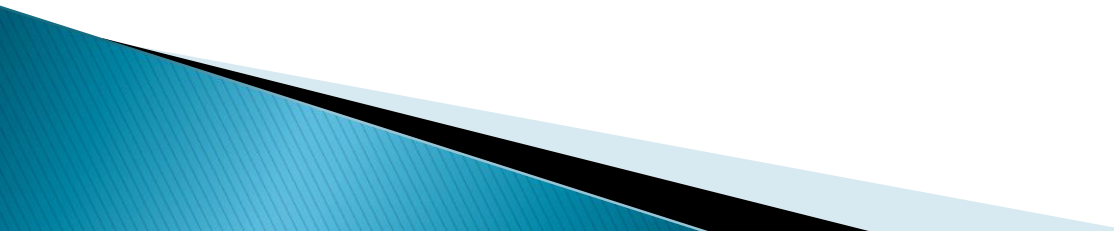




Pesticide Labels

Daphne Richards
Texas A&M AgriLife Extension Service
Travis County

The Label is the Law

- ▶ Required by law –the manufacturer must apply to the EPA for label approval and provide the label with the pesticide
 - ▶ Also required by law–the applicator must read and follow label instructions
- 

The Label is Informative

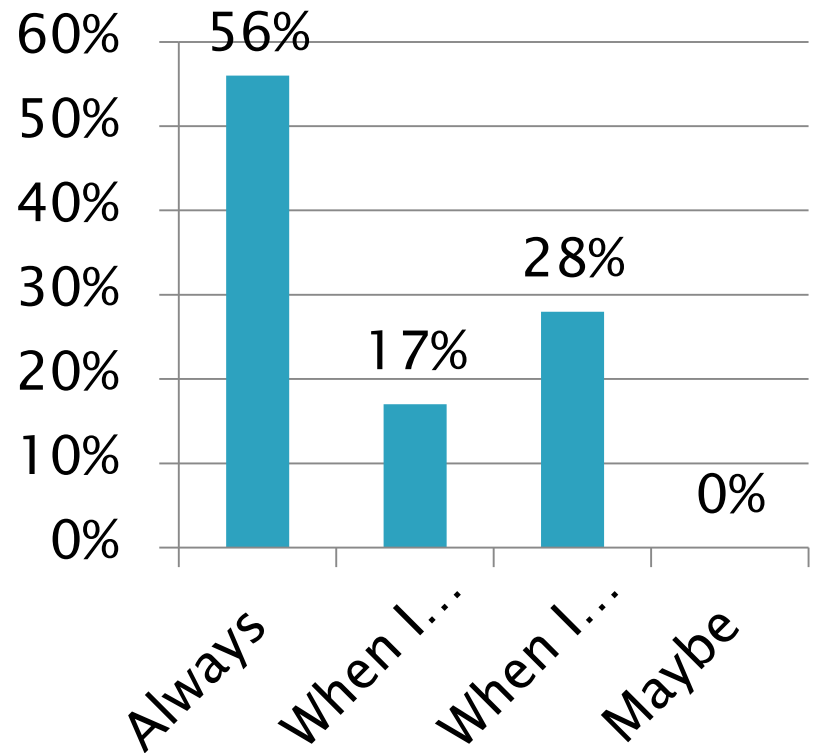
- ▶ Use
- ▶ Safety
- ▶ Storage
- ▶ Environmental Impacts

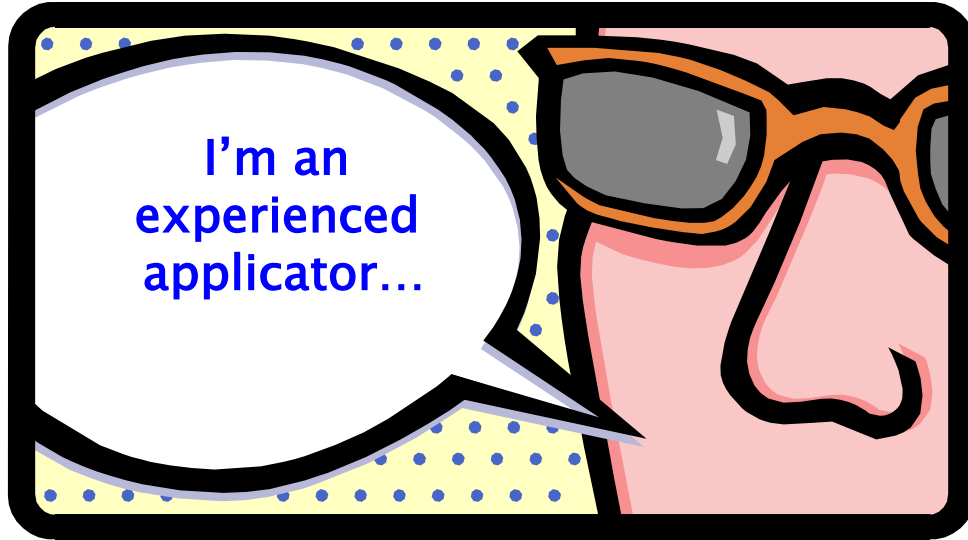
Pesticide manufacturers spend millions developing pesticide labels (\$180 million, Purdue 2010)

Reading Labels

When applying a pesticide, do you read the label?

1. Always
2. When I haven't used the product
3. When I haven't used it for some time
4. Maybe





Common
excuses for
not
reading the
label



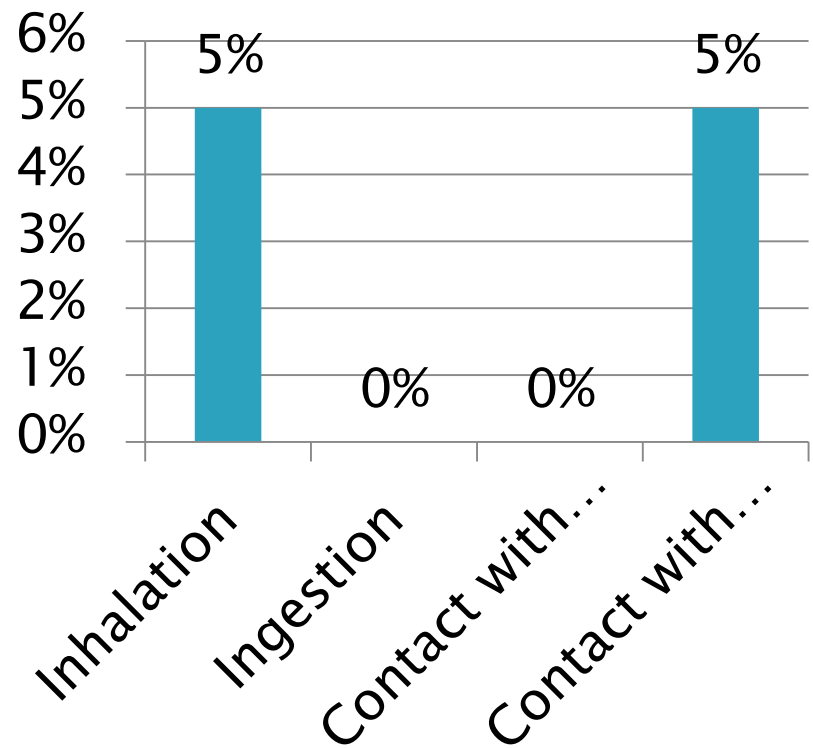
You need to know

- ▶ Is this the right product for the job?
 - Target pest
 - Application site
- ▶ Can I apply it correctly and safely?
 - Application equipment
 - Personal protective equipment
 - Weather conditions

Pesticide Names

Pesticides typically have::

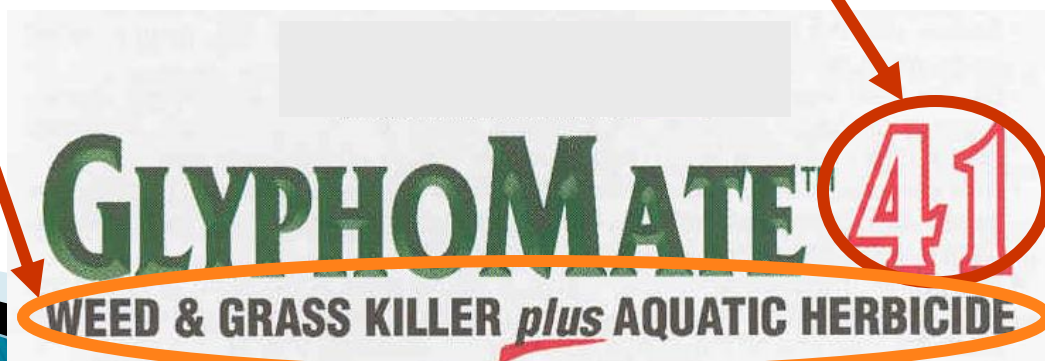
1. Chemical Names
2. Common Names
3. Trade Names
4. All Three



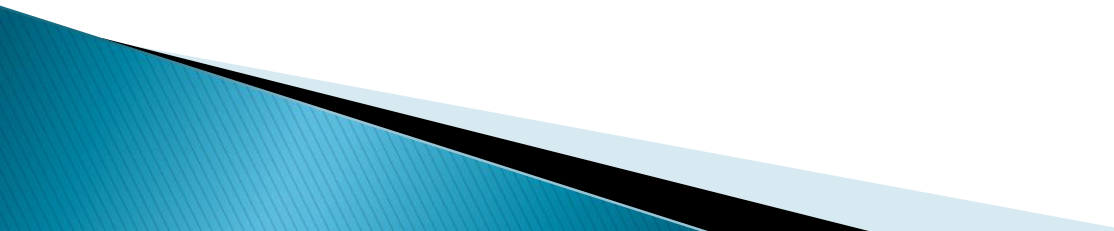
Trade, Brand, or Product Names

Brand Name can often include:

- The percent of active ingredient incorporated into the product name
- Type of pesticide
- Formulation (EC, etc)



Trade, Brand, or Product Names

- ▶ Companies register trade names as a trademark
 - ▶ The same active ingredient may be sold under different trade names
- 

Trade or Brand Names

Be careful, some products with:

Different brand names may have the same active ingredients

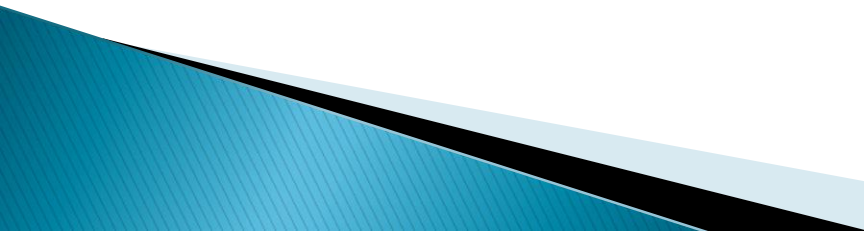
Example: Spinosad is the active ingredient in:

Tracer Spintor Conserve

Does this mean that I
can substitute these
products for each other ?

Only if the label allows!

Active Ingredients

- ▶ Many active ingredients are given a common name
 - ▶ Only common names accepted by the EPA may be used on the label
- 

Active Ingredients

- ▶ Official **common name** is usually followed by the chemical name in the list of active ingredients

GLYPHOMATE™ 41
WEED & GRASS KILLER *plus* AQUATIC HERBICIDE

ACTIVE INGREDIENT:

Glyphosate (N-(phosphonomethyl)glycine)
in the form of its isopropylamine salt

41.0%

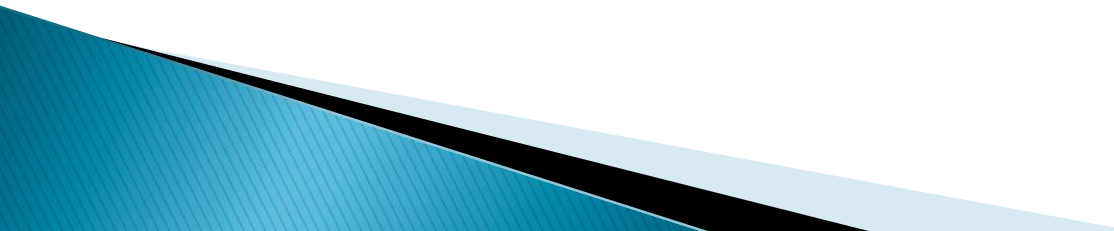
INERT INGREDIENTS:

59.0%

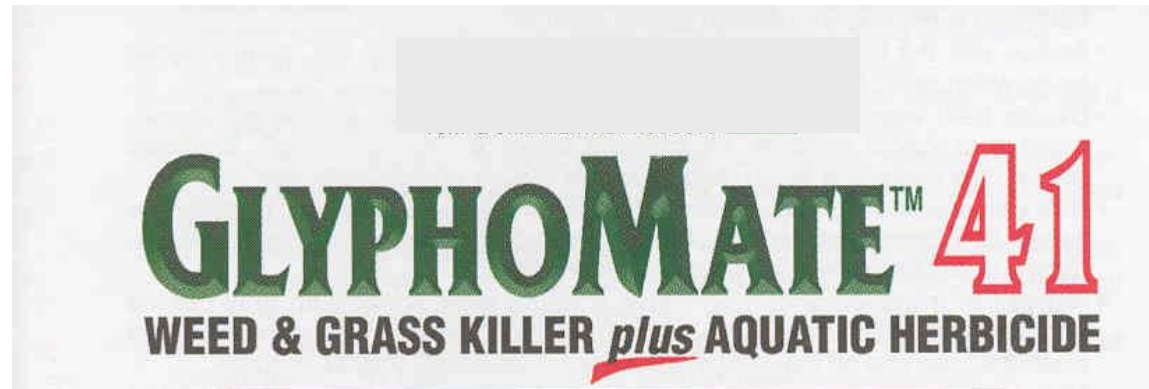
THIS PRODUCT CONTAINS:

TOTAL 100.0%

Ingredient Statement

- ▶ Active Ingredients:
 - ▶ Inert Ingredients:
- 

Ingredient Statement



ACTIVE INGREDIENT:

Glyphosate (N-(phosphonomethyl)glycine)

in the form of its isopropylamine salt 41.0%


INERT INGREDIENTS: 59.0%

THIS PRODUCT CONTAINS:

TOTAL 100.0%

Ingredient Statement

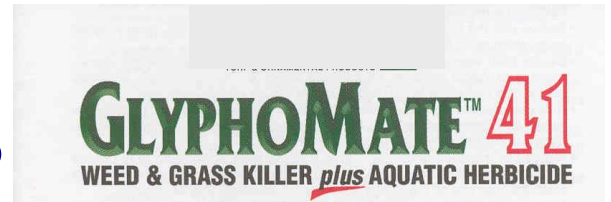
- Inert Ingredients
 - Listed as total percentage in the product



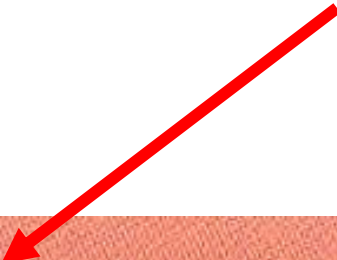
ACTIVE INGREDIENT:	
Glyphosate (N-(phosphonomethyl)glycine) in the form of its isopropylamine salt	41.0%
INERT INGREDIENTS:	59.0%
THIS PRODUCT CONTAINS:	TOTAL 100.0%

Ingredient Statement

■ Active Ingredients



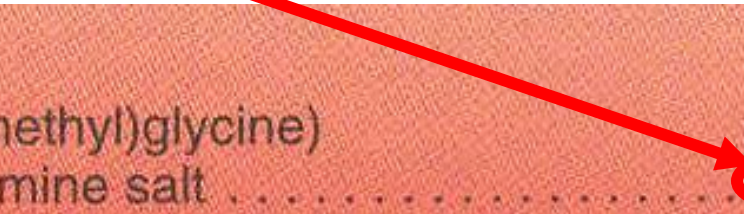
- The part of the product that actually controls the pest(s)



ACTIVE INGREDIENT:	
Glyphosate (N-(phosphonomethyl)glycine) in the form of its isopropylamine salt	41.0%
INERT INGREDIENTS:	59.0%
THIS PRODUCT CONTAINS:	TOTAL 100.0%

Ingredient Statement

- ▶ Active Ingredient:
 - Each active ingredient must be listed by individual percentage

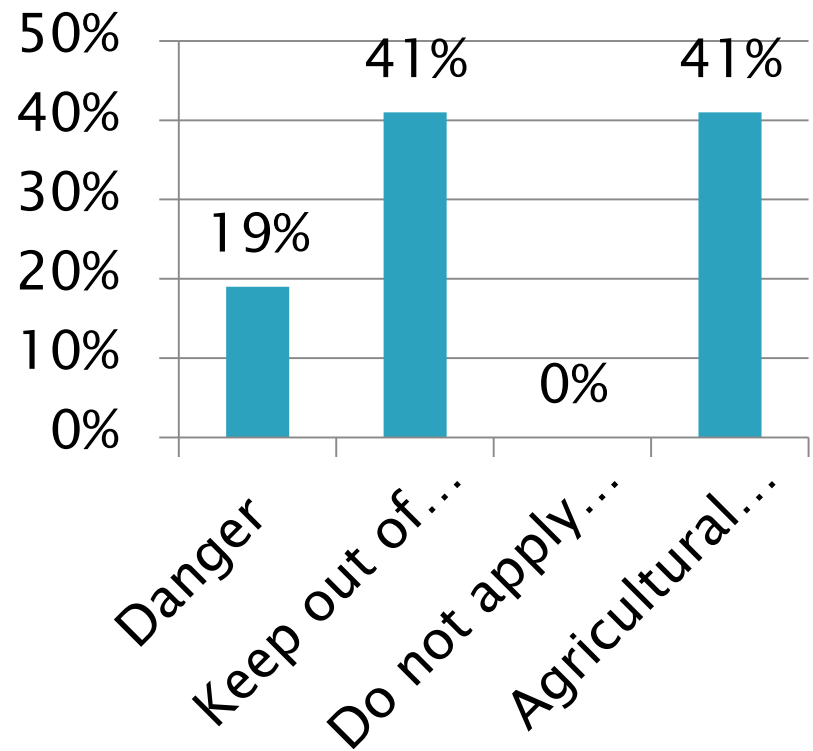


ACTIVE INGREDIENT:	
Glyphosate (N-(phosphonomethyl)glycine) in the form of its isopropylamine salt	41.0%
INERT INGREDIENTS:	59.0%
THIS PRODUCT CONTAINS:	TOTAL 100.0%

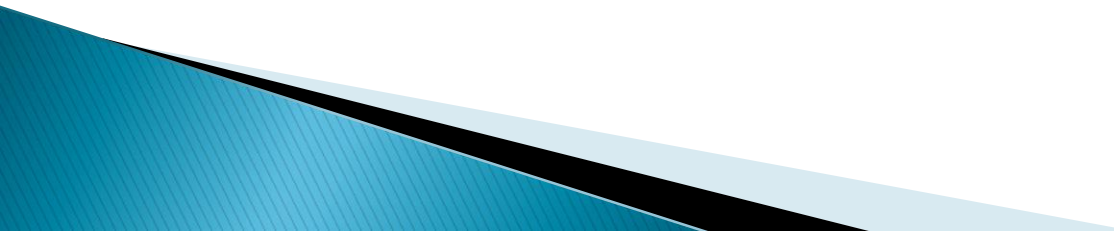
Precautionary Statements

Which precautionary statement is on every label?

1. Danger
2. Keep out of reach of children
3. Do not apply to water
4. Agricultural Use Requirements



Precautionary Statements

- ▶ Other precautions that should be followed when handling the product
 - ▶ Common sense practices to minimize exposure to applicators, the environment and others who may come in contact with the treated area
- 

User Safety Recommendations:

Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet

Users should remove clothing immediately if pesticide gets inside.

Then wash thoroughly and put on clean clothing.

Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Personal Protective Equipment

- ▶ Tells applicators what Personal Protective Equipment (PPE) should be worn to minimize exposure
- ▶ Often different for different tasks

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Protective eyewear
- Coveralls over long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing or loading
- For handling activities, a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C)

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

A Pesticide Applicator's Guide to

Glamour

DOES YOUR PPE
REALLY KEEP YOU
SAFE?

7

AVOID EXPOSURE
WITH PROPER PPE
CARE

**TOP PPE FOR
THE SAFETY
MINDED**

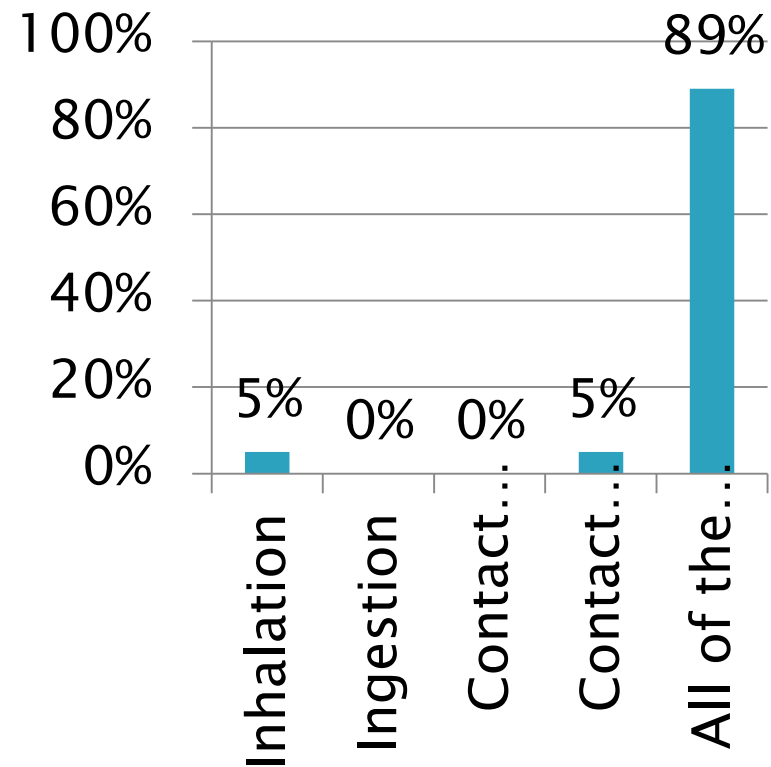
Linda Seals, Commercial Horticulture Agent, Brevard County UF/IFAS Extension
Daphne Richards, Horticulture Agent, Travis County, Texas A&M AgriLife
Extension Service



Does your PPE keep you safe?

How can pesticides enter your body?

1. Inhalation
2. Ingestion
3. Contact with skin
4. Contact with eyes
5. All of the above



Personal Protection Equipment

PPE must be worn properly

PPE must fit the job & the pesticide used

PPE is required by law

The pesticide label will list the MINIMUM requirements

Proper PPE
protects against
pesticide
exposure



Label states MINIMUM requirements

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if swallowed, inhaled, or absorbed through skin. Causes eye irritation. Avoid contact with skin, eyes, or clothing. Avoid breathing dust or vapor. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. Keep children or pets off treated area until spray is dry.

Personal Protective Equipment (PPE):

WPS USES: Applicators and Other Handlers who handle this product for any use covered by the Worker Protection Standard (40 CFR part 170) – in general, agricultural plant uses e.g., use in sod farms, must wear:

- Long-sleeved shirt and long pants
- Chemical resistant gloves made of any waterproof material such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC) or viton. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart.
- Shoes plus socks

Follow manufacturer's instructions for cleaning/ maintaining personal protective equipment, PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Non-WPS USES: Applicators and other handlers who handle this product for any use NOT covered by the Worker Protection Standard (40 CFR part 170) – in general, only agricultural plant uses are covered by the WPS, must wear:

- Shirt and pants
- Gloves
- Shoes plus socks

Engineering controls statements:

- When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS

User should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

What is WPS?

- ▶ Agricultural production of plants
 - Farms
 - Forests
 - Nurseries
 - Greenhouses
- ▶ Landscape uses
- ▶ Structural applications
- ▶ Wide area public pest control such as mosquito control
- ▶ Vertebrate pest control
- ▶ Pasture
- ▶ Right-of-way

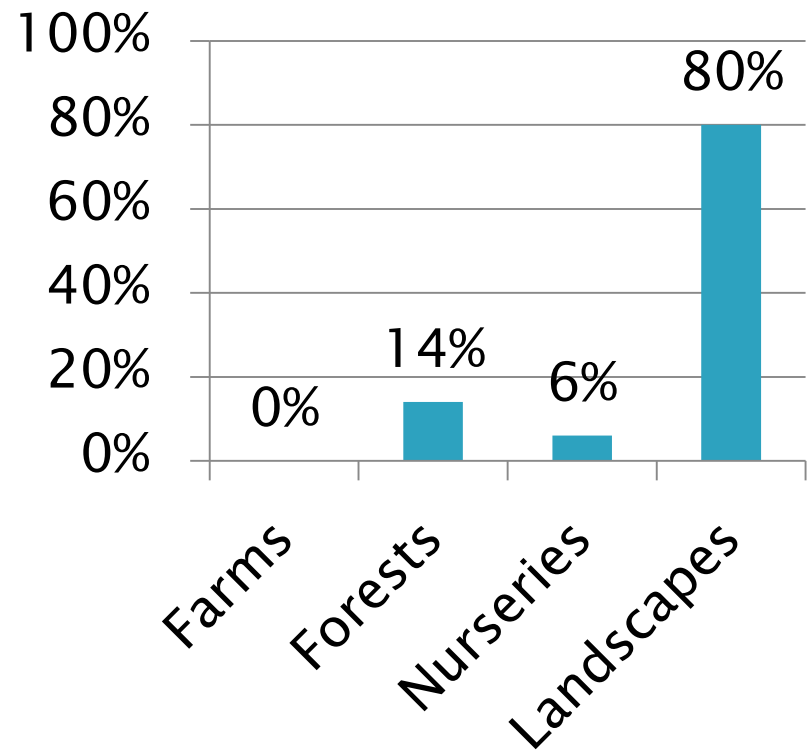
Worker Protection
Standard

Not WPS

Agricultural Use Requirements

Where does this NOT apply?

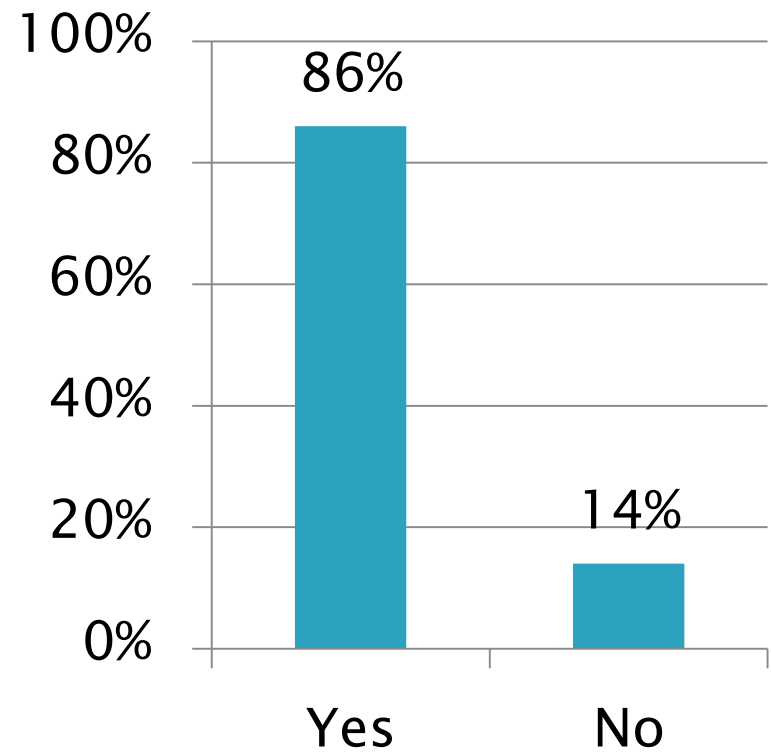
1. Farms
2. Forests
3. Nurseries
4. Landscapes



WPS

Does the Worker Protection Standard apply to you?

1. Yes
2. No



Worker Protection Standards (WPS)

- Within the Agricultural Use Requirements box you will find
 - Restricted entry interval (REI)
 - Early entry PPE requirements
 - Worker notification



Label states MINIMUM requirements

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if swallowed, inhaled, or absorbed through skin. Causes eye irritation. Avoid contact with skin, eyes, or clothing. Avoid breathing dust or vapor. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. Keep children or pets off treated area until spray is dry.

Personal Protective Equipment (PPE):

WPS USES: Applicators and Other Handlers who handle this product for any use covered by the Worker Protection Standard (40 CFR part 170) – in general, agricultural plant uses e.g., use in sod farms, must wear:

- Long-sleeved shirt and long pants
- Chemical resistant gloves made of any waterproof material such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC) or viton. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart.
- Shoes plus socks

Follow manufacturer's instructions for cleaning/ maintaining personal protective equipment, PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Non-WPS USES: Applicators and other handlers who handle this product for any use NOT covered by the Worker Protection Standard (40 CFR part 170) – in general, only agricultural plant uses are covered by the WPS, must wear:

- Shirt and pants
- Gloves
- Shoes plus socks

Engineering controls statements:

- When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS

User should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Chemical Resistance

The term *chemical-resistant* means there is no measurable movement of pesticide through the material

PPE that

is *Water resistant* prevents a small amount of fine spray particles or small liquid splashes from penetrating the clothing and reaching the skin

Waterproof (liquid-proof) material keeps water-soluble materials out, but not necessarily oil solvent-based products.



Check the label for specific requirements!

EPA Chemical Resistance Category Selection Chart

Selection	Type of Resistant Material							
category on label	Barrier laminate	Butyl rubber ≥ 14 mils	Nitrile rubber ≥ 14 mils	Neoprene rubber ≥ 14 mils	Natural rubber* ≥ 14 mils	Poly-ethylene	Polyvinyl chloride (PVC) ≥ 14 mils	Viton ≥ 14 mils
A Dry & water-based formulations	High	High	High	High	High	High	High	High
B	High	High	Slight	Slight	None	Slight	Slight	Slight
C	High	High	High	High	Moderate	Moderate	High	High
D	High	High	Moderate	Moderate	None	None	None	Slight

safety

7 Top PPE for the ~~Fashion~~ Minded



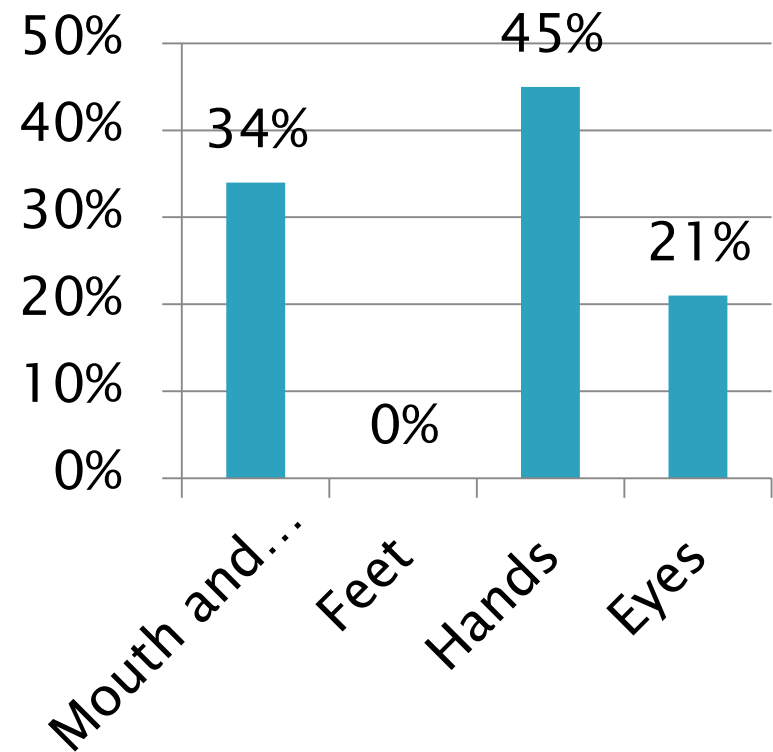
Fashion Show Time!



7 Top PPE for the Fashion Minded

Which body part is most likely to be exposed to pesticides?

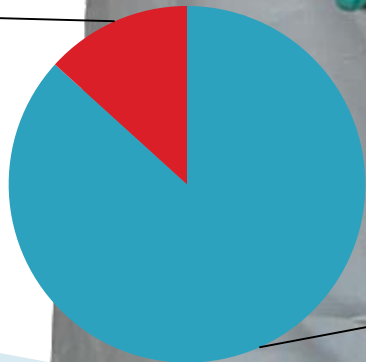
1. Mouth and Nose
2. Feet
3. Hands
4. Eyes



7 Top PPE for the Safety Minded

Hands and forearms are the parts of the body that get the most exposure
Gloves should be worn any time pesticides may contact hands

Fore
arm
13%



Hands
87%

Research showed wearing gloves reduced exposure by at least 98 percent to applicators who had spills while mixing or applying pesticides

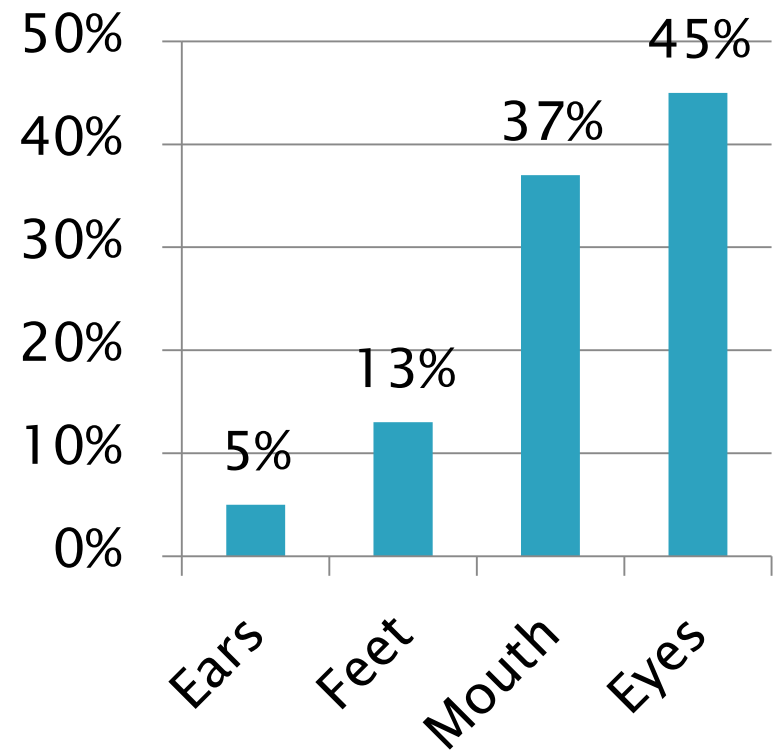
Average urinary glyphosate concentration values on the day of application according to use of rubber gloves

Activity	Use of Rubber Gloves	
	Yes	No
	Concentration (ppb)	Concentration (ppb)
Spill while mixing	4.1	232.7
Spill while applying	3.6	153.6

7 Top PPE for the Fashion Minded

Your hands are covered, which body part is the next most likely to be exposed to pesticides?

1. Ears
2. Feet
3. Mouth
4. Eyes



7 Top PPE for the Safety Minded



#2

Goggles, face shields, and safety glasses with shields at both the brow and sides are examples of protective eyewear.

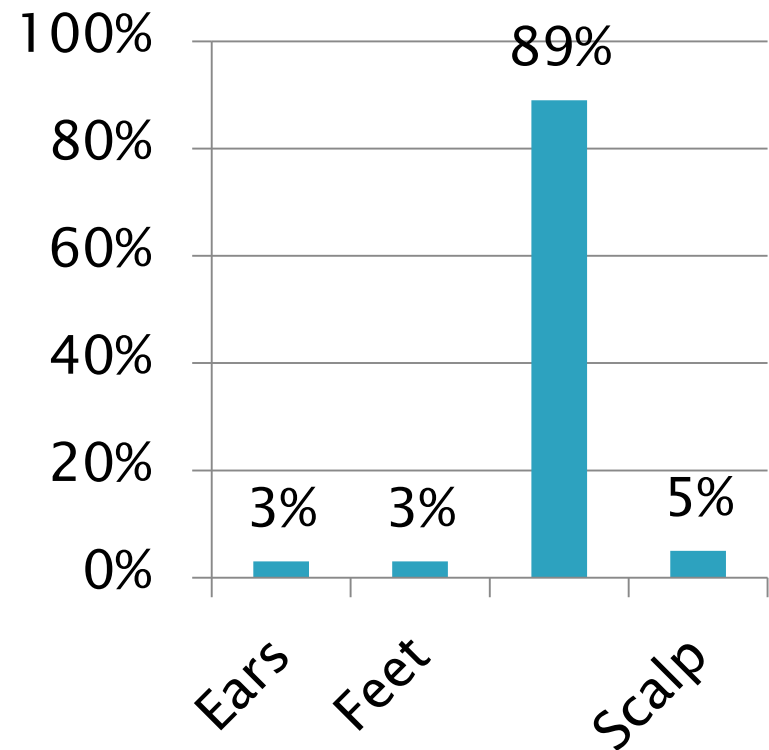
Eyes are very sensitive to the chemicals contained in some pesticide formulations, especially concentrates.

Protect your eyes by selecting the appropriate eyewear:
Safety glasses, face shield, goggles, full face respirator

7 Top PPE for the Fashion Minded

Which body part is most likely to be exposed to pesticides?

1. Ears
2. Feet
3. Mouth and Nose
4. Scalp



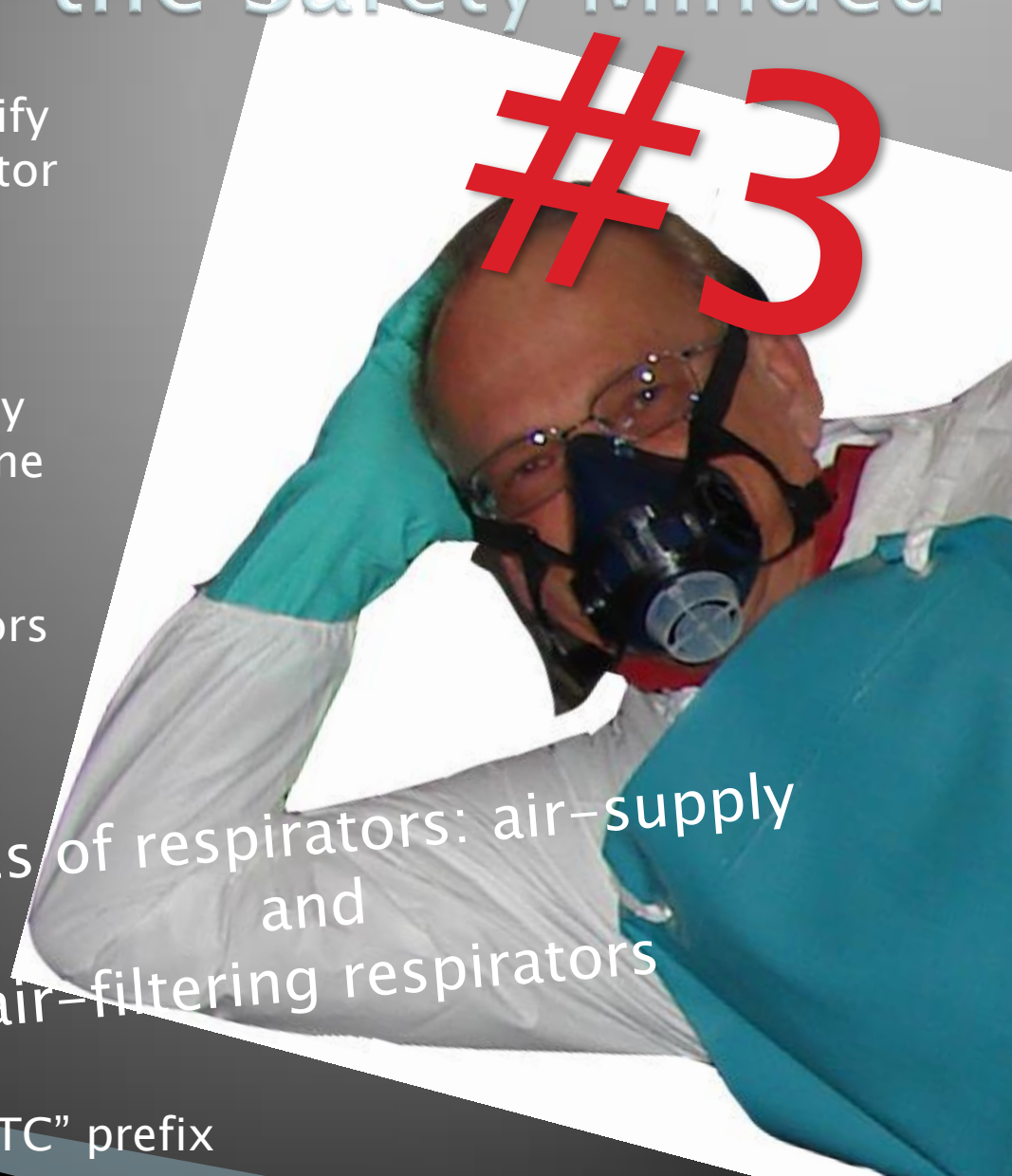
7 Top PPE for the Safety Minded

The label will specify the type of respirator required

Use only National Institute of Occupational Safety and Health and Mine Safety Health Administration approved respirators



#3

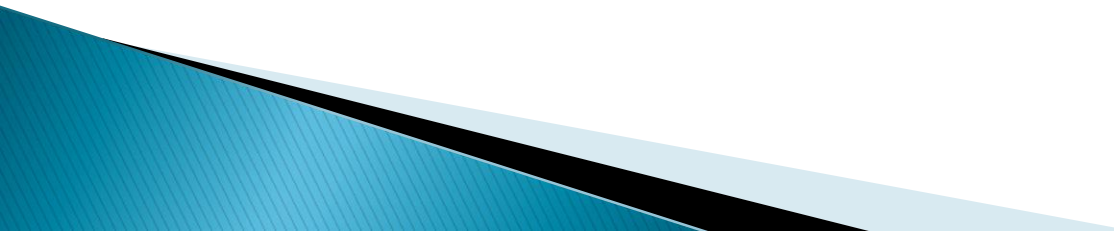


Respirators protect from breathing pesticide-contaminated air

2 types of respirators: air-supply and air-filtering respirators

Approved respirators carry a "TC" prefix

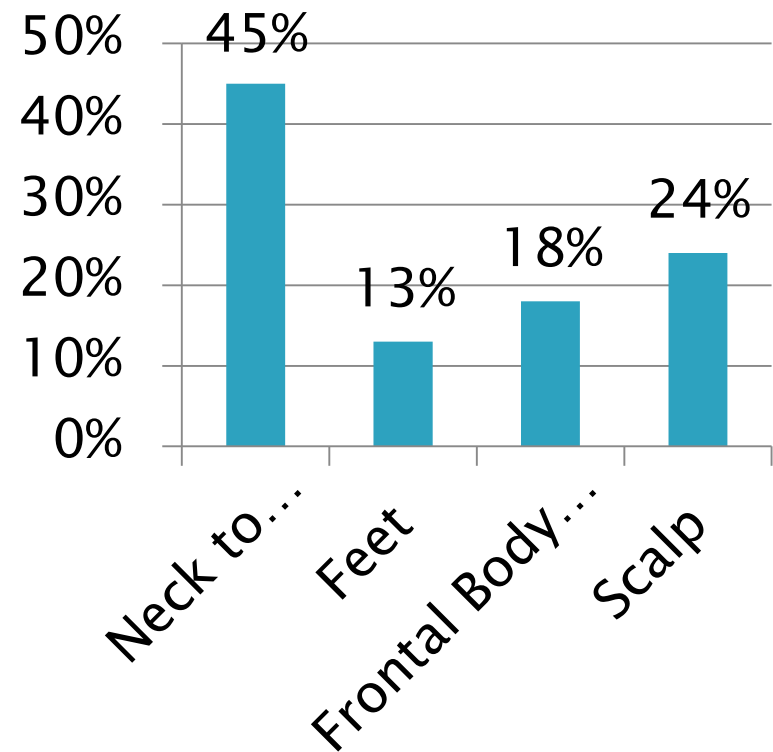
NIOSH TC Code Designations

- ▶ TC-84A: non-powered particulate respirators (N, P, and R filters)
 - ▶ TC-21C: powered particulate respirators only (100 series filters)
 - ▶ TC-23C: chemical cartridge respirators
 - ▶ TC-14G: gas masks with canisters
 - ▶ TC-19C: supplied-air respirators
 - ▶ TC-13F: self-contained breathing apparatus
- 

7 Top PPE for the Fashion Minded

Which body part is most likely to be exposed to pesticides?

1. Neck to ankles and wrists
2. Feet
3. Frontal Body Parts
4. Scalp



7 Top PPE for the Safety Minded

Always wear an apron when pesticide concentrates are used

The pesticide label may require wearing a chemical-resistant apron when mixing or loading a pesticide or when cleaning application equipment

Be careful when wearing an apron around equipment with moving parts. Consider wearing a chemical suit in those situations



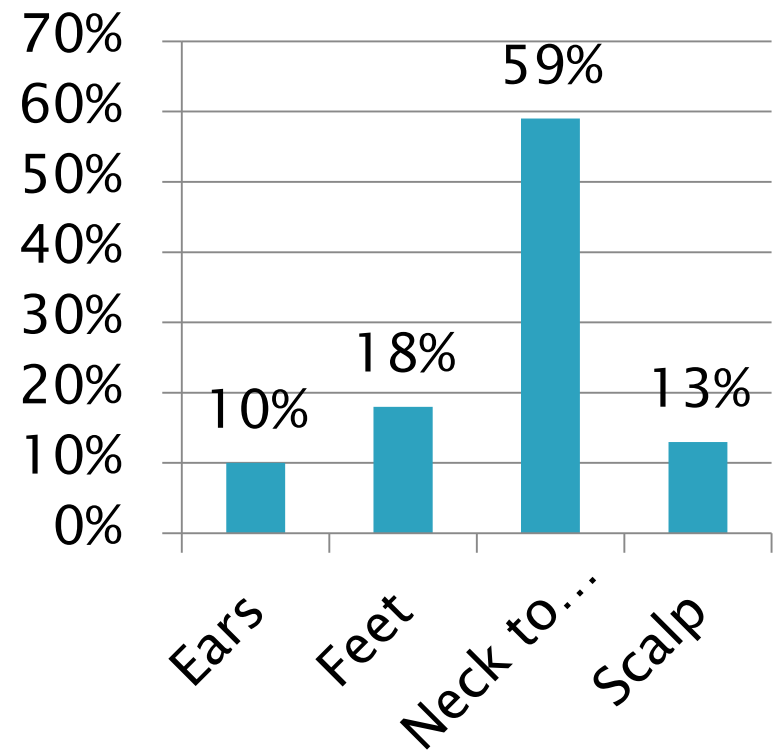
Aprons protect from splashes and spills and protects clothing

#4

7 Top PPE for the Fashion Minded

Which body part is most likely to be exposed to pesticides?

1. Ears
2. Feet
3. Neck to ankles and wrists
4. Scalp



7 Top PPE for the Safety Minded



The protection offered by chemical-resistant clothing depends on the fabric, and on design features

Coveralls should be made of sturdy material such as cotton, polyester, a cotton-synthetic blend, denim, or a non-woven fabric such as Tyvek®. Well-designed coveralls offering protection from pesticides are tightly constructed, have sealed seams and snug, overlapping closures that do not allow gaps and do not unfasten readily.

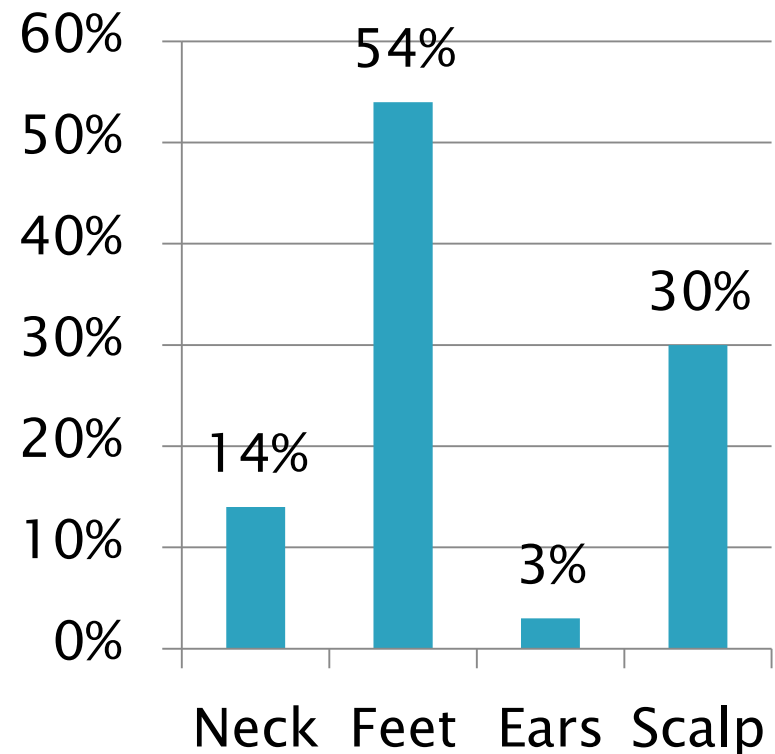
Coveralls can protect clothing and reduce exposure

Some product labels require a chemical-resistant suit

7 Top PPE for the Fashion Minded

Which body part is most likely to be exposed to pesticides?

1. Neck
2. Feet
3. Ears
4. Scalp



7 Top PPE for the Safety

Check the product label for specific footwear requirements (i.e., chemical-resistant, waterproof)



Feet are highly susceptible to pesticide exposure

#6

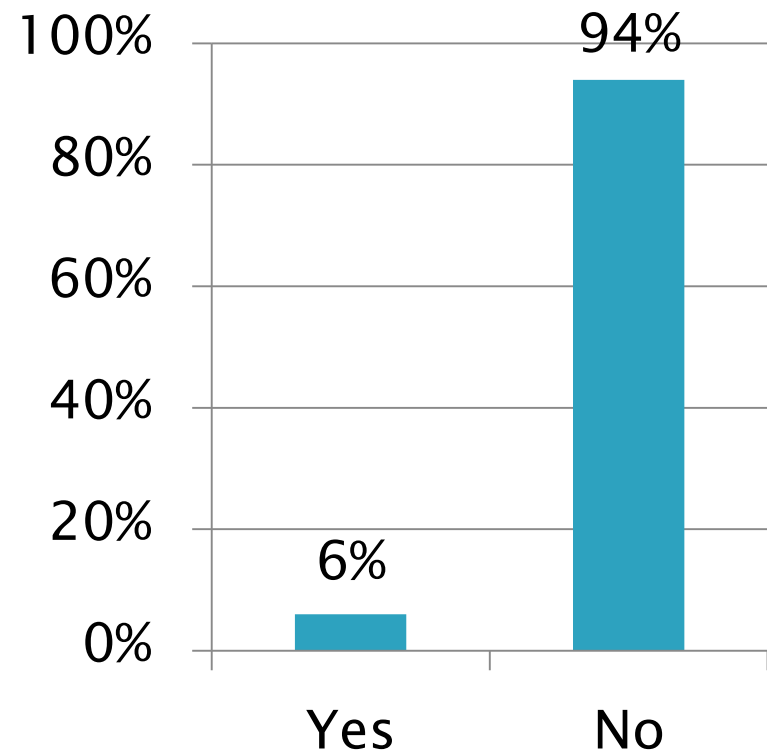
Shoes and socks are adequate for most pesticide handling activities



7 Top PPE for the Fashion Minded

Should you tuck your pants legs in chemical resistant boots?

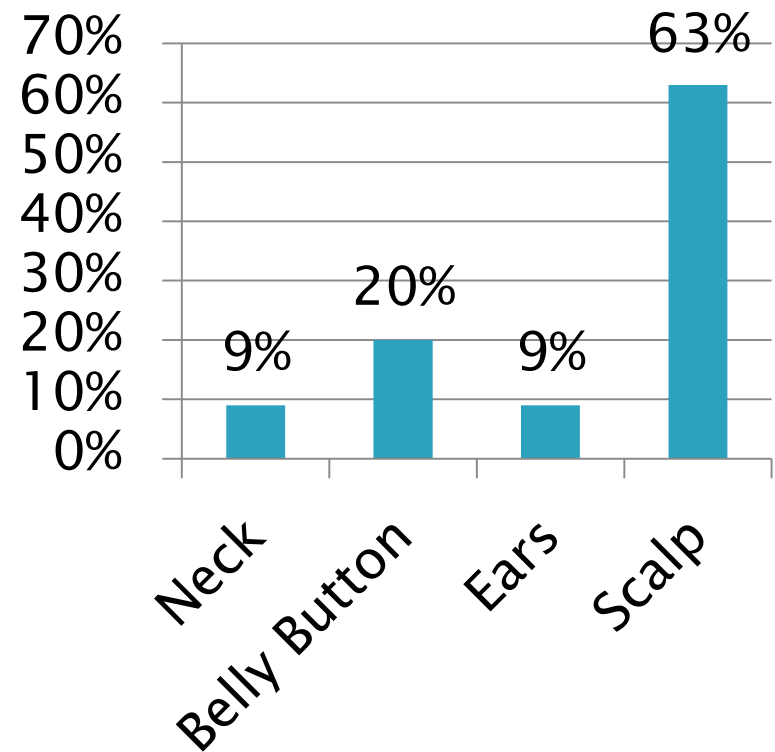
1. Yes
2. No



7 Top PPE for the Fashion Minded

Which body part is most likely to be exposed to pesticides?

1. Neck
2. Belly Button
3. Ears
4. Scalp



7 Top PPE for the Safety Minded



#7



Hats must not contain absorbent material such as cotton, leather, or straw

Plastic safari hat with a plastic sweatband is best choice.

Check product label for specific requirements (i.e., chemical-resistant hoods)

PPE Maintenance

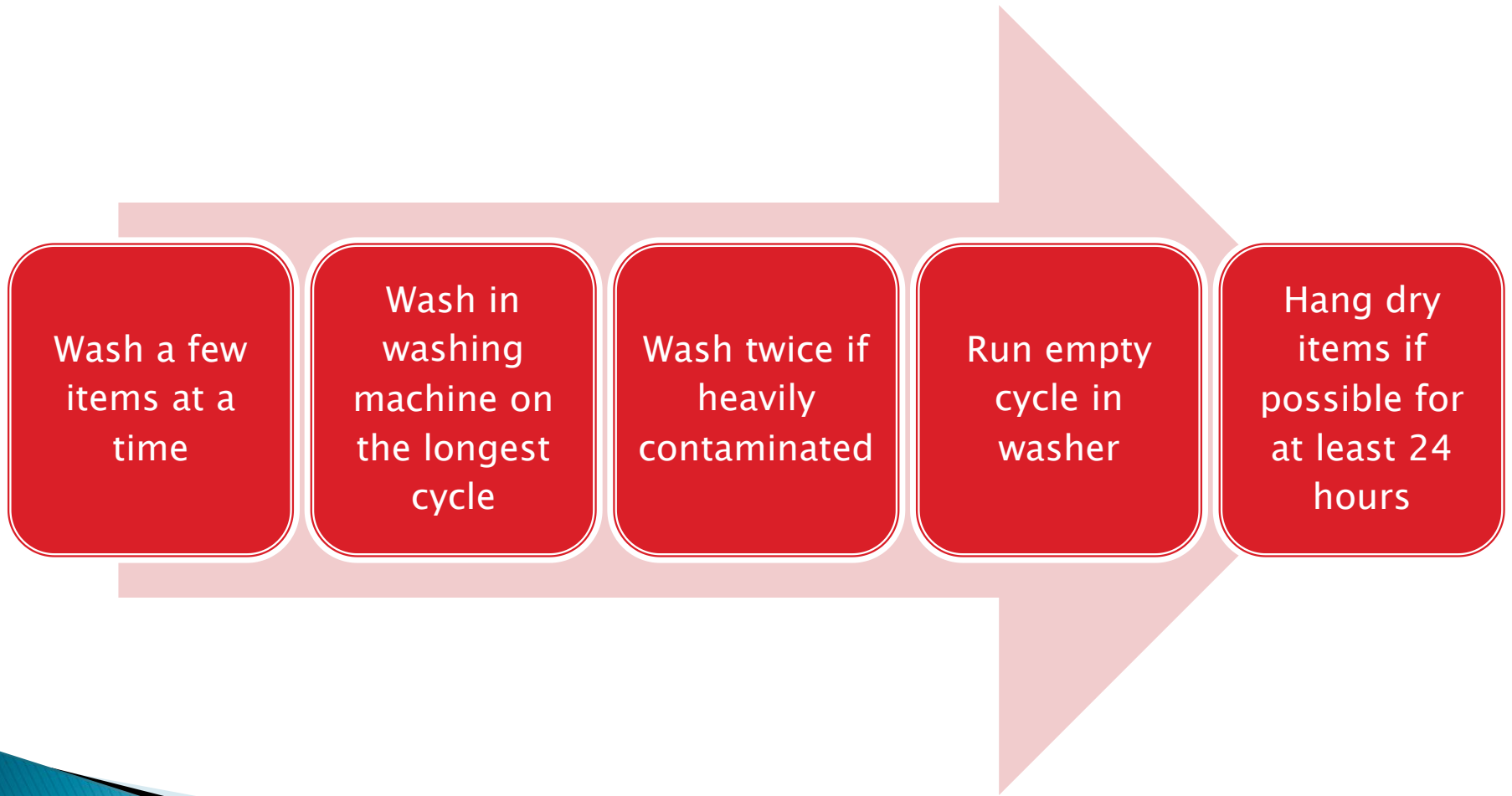
Disposables

- Meant to be disposed of
- Use for handling activities that require dexterity and does not tear the thin plastic

Reusable

- Meant to be washed or cleaned after use
- Gloves are good for about 7 days/applications
- Respirators, headgear, footwear may last years

Washing Contaminated PPE



Eyewear and Respirators

Wash after each
use with
detergent and
hot water

Hang dry
thoroughly

Sanitize by
soaking 2
minutes in 2
tbs. bleach to 1
gal. hot water

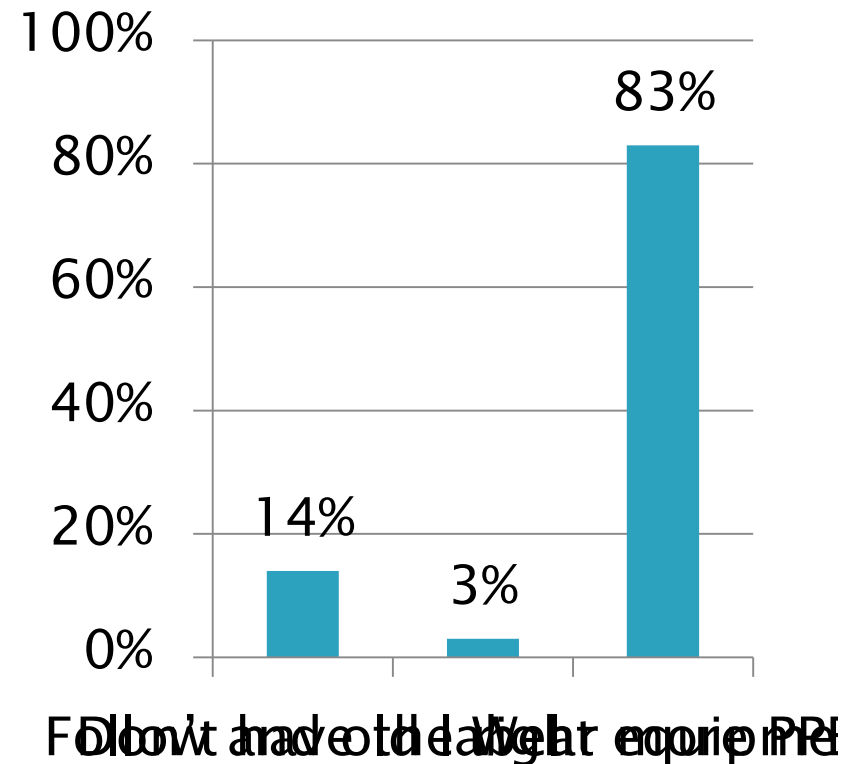
Store in plastic
bags with zip
closures



The Label is the Law

When is it ok to deviate from the label instructions?

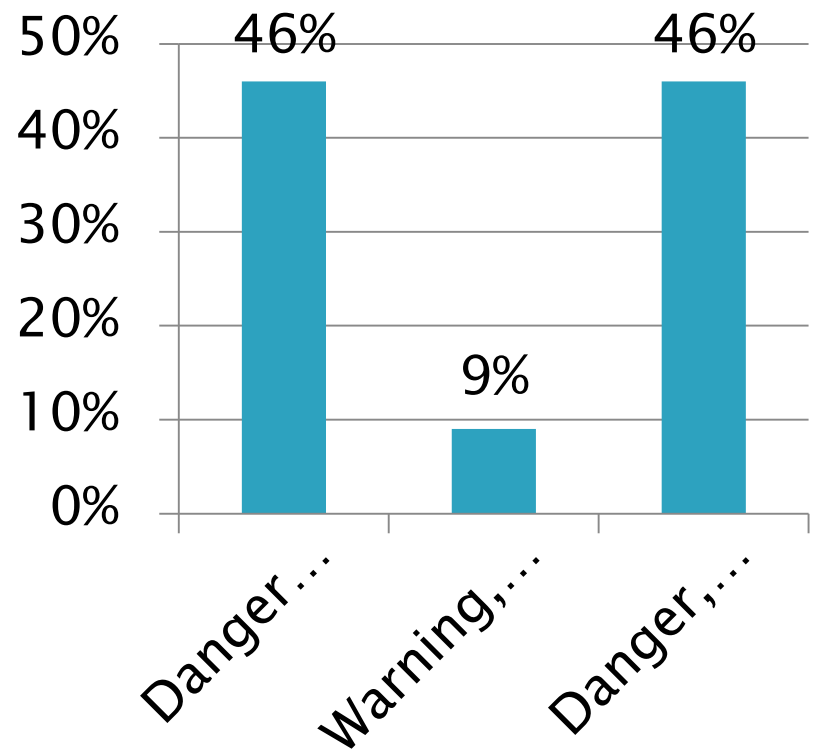
1. Follow an old label
2. Don't have the right equipment
3. Wear more PPE




Signal Words

Most to Least Toxic

1. Danger, Warning, Caution
2. Warning, Caution, Danger
3. Danger, Caution, Warning



Signal Words

- ▶ The word on the label that tells the potential hazards of the product
 - Danger Poison w/ skull & Crossbones 
 - Danger
 - Warning
 - Caution

Signal Words

▶ DANGER–POISON

with a skull and crossbones symbol

- **Peligro** (Spanish for “danger” must also appear on the label)
- ▶ Indicates the product is highly toxic by any route of entry



Signal Words

▶ DANGER

- Indicates that the product has a high potential to irritate skin and eyes

Signal Words

▶ **WARNING**

- Product is moderately toxic orally or when inhaled
- Can also cause moderate eye or skin irritation

Signal Words

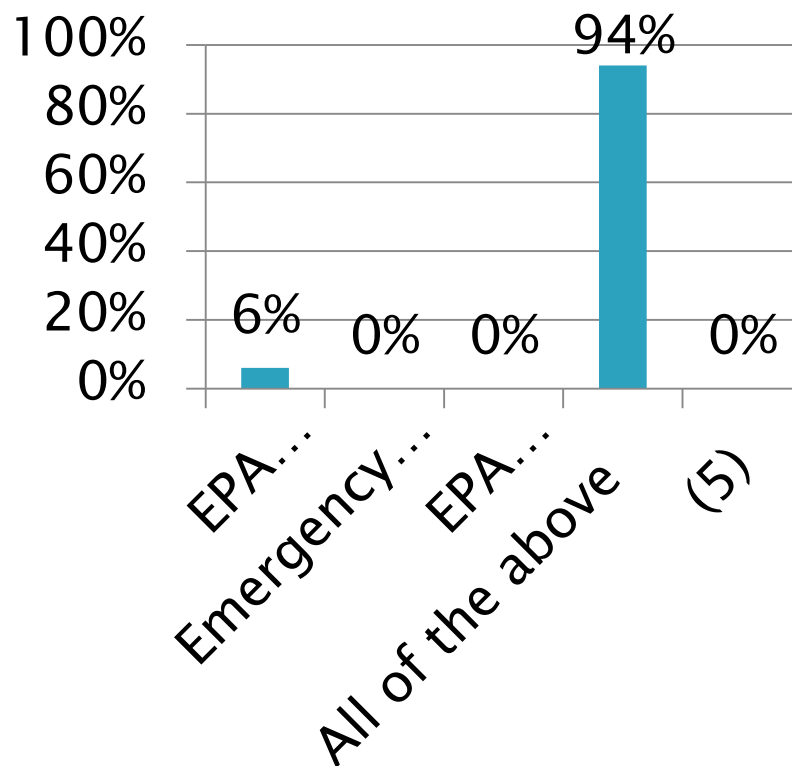
▶ CAUTION

- Harmful if swallowed or inhaled
- May irritate eyes, nose, throat, and skin

Numbers

Which numbers will you find on a label ?

1. EPA Registration #
2. Emergency phone
3. EPA Establishment
4. All of the above



EPA Establishment Number

- ▶ Tells where that product was made
 - Important if it is ever necessary to recall the product
- ▶ Includes abbreviation of state of origin

EPA Registration Number

- ▶ Indicates that the product has passed all tests required by EPA
 - Human health testing
 - Environmental testing
 - Wildlife toxicities

EPA Registration Number

- ▶ If a product contains an active ingredient on EPA's 25B list, no EPA registration number is required
- ▶ 25B list contains 31 active ingredients that are “non-toxic”
 - e.g. Mint oil, dried blood, citronella

Emergency Number

- Contact number in the event of human exposure, spill, accident, or environmental exposure

Emergency Number ?

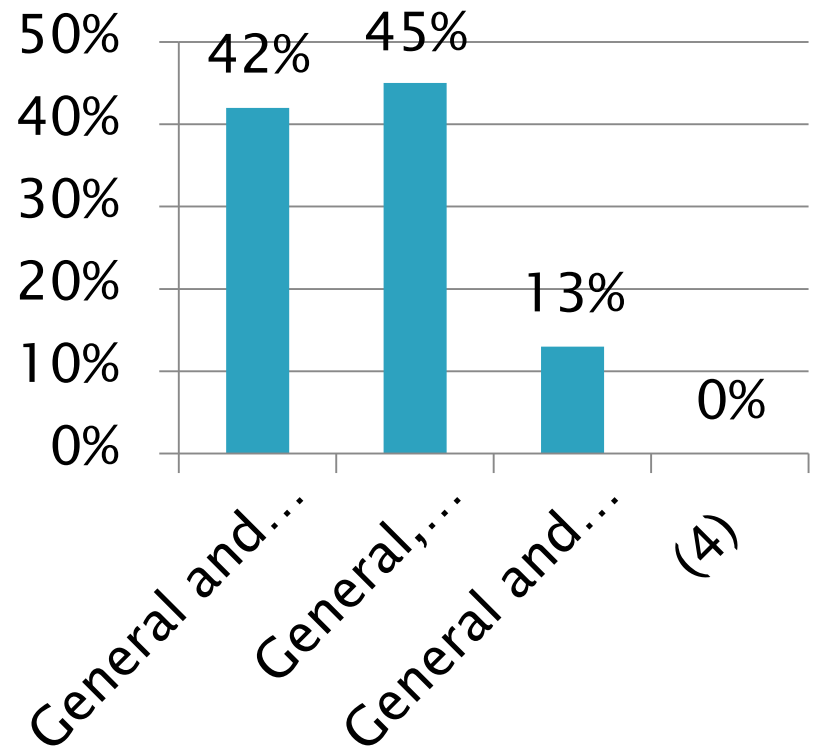
National
poison center number



Use Classification

What are the use classifications?

1. General and Restricted
2. General, Private, and Restricted
3. General and Precautionary



Use Classification Statement

- ▶ Two types of classification

Restricted
Use



General Use

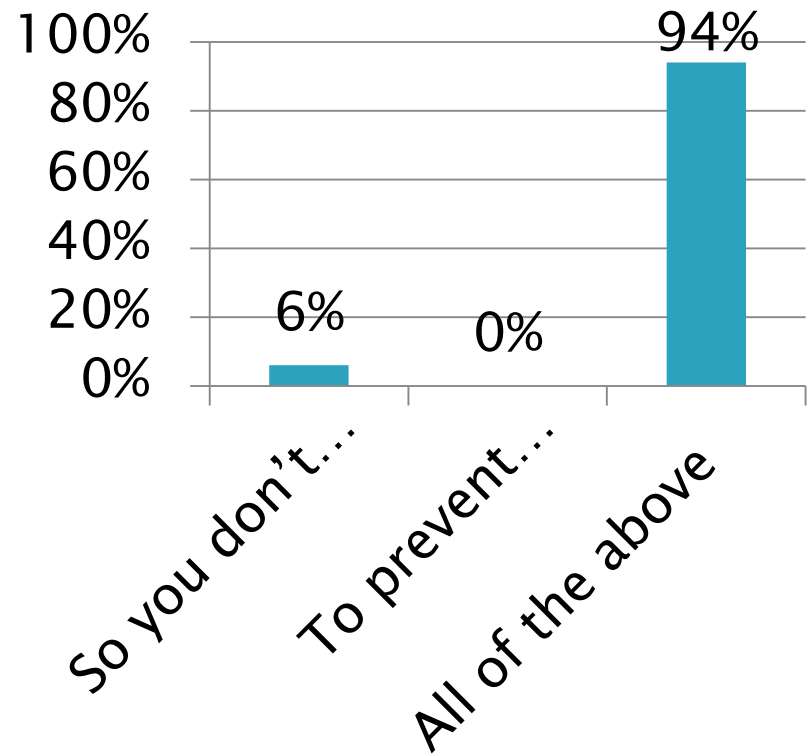
Use Classification Statement

- ▶ Restricted Use:
 - For sale to, and for use only by, certified applicators or applicators under the direct supervision of a certified applicator

Storage and Disposal

Why should you keep pesticides in their original container?

1. So you don't lose the label
2. To prevent accidental consumption
3. All of the above



Storage and Disposal

- ▶ Store in original container only
 - ▶ Temperature restrictions
 - ▶ Container disposal
- 

Storage and Disposal

Storage: Store above 10°F (12°C) to keep product from crystallizing. Crystals will settle to the bottom. If allowed to crystallize, place in a warm room (68°F or 20°C) for several days to allow crystals to re-dissolve, then shake before using.

Trade Name



Herbicide

Nonselective Foliar Systemic
Herbicide for Weed Control

Active Ingredient:
*Glyphosate:
N-(phosphonomethyl) glycine 28.3%
Inert Ingredients: 71.7%
Total: 100.0%

*Contains 3 pounds of glyphosate acid in each gallon, in the diammonium salt form. See directions for use in attached booklet.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

EPA Reg. No. 100-1121
EPA Est. 100-LA-001^{SSG}
EPA Est. 100-NE-001^{MHA}
Superscript identifies manufacturing site
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U.S. Patent No. 5,468,718
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Syngenta Crop Protection, Inc.
Greensboro, North Carolina 27409
www.syngenta-us.com
SCP 1121A-L1 0601

2.5 gallons
U.S. Standard Measure

KEEP OUT OF REACH OF CHILDREN.
CAUTION

FIRST AID	
If in eyes	• Flush eyes with plenty of water. Call a physician if irritation persists.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
HOT LINE NUMBER	
For 24 Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident), Call 1-800-888-8372	

Precautionary Statements

Hazards to Humans and Domestic Animals
Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.

Environmental Hazards
Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash water.

Storage and Disposal
Container Disposal
Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER!

Review



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Ingredient Statement

Review



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EPA Reg. and Est. No.

Review



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2.5 gallons
 U.S. Standard Measure

Net Contents

Review



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CAUTION

Signal Word

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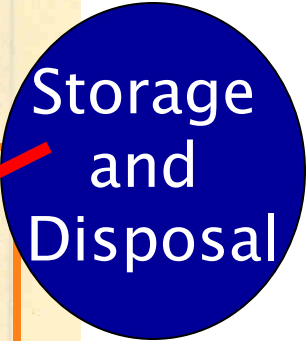


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The information for this presentation was found in the UF/IFAS EDIS publication:
<http://edis.ifas.ufl.edu/pi061>

A woman wearing a white short-sleeved shirt, a green skirt with a white leaf pattern, and a straw hat is pushing a lawnmower on a green golf course. The background shows a golf course with trees and a clear sky.

TEXAS A&M
AGRI LIFE
EXTENSION

Daphne Richards
County Extension Agent--Horticulture

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Questions?

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Thanks!

