, when working in a non-ventilated space, including but not limited to crawl spaces and basements. All pesticide handlers must wear protective eyewear (goggles, a face shield, or safety glasses with front, brow, and temple protection) when working in a non-ventilated space, including but not limited to crawl-spaces and basements or when applying termiticide by rodding or sub-slab injection.

For cleaning equipment: Wear a chemical resistant apron.

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### Chemical-Resistant Materials

- No material is chemically proof
- Coveralls or apron (Tyvek, PVC)
- gloves (Neoprene, butyl or Nitrile, not cotton)
- footwear (rubber boots, shoe covers, no leather)
- Hats (PVC, plastic, no baseball hats)
- Eyewear (safety glasses or goggles)
- NIOSH approved respirator (full or half face)



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## Personal Protective Equipment (PPE) – the minimum



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Safety Tip

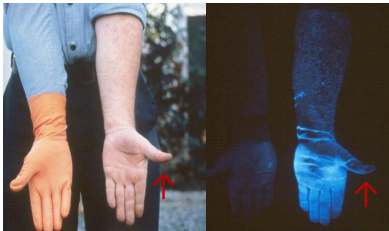
Wear Gloves, even if not  
required by Label



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## Gloves – the first line of defense



Hand without  
protection shows  
much more  
contamination.

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## The protective value of gloves

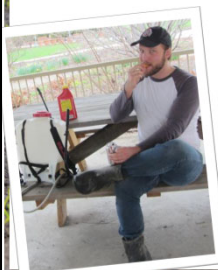
- Farmers who used gloves had 70% less 2,4-D detectable in urine
- Farmers who used gloves had 80% less Captan detectable on hands



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Safety Tip

Make smart decisions!



**USER SAFETY  
RECOMMENDATIONS**  
Wash hands before eating,  
drinking, chewing gum, using  
tobacco, or using the toilet

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Safety Tip

Don't contaminate yourself  
when removing PPE

Removing PPE –  
there is a correct order

1. Wash gloves
2. Wash PPE, then remove
3. Wash and remove gloves



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**Safety Tip** → Remove work clothes and shower before contact with your family




**And leave the boots outside the door!**

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**Safety Tip** → Wash Work Clothes Separately from Family Wash



- Pesticides can transfer to other items in wash
- Don't wear clothing again until washed



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**Safety Tip** → Discard heavily contaminated clothing

- Don't try to wash
- Can leave residues in washer, dryer
- Not fully removed from clothing



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**Pesticide Disposal**


Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

In case of spill, clean up dust spillage resulting from container or pack breakage by sweeping material into a

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**Storage Practices Include:**

- Store pesticides out of reach of children in locked cabinet
- Liquids stored beneath dry products
- Separate herbicides & insecticides
- Keep pesticides in original containers with labels attached
- Check for damaged containers




**Dry Products**

**Liquid Products**

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**Container Disposal**

- Triple rinse
- Don't reuse containers
- Dispose of with household waste
- Wear PPE when cleaning containers



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## Pesticide Spill Response The 3 C's

1. Control
2. Contain
3. Clean-up



- Wear PPE
- Don't rinse into drains
- Use kitty litter or absorbent pads
- Dispose of waste properly
- Check label for disposal instructions

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## Know the possible signs of Pesticide Poisoning



- Headache, dizziness
- Nausea, vomiting
- Sweating or chills
- Stomach cramps, diarrhea
- Chest pains
- Breathing difficulty
- Muscle cramps or aches
- Rashes, swelling, or blisters

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## First Aid On Older Labels, Statement of Practical Treatment

FIRST AID	
IF SWALLOWED	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have a person sip a glass of water if able to swallow.</li> <li>• <b>DO NOT</b> induce vomiting unless told to by a poison control center or doctor.</li> <li>• <b>DO NOT</b> give anything by mouth to unconscious person.</li> </ul>
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15 - 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
IF INHALED	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or ambulance, then give artificial respiration, mouth-to-mouth if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
IF IN EYES	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>

Have the product container or label with you when calling a poison control center or doctor, or going to a hospital. There is no specific antidote. All treatment should be based on observed signs of distress in the patient. Overexposure to materials other than this product may have occurred. For medical emergencies call 24 hours a day 1-800-832-HELP (4357).

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## Helpful Resources

- Where to find out more about the safety of pesticides
  - See NPIC – National Pesticide Information Center  
<http://npic.orst.edu/>
- How to find out if a pesticide is labeled for use in your state
  - See NPIRS (National Pesticide Information Retrieval System)  
<http://state.ceris.purdue.edu/>
  - New ODA Product Search  
<https://agri.ohio.gov/divisions/plant-health/pesticides/pesticide-search>

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**NPIRS** National Pesticide Information Retrieval System

**Be sure your product is registered for use in OHIO**

SEARCH STATE PUBLIC



U.S. Map

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**NPIRS** National Pesticide Information Retrieval System

**SEARCH OHIO STATE PESTICIDE PRODUCTS**

Search for pesticide products currently registered in a state using one of the following methods: EPA Registration Number, State Product Name, State Company Name or Active Ingredient. Only a single keyword ie., lemongrass or keyword set ie., lemon oil, may be used as your search criterion.

**EPA REGISTRATION NUMBER**  
Search by the two-part EPA registration number using the following format: company number product number.

**PRODUCT NAME**  
Search by the full or partial name of a product registered in a state.

**COMPANY NAME**  
Search by the full or partial name of a company registering products in a state.

**ACTIVE INGREDIENT**  
Search by the PC code, Chemical Abstract Services Number (CAS) or the full or partial chemical name.

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**The OSU Pesticide Safety Education Program**

614-292-4070  
pested.osu.edu

**Pesticide Safety Education Program**  
Ohio State University Extension

**CFAES** Home Commercial Private Training Opportunities Safety AND Education Events Resources OSU Extension

Online Registration for Commercial Pesticide Applications Online Recordkeeping

**WDI REPORTING REQUIREMENTS**  
Updates to WDI Reporting

[READ MORE >](#)



News & Events

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Thanks!

Questions?

andon 1@osu.edu

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