



Top Tips for Pesticide Applicators

Penn State Pesticide Education Program
extension.psu.edu/pesticide-education





PESTICIDE LABELS



Image: Penn State Pesticide Education Program



#1 Answer

- Read and understand the Label!
- Read and understand the entire Label!

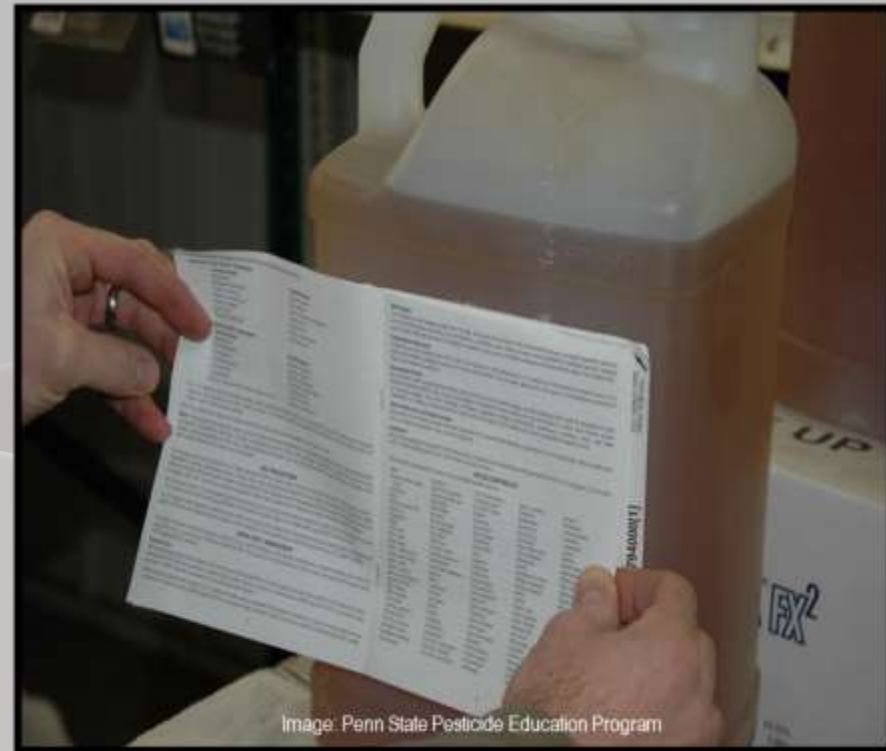


Image: Penn State Pesticide Education Program

Labels



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When Do You Read the Label?

- Before you buy the pesticide
- Before you mix the pesticide
- Before you apply the pesticide
- Before you dispose of the pesticide or its container

Labels



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Have Access to Your Labels

- Get copies of labels and MSDSs and keep in a reference binder or file
- Store the binder or files outside of the pesticide storage area for quick access in case of emergency



Image: Penn State Pesticide Education Program

Labels



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PERSONAL PROTECTIVE EQUIPMENT



Do You Have the Required PPE?

- Purchase before the spray season starts
- Does it match the requirements of the products you will be using?
- How do you have it stored?
- Have you replaced worn-out PPE?



PPE



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SPRAYER CALIBRATION



Do You Calibrate Your Sprayers?

- Keep a record of all your calibrations;
 - It is a time saver later
- Do you know how to do the $1/128^{\text{th}}$ of an acre boom sprayer calibration?
- Know the value of correct calibration!



Calibration



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INTEGRATED PEST MANAGEMENT (IPM)



Use Integrated Pest Management

- Identify the pest
- Monitor for pest populations
- Establish action threshold
- Choose appropriate control tactics
- Evaluate the results

IPM



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Know Your Pests Before You Treat!

- What is the life cycle?
- Are certain products more effective than others?



IPM



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Know Your Pests Before You Treat!

- Wrong pesticide for the pest, can cost you money and does nothing to solve your problem.
- Some insects and diseases cause little damage to certain plants, and some weeds are not competitive.



IPM



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Determine Whether the Pest(s) ...

- Will cause trouble this year
 - Scout the field or garden to determine the presence and extent of the pest
 - Do the past or current weather conditions favor a major infestation
 - Is the crop close to harvest



Determine Whether the Pest(s) ...

- Will cause trouble this year
 - Can you accept superficial damage or absolutely no damage at all
 - Understand thresholds and the principle of managing populations



Combine Effective Techniques into an IPM Approach

- Reasonable cost
- Protect the Environment
 - Biological
 - Mechanical
 - Cultural
 - Genetic
 - Chemical



IPM



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Promote Biological Control

- Protect beneficial predators and parasites that help control the pest



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Do Not Wait To Treat!

- Don't gamble and delay treatment when you know a pesticide will be needed
- Pesticide effectiveness often depends on a specific timing and placement relative to the crop and/or pest



Do Not Wait To Treat

- Waiting too long can leave you with no effective way to control the pest



IPM



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Re-infestation or Regrowth

- 2nd flushes of weeds may or may not be competitive
- Re-infestations of insects or diseases may or may not cause unacceptable plant damage



Re-infestation or Regrowth

- Know what you can tolerate and continue monitoring after every application.



Use Rescue Treatments

- Rescue treatments are used to help prevent:
 - Weed seed production
 - Harvest problems
 - Pest contamination of the crop





PESTICIDE SPILLS



Prevent Spills

- Keep absorbent material such as cat litter readily available
- Clean up both liquid and dry spills immediately
- Dispose of pesticide spill materials properly





FATE OF PESTICIDES



Understand the Importance of Buffers

- Natural or man-made physical barriers
 - Can reduce spray drift, water runoff, and soil erosion



Image: Penn State Pesticide Education Program





RESISTANCE MANAGEMENT



Understand Resistance Management

- Look for the Group Number on the label to indicate mode of action (MOA)
- Rotate pesticides with different MOAs
- Tank mixtures or premixes that contain multiple MOA can help



Image: Penn State Pesticide Education Program





DISPOSAL OF PESTICIDES



No Longer Plan To Use a Registered Pesticide

- Be aware of
 - State disposal regulations.
 - Local and municipality ordinances
- Check out CHEMSWEEP
 - www.pda.state.pa.us/CHEMSWEEP



Disposal

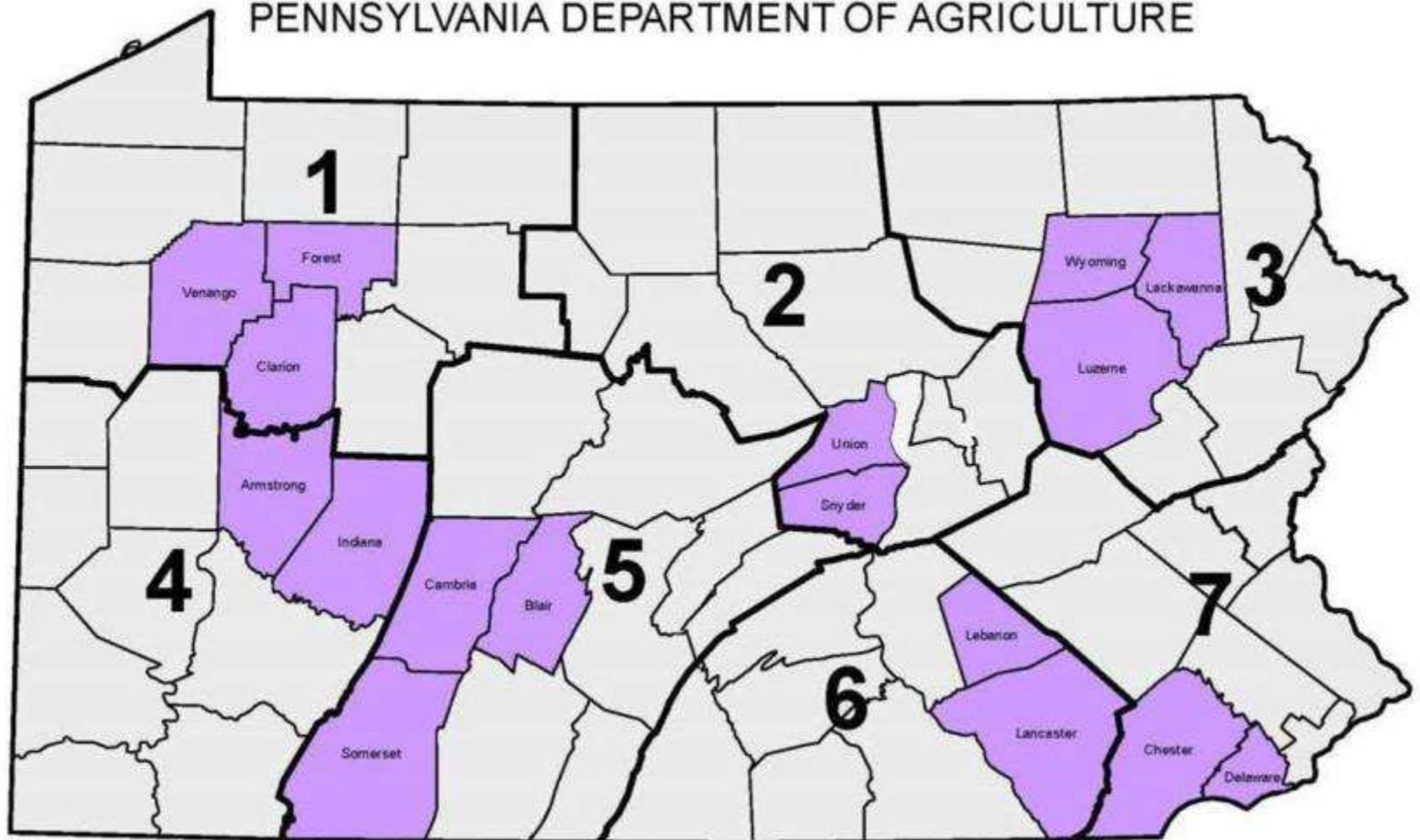


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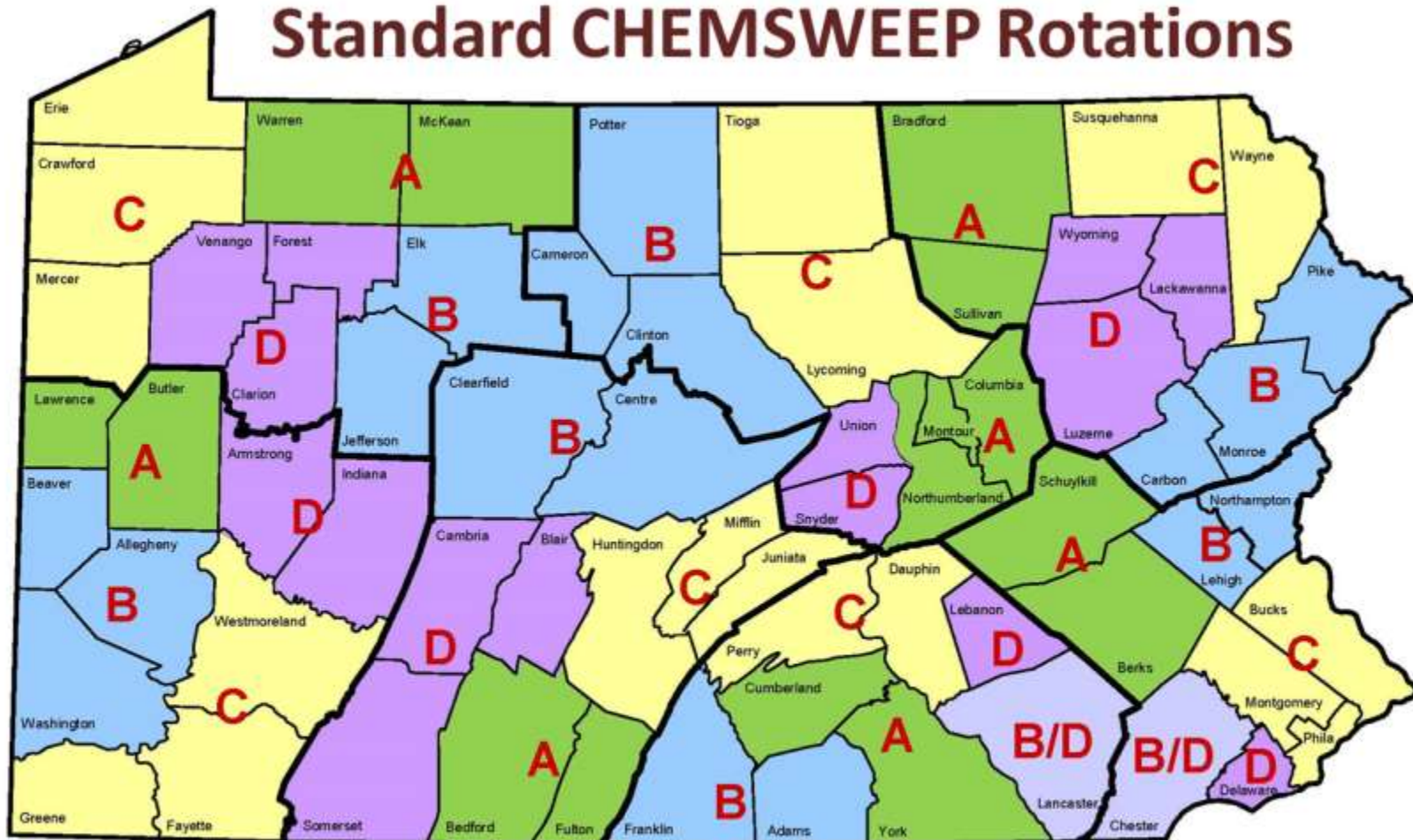
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PENNSYLVANIA DEPARTMENT OF AGRICULTURE



Standard CHEMSWEEP Rotations



A=2017, 2021 **B=2014***, 2018, 2022 **C=2015, 2019, 2023** **D=2016, 2020, 2024**

*2014 also included Schuylkill County.



Triple- or Pressure-Rinse “Empty” Liquid Product Containers

- Dispose of properly.
- Use the Plastic Pesticide Container Recycling Program
 - Find recycling partner drop-off locations:
 - www.pda.state.pa.us/pesticiderecycling



Disposal



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HOW DO YOU STORE YOUR PESTICIDES?

Storage



What Is Wrong In This Picture?

- Can you find six things you shouldn't do?



Image: Penn State Pesticide Education Program

Storage



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What Is Wrong In This Picture?

1. Food should not be near pesticides



Image: Penn State Pesticide Education Program

Storage



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What Is Wrong In This Picture?

1. Food should not be near pesticides
2. Do not store different types of pesticides together



Image: Penn State Pesticide Education Program

Storage



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What Is Wrong In This Picture?

1. Food should not be near pesticides
2. Do not store different types of pesticides together
3. Do not store PPE with chemicals



Image: Penn State Pesticide Education Program

Storage



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What Is Wrong In This Picture?

1. Food should not be near pesticides
2. Do not store different types of pesticides together
3. Do not store PPE with chemicals
4. Avoid wood shelving. Wood can absorb chemicals



Image: Penn State Pesticide Education Program

Storage



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What Is Wrong In This Picture?

1. Food should not be near pesticides
2. Do not store different types of pesticides together
3. Do not store PPE with chemicals
4. Avoid wood shelving. Wood can absorb chemicals
5. Store containers right-side up



Image: Penn State Pesticide Education Program

Storage



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What Is Wrong In This Picture?

1. Food should not be near pesticides
2. Do not store different types of pesticides together
3. Do not store PPE with chemicals
4. Avoid wood shelving. Wood can absorb chemicals
5. Store containers right-side up
6. Do not use carpets on floor



Image: Penn State Pesticide Education Program

Storage



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Use Secondary Containment



Image: Penn State Pesticide Education Program

Storage



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Avoid Direct Sunlight onto Pesticides



Image: Penn State Pesticide Education Program

Storage



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POLLINATORS



Protect Our Pollinators!

- Know the blooming period of plants in the area
- Follow all label directions and precautions



Pollinators



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Protect Our Pollinators!

- Most pesticides are not toxic to bees
- When using a pollinator-toxic pesticide, make sure you know the proximity of commercial hives and native pollinator habits



Pollinators



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Pollinator Protection Checklist

- ✓ Determine if the pesticide may be toxic to pollinators
 - The Environmental Hazard section of a label will indicate if a PTP is moderately or highly toxic to bees if they come in contact with the pesticide
 - There is also a “practically non-toxic to pollinators” category of pesticides



THE NEW EPA BEE ADVISORY BOX

On EPA's new and strengthened pesticide label to protect pollinators

PROTECTION OF POLLINATORS



APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. APPLICATION RESTRICTIONS FOUND IN THE LABEL.

Look for the bee hazard icon on the pesticide label to alert you to the potential hazard to 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, and 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 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/tribe, go to: www.aapco.org. Pesticide incidents can also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekills@epa.gov

Alerts users to separate restrictions on the label. These prohibit certain pesticide use when bees are present.



The new bee icon helps signal the pesticide's potential hazard to bees.

Bees are often present and foraging when plants and trees flower. EPA's new label makes it clear that pesticides cannot be applied until all petals have fallen.

Warns users that direct contact and ingestion could harm pollinators. EPA is working with beekeepers, growers, pesticide companies, and others to advance pesticide management practices.

Highlights the importance of avoiding drift. Sometimes, wind can cause pesticides to drift to new areas and can cause bee kills.

The science says that there are many causes for a decline in pollinator health, including pesticide exposure. EPA's new label will help protect pollinators.



Read EPA's new and strengthened label requirements: <http://go.usa.gov/jHH4>

THE NEW EPA BEE ADVISORY BOX

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Alerts users to separate restrictions on the label. These prohibit certain pesticide use when bees are present.



The new bee icon helps signal the pesticide's potential hazard to bees.

Makes it clear that pesticide products can kill bees and pollinators.

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PROTECTION OF POLLINATORS



APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.



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 foraging on plants
- Soil, tree injection, as well as foliar application

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators by avoiding application to plants that are in bloom or foraging on pollinator attractive plants around the application site
- Minimize drift of this product on to beehives or other structures where bees and other insect pollinators may be present. Drift of this product onto beehives can result in bee kills.

Information on protecting bees and other insect pollinators is available on the EPA's Environmental Stewardship website at: <http://pesticidestewardship.org/pollinatorprotection>

Pesticide incidents (for example, bee kills) should immediately be reported to your state or tribe, go to: www.epa.gov/pesticides/incidents or the National Pesticide Information Center at: www.npic.orst.edu

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Read EPA's new and strengthened label requirements: <http://go.usa.gov/jHH4>



DRIFT



Applicator Responsibilities

- It's the pesticide applicator's responsibility to avoid drift problems
- Read the laws and label directions as they are written to limit environmental problems
- Applicators must understand the consequences of not using pesticides properly:
 - In the environment and as well as the serious and long-lasting effects on humans, plants, and animals

Drift



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Avoid Drift

- Keep spray droplets on target
- Legal responsibility of the applicator
- Know application variables to minimize drift:
 - Type of nozzles
 - Acceptable weather conditions
 - Buffer area
 - Use of a shield on sprayer



Image: Penn State Pesticide Education Program

Drift



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Avoid Drift

- Keep spray droplets on target
 - Flexibility is a key component
 - Many factors to avoid drift can be modified by the applicator



Image: Penn State Pesticide Education Program

Drift



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Why Be Concerned About Drift?

- Damage can be significant
 - Destruction of an adjacent crop
 - Illegal pesticide residue on an adjacent food crop
 - Trees and ornamentals can be harmed by just one drift event
 - Fish and wildlife kills, including honeybees
- Human health can be adversely affected
- May result in regulatory fines, legal liability, and litigation

Drift



Why Be Concerned About Drift?

- Organic Agriculture
 - Organic certification requires pesticide-free for at least 3 years
 - Off-target movement of pesticides into organic acreage
 - Could result in loss of organic certification
 - Visible damage need not occur for certification loss

Drift



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The Bottom Line About Drift

- Pesticide must always be applied in a manner consistent with labeling
- Illegal to make an application of a pesticide resulting in off-target movement
- Drift is not tolerated in the regulatory or agricultural community
- Whether or not damage or harm has occurred, **drift is illegal!**

Drift



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Summary of Techniques to Reduce Drift

Recommended Technique	Explanation
Follow label directions for reducing drift.	Determine proper nozzle and pressure combinations.
Select a nozzle to increase droplet size.	Large droplets are less prone to drift.
Consider using new technologies.	Drift-reduction nozzles.
Lower boom height.	Lowering the boom height a few inches can reduce off-target drift.
Maintain appropriate travel speed.	High travel speeds may result in an unstable boom, high boom positions and increased drift potential.

Source: Pennsylvania Pesticide Applicator Certification Core Manual, NASDARF

Drift



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Summary of Techniques to Reduce Drift

Recommended Technique	Explanation
Avoid applications during times of high wind speeds.	More spray volume moves off-target as wind increases.
Do not spray in the presence of a temperature inversion.	Temperature inversions prevent the dissipation of spray particles.
Consider using buffer zones/no-spray zones near sensitive areas.	Leave a buffer zone/no-spray zone if sensitive areas are downwind.
Use a drift-control additive when needed.	Drift-control additives increase the average droplet size produced by the nozzles.

Source: Pennsylvania Pesticide Applicator Certification Core Manual, NASDARF

Drift



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NOZZLES



Clogged Spray Nozzles?



Image: Penn State Pesticide Education Program

Nozzles



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Clogged Spray Nozzles?

- Use a can of air to clean nozzles, or
- Use a jar of water and an old, soft toothbrush.



Spray Nozzles



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Select the Proper Nozzle

- Application rate and water per acre required
 - Label will recommend the minimum amount of water per acre to achieve the best results with the pesticide
 - Sometimes listed as a range if too much per acre is not good
 - Ex: apply in 20 to 100 gallons water per acre
 - Label may list desired droplet size for best control



Fungicides

	Extended Range Flat Fan	Standard Flat Fan	Drift Guard Flat Fan	Twin Flat Fan	Turbo Flood Wide Angle	Full Cone	Flood Nozzle Wide Angle	Raindrop Hollow Cone
Contact	Very Good	Good						
Systemic	Very Good @ low pressure		Very Good		Very Good			

Charts adapted from Virginia Cooperative Extension, Publication 442-032, *Nozzles: Selection and Sizing*.



Drift Reduction Nozzles

- Three types:
 - Pre-orifice Nozzles
 - Turbulence Chamber, Flood Type
 - Air Induction

Drift/Nozzle Selection



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Drift Reduction: Pre-Orifice Nozzles

- Reduces the internal operating pressure
- Produces a larger droplet at the same pressure as a flat fan nozzle
- Available in 80 and 110 degree discharge angle
- Normal pressure range 30 to 60 psi
 - Don't go below 30 psi, optimum is 40 psi
- Can reduce drift by 50% compared to flat fan
- More difficult to clean

Drift/Nozzle Selection



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Drift Reduction: Air Induction Nozzles

- 2 orifices
 - Meter liquid flow
 - Form the pattern
- Between the orifices is a venturi or jet to draw air into the nozzle body
- Produces a coarse, air filled droplet
- Very few drift susceptible droplets

Drift/Nozzle Selection



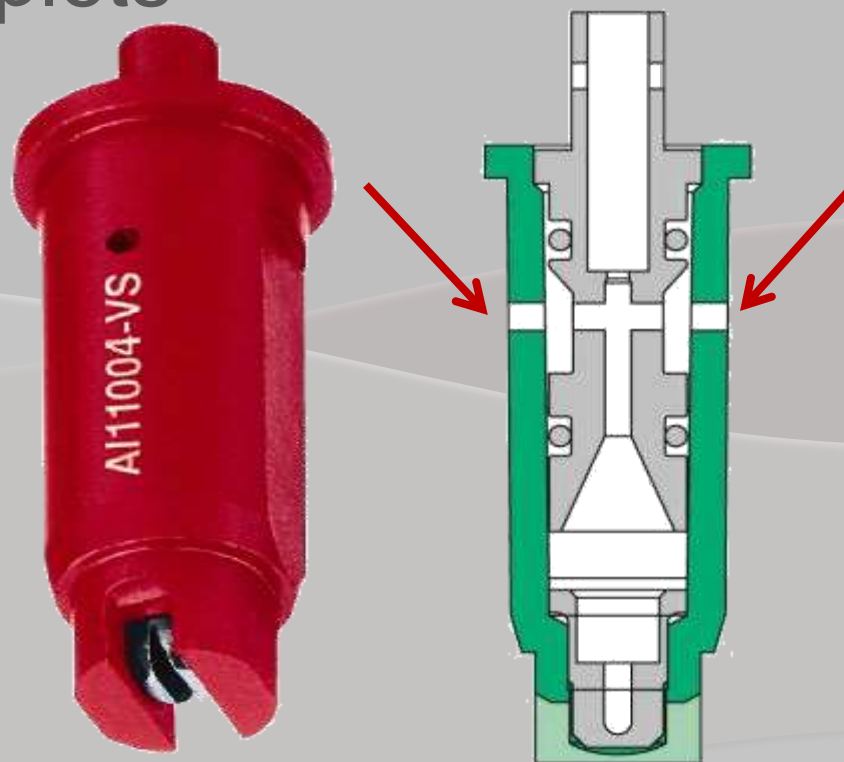
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Air Induction Nozzles

- Venturi effect to produce air-induced, larger droplets



Drift/Nozzle Selection

Image: Penn State Pesticide Education Program



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Image: Penn State Pesticide Education Program

Drift/Nozzle Selection



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Air Induction Nozzles

- Careful selection for your needs
- Optimum psi for most 60-80 psi
- Double check
 - Operating pressure ranges
 - Ease of cleaning
 - Ability to fit into existing nozzle caps





WATER QUALITY



Quality of the Water Used to Spray Pesticides

- Over 95% of the spray solution is water!
- **FACT:** Research clearly shows that the quality of water used for spraying **can affect** pesticide performance!



Why is this Seldom Noticed?

- Water is viewed as a relatively clean input
- Concise, easy-to-read information on water quality and the effects on pesticide performance is scarce



Poor Water Quality Causes Problems

- Interact with product
- Reduce solubility of pesticide
- Decrease absorption by target pest

**These performance issues
may not be obvious!
We tend to blame other factors!**



pH Value

- Most herbicides, insecticides, and fungicides perform best in slightly acidic water
 - A pH of 4 to 6.5
- However, some pesticides, such as sulfonylurea herbicides perform better in water that is slightly alkaline
 - A pH above 7



pH Rule

- When water pH falls outside of the preferred upper and lower boundaries, product performance can be compromised
- In some cases, the pesticide will precipitate out of solution



Images: Penn State Pesticide Education Program



pH Rule

- pH can influence how long a pesticide product remains active
- The effect of pH usually proceeds faster as the temperature of the water increases



Effect of pH on Pesticides

- Example: Flumioxazin Herbicide
- As pH varies, so does the Half-life:
 - pH 5 = Stable
 - pH 7 = Half-life of 24 hours
 - pH 9 = Half-life of 15 minutes



Effect of pH on Pesticides

Selected Half-Life of Common Pesticides

Captan / Orthocide	pH 9	2 minutes
Dimethoate / Cygon	pH 9	1 hour?
Phosmet / Imidan	pH 10	1 minute
Endosulfan / Thiodan	pH 8-9	Unstable ? (12 hours)
Malathion / Cythion	pH 8-9	5 hours? (no data)



Alkaline Hydrolysis

- A chemical reaction that occurs when some pesticides in the presence of alkaline water (pH of 7 or above) degrade or lose their effectiveness
- For every pH point increase, the rate of hydrolysis will increase 10X



How to Combat Alkaline Hydrolysis

- Know your pesticide products
- Know the pH of your water source
 - Test regularly
- Use a commercial buffering agent
 - Buffer-X
 - Buffer
 - Spray-Aide
 - Buffercide



Images: Penn State Pesticide Education Program



Images: Penn State Pesticide Education Program

Water Quality



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General Rule

- Check the label for any recommendations in regards to the addition of water conditioners, additives, or adjuvants.
 - NOTE: The pesticide label may or may not specify the need for additives





EFFECTIVE PESTICIDE APPLICATIONS



The Six Key Steps to Effective Pesticide Applications

1. Identify the pest correctly
2. Select the appropriate product
3. Calibrate equipment properly
4. Measure the pesticide accurately
5. Review the treatment site before and during application
6. Monitor the results





CORRECT MEASUREMENT OF PESTICIDES



You Must ...

- Know how to correctly measure and mix pesticide products to:
 - Improve results
 - Save money
 - Enhance safety

Correct Measurement



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You Must ...

- Know what the difference is between liquid ounces and dry ounces
- Know the common problems with measuring devices for liquid and dry pesticide formulations

Correct Measurement



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Liquid Measuring Devices

- Not all measuring devices are accurate.
- How to check for accuracy:
 - Buy an accurate graduated cylinder
 - Use it to check the accuracy of your measuring device



Correct Measurement



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Liquid Measuring Devices

- Check for accuracy
 - 8 fluid ounces = 1 cup
 - 1 cup = 236.5882 ml



Image: Penn State Pesticide Education Program

Correct Measurement



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Liquid Measuring Devices

- Never write or add marks on your measuring device
- Always rinse out measuring devices before measuring different kinds of pesticides
- Always shake the product container before pouring into measuring container

Correct Measurement



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Liquid and Dry Ounces Are Not Created Equal

- What is the difference
- Liquid ounces are a volume measurement
- Dry ounces are a measure of weight

Correct Measurement



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Liquid Ounces are a Volume Measurement

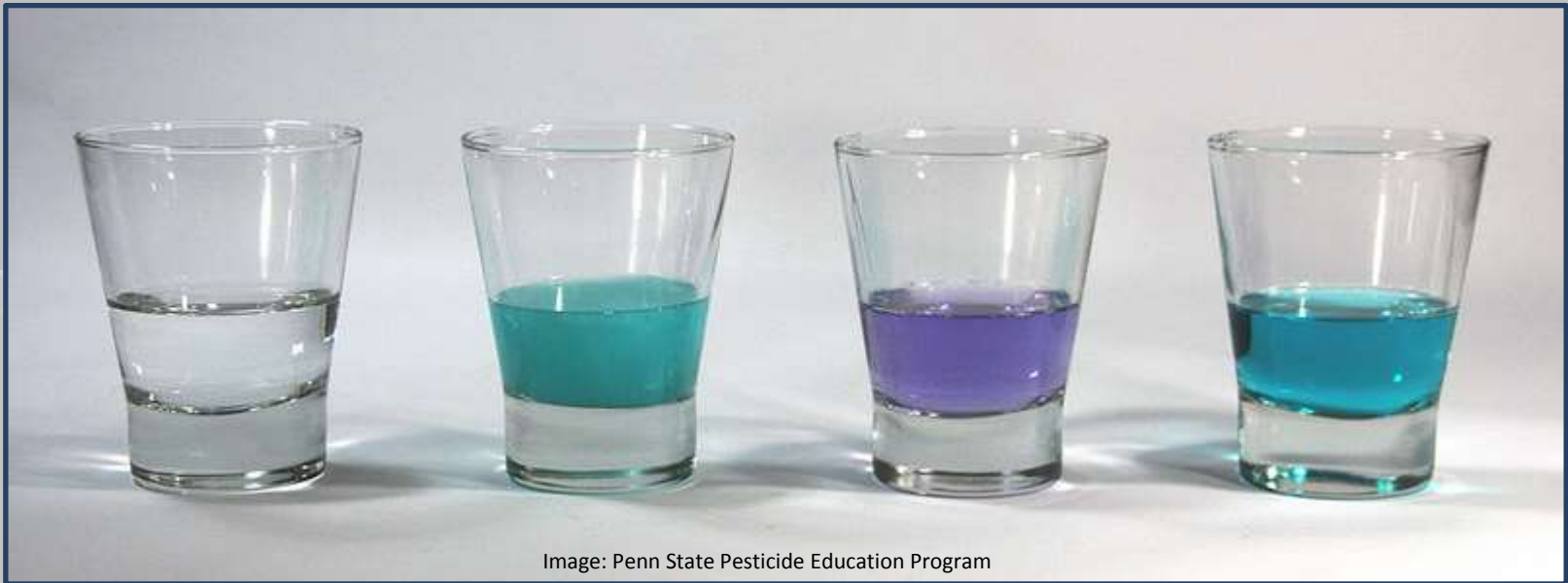


Image: Penn State Pesticide Education Program

Correct Measurement



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The Volume Occupied by a Given Weight of a Dry Material



Image: Penn State Pesticide Education Program

Correct Measurement



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The Volume Occupied by a Given Weight of a Dry Material

- Density and particle size



Correct Measurement



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The Volume Occupied by a Given Weight of a Dry Material

- Instead of weighing products on a scale
 - Manufacturers designed volumetric tubes to make measuring easier for their users

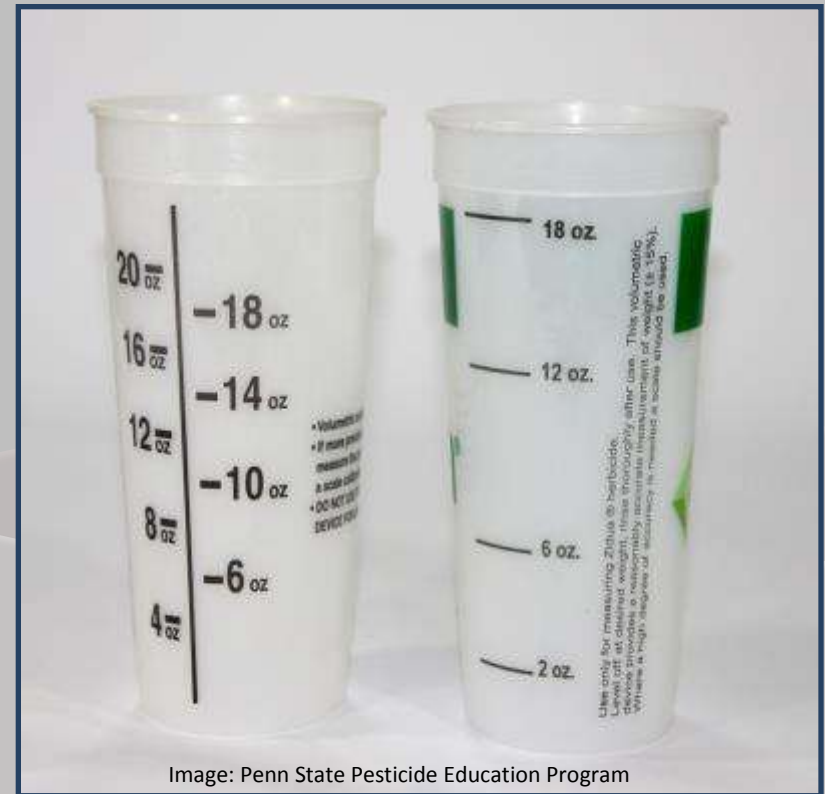


Image: Penn State Pesticide Education Program

Correct Measurement

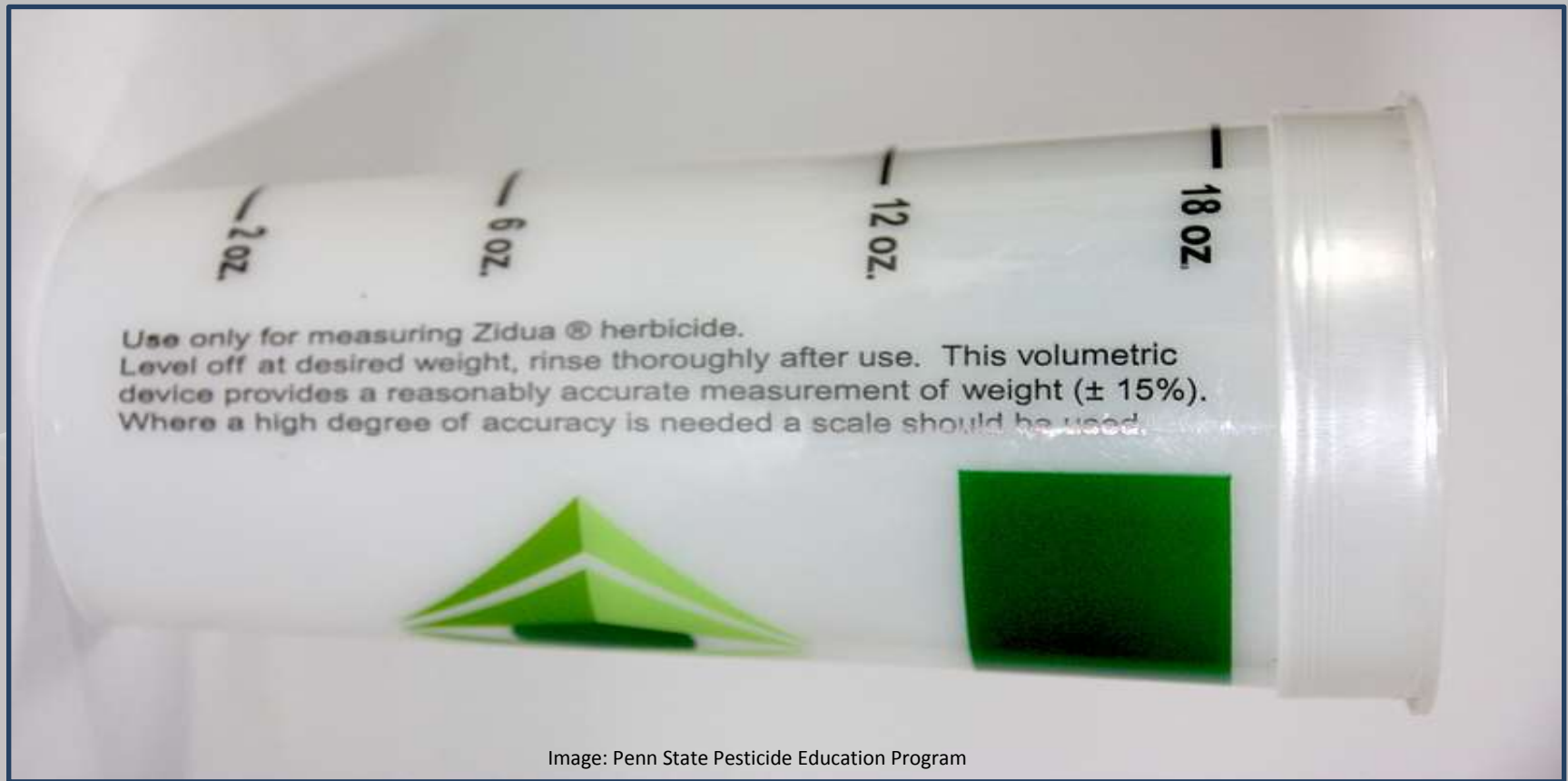


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The Volume Occupied by a Given Weight of a Dry Material



Correct Measurement



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Measuring Dry Formulations

- Factors that affect the accuracy
 - Remember that measuring devices are product-specific

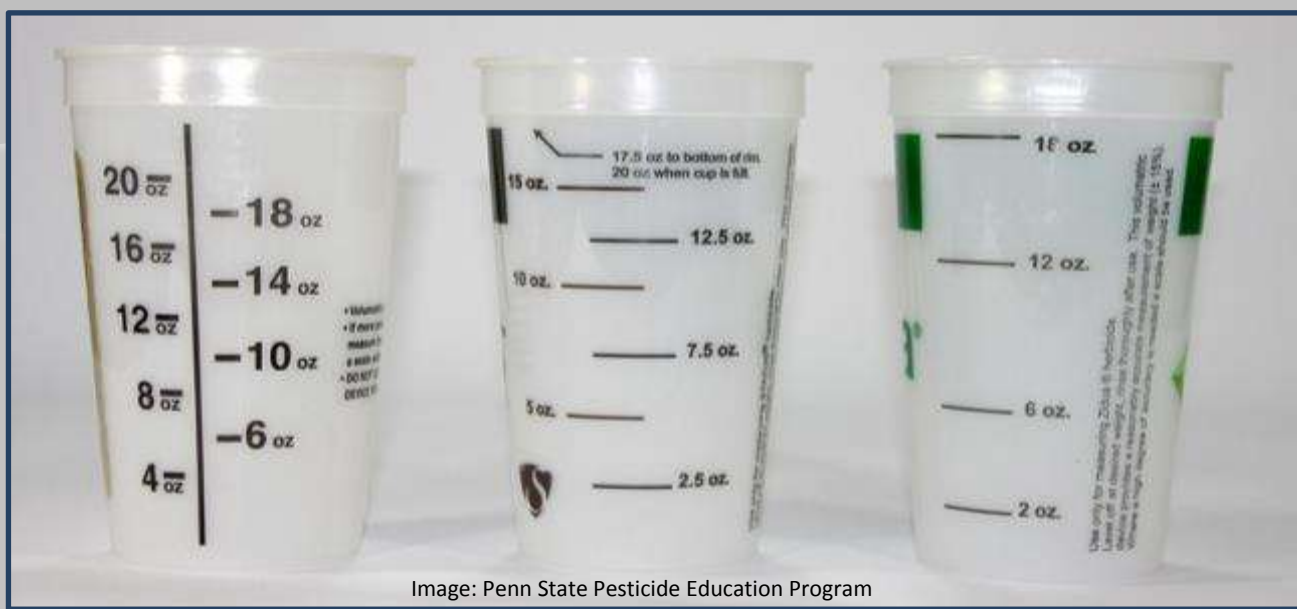


Image: Penn State Pesticide Education Program

Correct Measurement



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Volume Tubes Measure Dry Weight

- Before you measure,
 - Know whether a measuring device is meant for fluid ounces or dry ounces



Image: Penn State Pesticide Education Program

Correct Measurement



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Measuring Dry Formulations

- Factors that affect the accuracy
 - The number of times needed to measure or weigh the product
 - The most accurate and consistent way to measure dry flowables is to weigh them on a scale



Correct Measurement



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SPRAYER CLEAN-UP



General Sprayer Cleanup Tips

- Pesticides can settle to the bottom of spray tank
- Pesticide residues can dry and harden in the spray system
- Clean the sprayer immediately following the application
- Can cause corrosion in the spray system
- End the workday with an empty tank

Sprayer Cleanup



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General Sprayer Cleanup Tips

- If using the same pesticide the next day, thoroughly flushing with clean water is sufficient
- If a different pesticide will be used the next day, a more comprehensive procedure is required



General Sprayer Cleanup Tips

- Clean the entire sprayer system, not just the tank
- Operate the pump
- Flush the cleaning solution through all hoses, strainers, screens, nozzles, and the boom
- Screens and strainers should be cleaned or replaced frequently as they can be a major source of contamination

Sprayer Cleanup



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General Sprayer Cleanup Tips

- Catch or contain the rinsate
- Spray the rinse water (or cleaning solution) on a field in a manner consistent with the intended use of the pesticide
- Avoid discharging all the cleaning solution in a small area



General Sprayer Cleanup Tips

- Clever idea!
 - Carry a 50 to 100 gallon tank of clean water with the spray equipment
 - Flush the system in the field
 - Spray the rinsate on the field in a manner consistent with the product's label



Image: Penn State Pesticide Education Program

Sprayer Cleanup



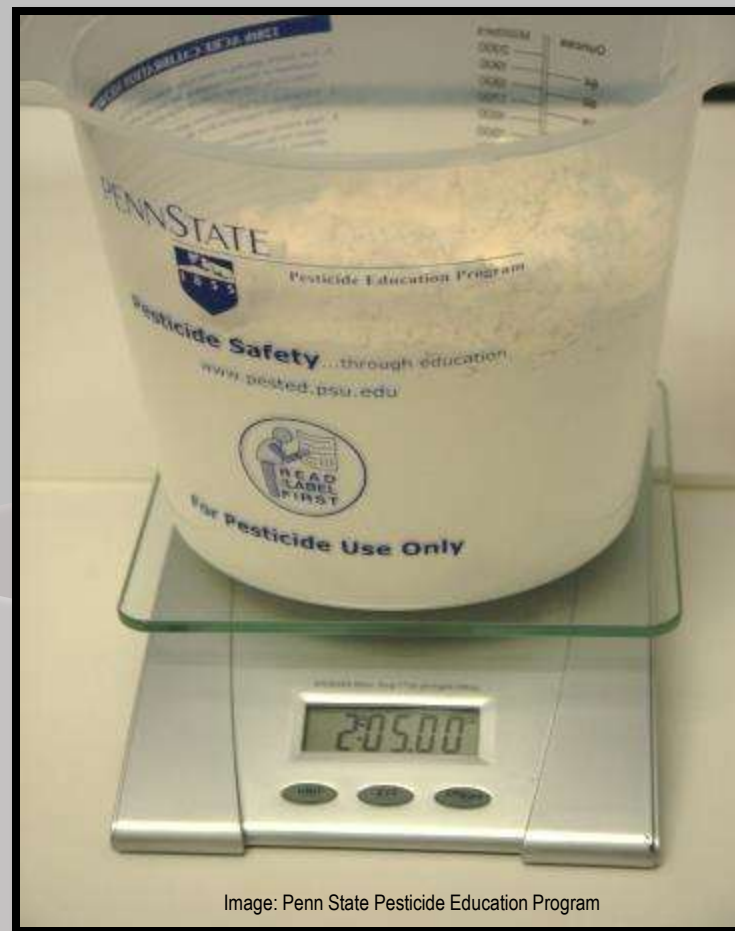
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Prepare Only What Is Needed

- Dispose of any excess by applying it to a registered crop or site.
- Pesticide activity may be compromised by sitting in tank.



Sprayer Clean Out



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SERVICE CONTAINER TAGS



Service Container Tags

SERVICE CONTAINER
CONTENEDOR DE SERVICIO

☐ Concentrate
Concentrado

☐ Dilution
Dilución

(Mark One)
(Marque Uno)

Product(s)
Producto(s) _____

EPA Reg. No.(s) _____
No.(s) Reg. EPA _____

Active Ingredient(s) _____
Ingrediente(s) Activo (s) _____

% Dilution or Concentrate _____
% Dilución o Concentrado _____

EPA Signal Word(s) - Palabra(s) de Advertencia EPA

☐ Danger = Poison ☐ Danger ☐ Warning ☐ Caution

Personal Protective Equipment _____
Equipo de Protección Personal _____

Restricted Entry Interval _____ **Hours**
Intervalo de Entrada Restringida _____ **Horas**

Preharvest Interval _____
Intervalo de Pre-Cosecha _____

Image: Penn State Pesticide Education Program

- Service Containers: filled with an EPA-registered pesticide
- Transported to a use site where the pesticide will be applied by the applicator



Service Container Tags

SERVICE CONTAINER
CONTENEDOR DE SERVICIO

☐ Concentrate
Concentrado

☐ Dilution
Dilución

(Mark One)
(Marque Uno)

Product(s)
Producto(s)

EPA Reg. No.(s)
No.(s) Reg. EPA

Active Ingredient(s)
Ingrediente(s) Activo (s)

% Dilution or Concentrate
% Dilución o Concentrado

EPA Signal Word(s) - Palabra(s) de Advertencia EPA

☐ Danger = Poison ☐ Danger ☐ Warning ☐ Caution

Personal Protective Equipment
Equipo de Protección Personal

Restricted Entry Interval
Intervalo de Entrada Restringida

Hours
Horas

Preharvest Interval
Intervalo de Pre-Cosecha

Image: Penn State Pesticide Education Program

- Service Containers:
 - Not intended for long-term storage
 - Are not used to sell or distribute the pesticide (That is illegal!)



Service Container Tags

SERVICE CONTAINER
CONTENEDOR DE SERVICIO

☐ Concentrate
Concentrado

☐ Dilution (Mark One)
Dilución (Marque Uno)

Product(s)
Producto(s)

EPA Reg. No.(s)
No.(s) Reg. EPA

Active Ingredient(s)
Ingrediente(s) Activo (s)

% Dilution or Concentrate
% Dilución o Concentrado

EPA Signal Word(s) - Palabra(s) de Advertencia EPA

☐ Danger = Poison ☐ Danger ☐ Warning ☐ Caution

Personal Protective Equipment
Equipo de Protección Personal

Restricted Entry Interval
Intervalo de Entrada Restringida

Preharvest Interval
Intervalo de Pre-Cosecha

Hours
Horas

Image: Penn State Pesticide Education Program

- Must*:
 - Indicate the name and percentage of active ingredients
 - Be accompanied by a readily available copy of the registered label that represents the pesticides contained therein.

*Under § 128.103. Handling, transportation, storage, use and disposal of pesticides of the Pennsylvania Pesticide Control Act



Service Container Tags

SERVICE CONTAINER
CONTENEDOR DE SERVICIO

☐ Concentrate
Concentrado

☐ Dilution
Dilución (Mark One)
(Marque Uno)

Product(s)
Producto(s) _____

EPA Reg. No.(s)
No.(s) Reg. EPA _____

Active Ingredient(s)
Ingrediente(s) Activo (s) _____

% Dilution or Concentrate
% Dilución o Concentrado _____

EPA Signal Word(s) - Palabra(s) de Advertencia EPA

☐ Danger = Poison ☐ Danger ☐ Warning ☐ Caution

Personal Protective Equipment
Equipo de Protección Personal _____

Restricted Entry Interval
Intervalo de Entrada Restringida _____ Hours
Horas

Preharvest Interval
Intervalo de Pre-Cosecha _____

Image: Penn State Pesticide Education Program

- Remember:
 - The service container tag is not a substitute for the label
 - The tag identifies the material in the container in the event of a spill or other emergency



Service Container Tags

OSHA - GHS Information

Product(s) ID _____
ID Producto(s) _____

OSHA GHS Signal Word ☐ Danger ☐ Warning ☐ N/A
Palabra(s) de Advertencia SGH OSHA

Hazard Pictogram Grid:

- Top Left: Corrosion (liquid dripping from test tubes onto a hand and a metal surface)
- Top Right: Flammable (flame)
- Middle Left: Explosive (exploding bomb)
- Middle: Skull and Crossbones (toxic)
- Middle Right: Environment (dead tree and fish)
- Bottom Left: Health Hazard (silhouette of a person with a star on their chest)
- Bottom: Flame (fire)
- Bottom Center: Exclamation Mark (irritant or harmful)

Hazard & Precautionary Statements / Supplemental Information:
Consejos de Prudencia e Indicaciones de Peligro / Información Suplementaria: _____

Personal Protective Equipment Code & Description
Código de Equipo de Protección Personal y Descripción _____

Label Produced By Penn State Extension

Image: Penn State Pesticide Education Program

- Back side of tag to correspond to the new SDS information



Service Container Tags

OSHA - GHS Information

Product(s) ID
ID Producto(s) Bravo 500

OSHA GHS Signal Word
Palabra(s) de Advertencia SGH OSHA ☒ Danger Peligro ☐ Warning Atención ☐ N/A

Hazard & Precautionary Statements / Supplemental Information:
Consejos de Prudencia e Indicaciones de Peligro / Información Suplementaria: Toxic by inhalation, eye damage risk, toxic to aquatic environments and inhalation irritant

Personal Protective Equipment Code & Description
Código de Equipo de Protección Personal y Descripción respirator, gloves, eyewear and long sleeves

Label Produced By Penn State Extension

Image: Penn State Pesticide Education Program

- Back side of tag to correspond to the new SDS information
- Example after being filled in and ready for self lamination





Try Our Online Recert Courses!

- Go to: extension.psu.edu/pested/online-recert
- **Six 1-Credit CORE** courses that cost \$20 and include topics on:
 - Labeling, formulations, transportation, emergencies, application planning, and application procedures
- **Two 2-Credit** courses that cost \$35 are titled:
 - Pest Management and Pesticides in the Environment
- **Two 1-Credit SPANISH** courses that cost \$20:
 - Pest Management and Pesticides in the Environment





Discover our Program and Connect with our Resources



pested.psu.edu



**Penn State Pesticide
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This presentation was created in partnership with the Pesticide Education Program, Penn State Cooperative Extension, and the Pennsylvania Department of Agriculture.

For more information on this and other resources, please visit:

extension.psu.edu/pesticide-education

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