

Pesticide Safety for Forestry Services



**PACIFIC NORTHWEST AGRICULTURAL
SAFETY AND HEALTH CENTER**
farming • fishing • forestry



**OCCUPATIONAL SAFETY AND HEALTH
CONTINUING EDUCATION**
ENVIRONMENTAL & OCCUPATIONAL
HEALTH SCIENCES



WASHINGTON STATE UNIVERSITY
EXTENSION



Photo credit from video: Pesticides in Forestry

PESTICIDES

Learning objectives

- Learn about pesticide safety challenges in forestry
- Review pesticide routes of exposure, signs and symptoms
- Explain the pesticide label and bilingual pesticides labels for forestry
- Describe a few practical solutions for pesticide safety in forestry

Agenda

1. Activity 1: A few questions about pesticides
2. Pesticides in forestry – Safety challenges
3. Video: Pesticides in Forestry:
pesticide exposure, routes of exposure,
preventing exposure, and more
4. The pesticide label
5. Bilingual herbicide labels for forestry
6. Activity 2: A worker's herbicide exposure
7. Practical Solutions for Pesticide Safety

Activity 1

How many of you have worked with pesticides?

How many of you have worked with pesticides in forestry?

If you have worked with pesticides, have you been sick or expose to pesticides?



**Herbicides are used to knock down grasses in newly planted forests.
Photo credit: Carl Wilmsem. Forestry Worker Safety Talks.**

PESTICIDE SAFETY CHALLENGES

Pesticide exposure

Handlers might fail to follow recommendations to avoid exposure.

Handler training

Handlers in forestry might not be properly trained to handle pesticides.

Labels are in English

The pesticide label is 'The Law'; however, is rarely in Spanish.

Health risks can be long-term

Herbicides have various acute toxicities that are well understood, but long-term effects require long-term studies.

Complex to diagnose

Overexposure symptoms can look like many others

PESTICIDE SAFETY CHALLENGES



What other challenges have you observed?

Pesticides in forestry – Safety concerns we've seen



- **Handlers spraying with backpack sprayer walking to close to each other.**
- **Handlers walking in the just sprayed area after done spraying and getting all wet with the product sprayed.**
- **Not having correct PPE**
- **Not understanding the pesticide label (due to language barrier or in-general)**

Video: Pesticides in Forestry



Don't carry inside vehicle

Pesticides in Forestry video. ODA,
Oregon OSHA, and EPA



<https://youtu.be/Ed54GqTcex8>

Pesticide Poisoning symptoms

Mild

Fatigue

Headache

Nausea

Dizziness

Moderate

Excessive saliva or drool

Blurry vision

Shortness of breath

Severe

Pinpoint pupils

Trembling

Lack of muscle control

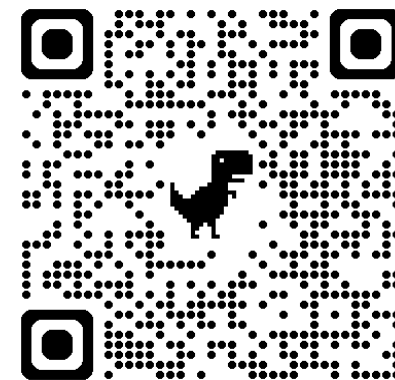
Violent convulsions or seizures

Unconsciousness



Image credits: PNASH. Forest Safety Talks.

The Pesticide Label



EPA Explains...

How to Read a Pesticide Product Label

✓ Read the entire label
✓ The label is the law
✓ Below is an example of information found on a pesticide product label

Active Ingredients
✓ Main chemical ingredients

EPA Registration Number
✓ U.S. laws require EPA to register all pesticides

Directions for Use
✓ Germs the product kills
✓ Where and how to properly use the product

ACTIVE INGREDIENTS:
Alkyl (60% C14, 30% C16, 5% C12, 5% C18)
Dimethyl Benzyl Ammonium Chloride.....10.0%
OTHER INGREDIENTS:.....90.0%
TOTAL:.....100.0%

EPA REG NO. 55555-55-55555

CAUTION

Directions for Use
INSTRUCTIONS FOR USE:
It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
For Disinfection of Healthcare Organisms:
Staphylococcus aureus,
Pseudomonas aeruginosa.
To Disinfect Hard, Nonporous Surfaces:
Pre-wash surface.
Mop or wipe with disinfectant solution.
Allow solution to stay wet on surface for at least 10 minutes.
Rinse well and air dry.

PRECAUTIONARY STATEMENTS:
Hazardous to humans and domestic animals. Wear gloves and eye protection.
CAUSES MODERATE EYE IRRITATION. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Avoid contact with foods.
FIRST AID: IF IN EYES: 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.
IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes.
POISON CONTROL: Call a Poison Control Center (1-866-366-5048) or doctor for treatment advice.
STORAGE AND DISPOSAL: Store this product in a cool, dry area away from direct sunlight and heat. When not in use keep center cap of lid closed to prevent moisture loss. Nonrefillable container. Do not reuse or refill this container.

Precautionary Statements
✓ The identified risks of product use
✓ Denotes whether personal protective equipment is needed

First Aid
✓ What to do if you get the product in your eyes or mouth, on your skin, or if you breathe it in

Storage and Disposal
✓ How to store
✓ Instructions on disposal and reuse of container

EXP MM-DD-YYYY
5 55555 55555 5

epa.gov/pesticides

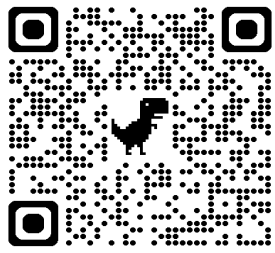
EPA

Information on the pesticide label most consulted by users (PNASH research)

- Product information
- PPE
- Signal word
- REI
- PHI
- First Aid

EPA-How to Read a Pesticide Product Label. Image. Image credits: EPA.

Bilingual Herbicide Labels for Forestry



PNASH - 2024



Bilingual Herbicide Labels for Forestry

Product	EPA No.	Type	Oregon Reg. Year	Washington Reg. Year
2,4-D Amine 4	1381-103	Herbicide		2024
Accord® XRT II	62719-556	Herbicide	2024	2024
ALLIGARE GLYPHOSATE 5.4	81927-8	Herbicide	2024	2025
ALLIGARE IMAZAPYR 4 SL	81927-24	Herbicide	2024	2025
ALLIGARE ROTARY 2 SL	81927-6	Herbicide	2024	2025
ALLIGARE SFM EXTRA™	81927-5	Herbicide	2024	2025
AquaNeat® Aquatic Herbicide	228-365	Herbicide	2024	2025
ARSENAL® herbicide	241-346	Herbicide		2024
ATRAZINE 4L HERBICIDE	34704-69	Herbicide	2024	2025
Bayer Oust® EXTRA HERBICIDE	432-1557	Herbicide	2024	2024
Chopper® Gen2™ Herbicide	241-430	Herbicide		2024
Cleantraxx™ HERBICIDE	62719-702	Herbicide	2024	2024
Drexel® Atrazine 4L Herbicide	19713-11	Herbicide		2024
Escort® XP HERBICIDE	432-1549	Herbicide	2024	2024
Esplanade® F HERBICIDE	432-1517	Herbicide	2024	2024
Foresters® Non-Selective Herbicide	228-381	Herbicide	2024	2025
Forestry Garlon® XRT Specialty Herbicide	62719-553	Herbicide	2024	2024
Garlon® 3A SPECIALTY HERBICIDE	62719-37	Herbicide	2024	2024
Garlon® 4 SPECIALTY HERBICIDE	62719-40	Herbicide	2024	2024
Garlon® 4 Ultra SPECIALTY HERBICIDE	62719-527	Herbicide	2024	2024
Garlon® XRT HERBICIDE	62719-553	Herbicide	2024	2024
Milestone® SPECIALTY HERBICIDE	62719-519	Herbicide	2024	2024
Nufam Polaris® SP Herbicide	228-536	Herbicide	2024	2025
Opensight® SPECIALTY HERBICIDE	62719-597	Herbicide	2024	2024
Oust® XP HERBICIDE	432-1552	Herbicide	2024	2024
OutPost™ K HERBICIDE	62719-17	Herbicide	2024	2024
Rodeo® HERBICIDE	62719-324	Herbicide	2024	2024
Tordon® 22K SPECIALTY HERBICIDE	62719-6	Herbicide		2024
Tordon® K SPECIALTY HERBICIDE	62719-17	Herbicide	2024	2024
Transline® SPECIALTY HERBICIDE	62719-259	Herbicide	2024	2024
Weedmaster® Herbicide	71368-34	Herbicide		2024
MSO® CONCENTRATE with LEQ-TECH	34704-07001	Adjuvant/Surfactant		2025
Premium MSO Methylated Spray Oil	5905-90001	Adjuvant/Surfactant		2024
SUPER SPREAD® MSO	2935-03001	Adjuvant/Surfactant	2024	2025
SYL-TAC-EA™	2935-15004	Adjuvant/Surfactant		2025
TIMBER MODIFIED VEGETABLE OIL COI	994060-21001	Adjuvant/Surfactant		2025

Bilingual herbicide labels for forestry

English



Spanish



Product Information / Información del producto

Product: ATRAZINE 4L HERBICIDE
Epa Reg. No.: 34704-69

Net Measure:
Class: Herbicide
Formulation: Liquid

RESTRICTED USE PESTICIDE

(Ground and Surface Water Concerns)

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's Certification. Users must read and follow all precautionary statements and instructions for use in order to minimize potential for atrazine to reach ground and surface water.

CAUTION!

FOR AGRICULTURAL USE ONLY

AGRICULTURAL USE REQUIREMENTS

Producto: ATRAZINE 4L HERBICIDE
Núm. EPA de registro: 34704-69

Contenido neto:
Clase: Herbicida
Formulación: Líquido

PESTICIDA DE USO RESTRINGIDO

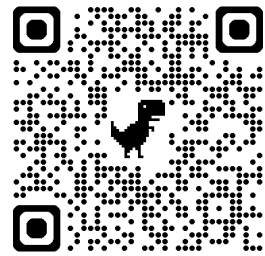
(Consideraciones sobre el agua subterránea y superficial)

Para la venta al por menor a, y para ser usado por aplicadores certificados o personas que estén bajo la supervisión directa de estos y únicamente para los usos incluidos en la certificación del aplicador certificado. El usuario debe leer y seguir todas las declaraciones de precaución e instrucciones de uso para minimizar el potencial de que la atrazina llegue al agua subterránea y superficial.

¡PRECAUCIÓN!

SOLO PARA USO AGRÍCOLA

Bilingual Herbicide Labels for Forestry



Product	Washington Labels	Oregon Labels	Handbook Labels
Herbicides	31	24	31
Adjuvants	5	2	5
Total	36	26	36

Labels (in English) downloaded from the
Washington State University
Pesticide Information Center OnLine
(PICOL) Database

<https://picol.cahnrs.wsu.edu/>

PESTICIDE HANDLING

Personal Protective Equipment (PPE)

Respirator

(see resource 5 for types of respirators)

Chemical resistant suit

Gloves

Chemical resistant:

- Barrier laminate
- Natural rubber
- Neoprene rubber
- Butyl rubber
- Nitrile rubber
- Polyethylene
- Polyvinyl chloride (PVC)
- Viton

Chemical resistant footwear



Chemical resistant headgear

Eye protection

- Goggles
- Safety glasses
- Face shield



Chemical resistant apron



Coveralls



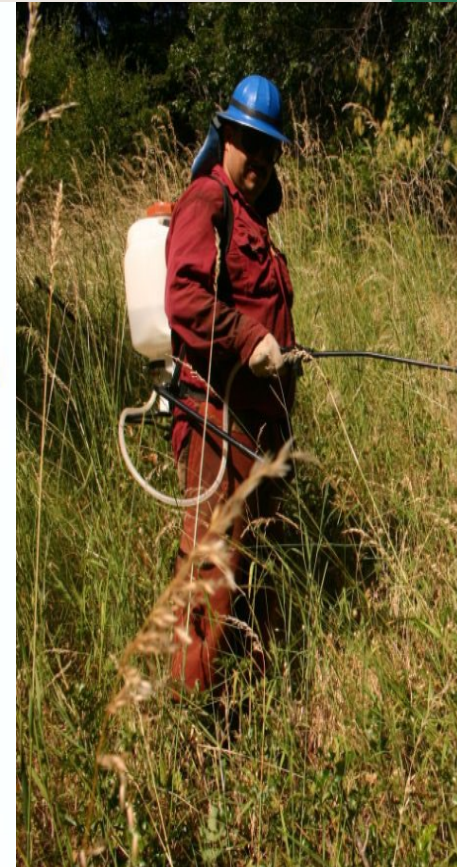
Images credits: PNASH, OROSHA, PERC

Personal Protective Equipment (PPE)



How do you know what PPE to wear when handling a specific pesticide for restoration forestry?

Looking at the images, what PPE do you think is commonly used when handling herbicides in restoration forestry?



Images credits: PNASH, Carl Wilmsen.

Personal Protective Equipment (PPE)

PPE - Herbicides labels in the bilingual handbook for forestry ask handlers to wear:

ALWAYS

- Long sleeve shirts
- Long pants
- Shoes
- Socks

MOST OF THE TIME

- Chemical resistant gloves

SOMETIMES

- Coveralls
- Protective eyewear: goggles, face shield or safety glasses
- Chemical resistant apron
- Waterproof gloves

AND NEVER

- Suit
- Respirator
- Chemical resistant footwear



How often do you consult pesticide labels during the spray season?

GROUP 9 HERBICIDE

Aqua Neat®

Aquatic Herbicide

FOR USE ON EMERGED AQUATIC WEEDS AND BRUSH IN AQUATIC SITES. FOR USE IN FORESTRY (INCLUDING WEED CONTROL IN CHRISTMAS TREE PLANTATIONS), PASTURES, RANGELANDS, RIGHTS-OF-WAY, HABITAT RESTORATION AREAS, NON-CROP AND OTHER LISTED APPLICATION SITES.

ACTIVE INGREDIENT:
Glyphosate, N-(phosphonomethyl)glycine, in the form of its isopropylamine salt* 53.8%

OTHER INGREDIENTS: 46.2%

TOTAL: 100.0%

*Contains 648 grams per litre or 5.4 pounds per U.S. gallon of the active ingredient, glyphosate, in the form of its isopropylamine salt. Equivalent to 480 grams per litre or 4 pounds per U.S. gallon of the acid, glyphosate.

KEEP OUT OF REACH OF CHILDREN

CAUTION / PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail.)

SEE INSIDE BOOKLET FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS

For Medical Emergencies, Call (877) 325-1840
For Chemical Spill, Leak, Fire, or Exposure, Call CHEMTREC (800) 424-9300

EPA Reg No. 228-365
EPA Est. No. indicated by the first two letters of the batch number on this package
(CH) 228-IL-001, (GR) 228-MS-001

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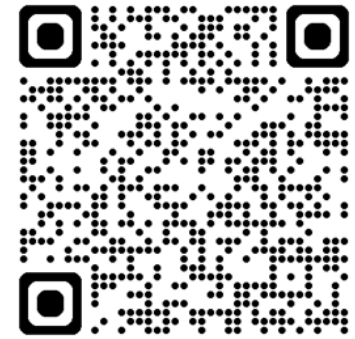

1 91662 01300 9

Net Contents
2.5 Gal.
(9.46 L)
Nonrefillable Container

14501000

Image credit: Pesticide Information
Center OnLine (PICOL)

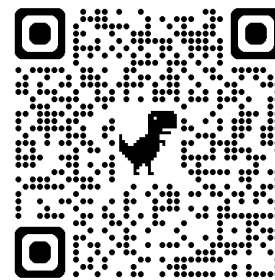
EPA English/Spanish Pesticide Labels Requirement



**PRIA 5:
Pesticide Registration Improvement Act of 2022**

Search for page 3980

Glossary of Terms for Labels English-Spanish



PRODUCT INFORMATION / INFORMACIÓN DEL PRODUCTO	
Active ingredient	Ingrediente activo
Adjuvant	Coadyuvante
Chemical name	Nombre químico
Class	Clase
Common name	Nombre común
EPA establishment number	Número de establecimiento de EPA
Net measure	Contenido neto
EPA Reg. No.	Número de registro de EPA
Formulation	Formulación
Formulation Related Terminology / Terminología en relación a la formulación	
<i>Aerosol</i>	<i>Aerosol</i>
<i>Aqueous solution</i>	<i>Solución acuosa</i>
<i>Aqueous suspension</i>	<i>Suspensión acuosa</i>
<i>Capsule suspension</i>	<i>Suspensión en cápsulas</i>

FORESTRY VEGETATION MANAGEMENT / MANEJO DE VEGETACIÓN FORESTAL

Bilingual Pesticide Labels for Reforestation Worker Safety

Etiquetas bilingües de pesticidas
para la seguridad de los trabajadores
de reforestación

Glossary of Terms Glosario de términos



PACIFIC NORTHWEST AGRICULTURAL
SAFETY & HEALTH CENTER

10.2024



ACTIVITY

Activity 2: Worker pesticide exposure



I was spraying chemicals with a pump and didn't have protection for my eyes, mouth and nose.



What should I do to protect myself?

I will ask the boss later.

I started getting a headache right away.



<https://deohs.washington.edu/pnash/node/930>



ACTIVITY



Source: PNASH. Forestry Worker Safety Talks.



ACTIVITY

Activity 2: Worker pesticide exposure

What problems do you see in this story?

How could this injury have been prevented?



DISCUSSION

What problems do you see in this story?

- No training about the chemicals and protective gear.
- Spray drift onto co-workers.
- The crew was pressured to work too fast.

How could this injury have been prevented?

- You must be trained if you use any kind of chemical.
- Read the label. The label is the law
- Make sure you and your co-workers are spaced out and not downwind of the spray.

Practical solutions for pesticide safety

A ***practical solution*** is a work practice, tool, or facility that makes work easier for pesticide handlers; it is also a safety measure.

Useful

- Compatible with work activities
- Convenient for handlers and management
- Adaptable and affordable for other workplaces

Safe

- Helps to minimize pesticide exposure
- Does not create a new health or safety problem



https://deohs.washington.edu/pnash/pesticides_health

Unclog sprayer nozzle



Save time by having supplies on hand to de-clog nozzles during a pesticide application.



<https://deohs.washington.edu/pnash/psps/unclogging-sprayer-nozzles-go>

Backpack sprayer and supplies to unclog nozzle. Image credits: PNASH. Practical Solutions for Pesticide Safety.

Unclog sprayer nozzle

The applicator carries a **resealable bag** with the tools needed to unclog a nozzle. To keep their hands free, they can fasten the bag to their sprayer with a big binder clip or put it on a nearby bench.

Backpack sprayer and supplies to unclog nozzle. Image credits: PNASH. Practical Solutions for Pesticide Safety.



Unclog sprayer nozzle

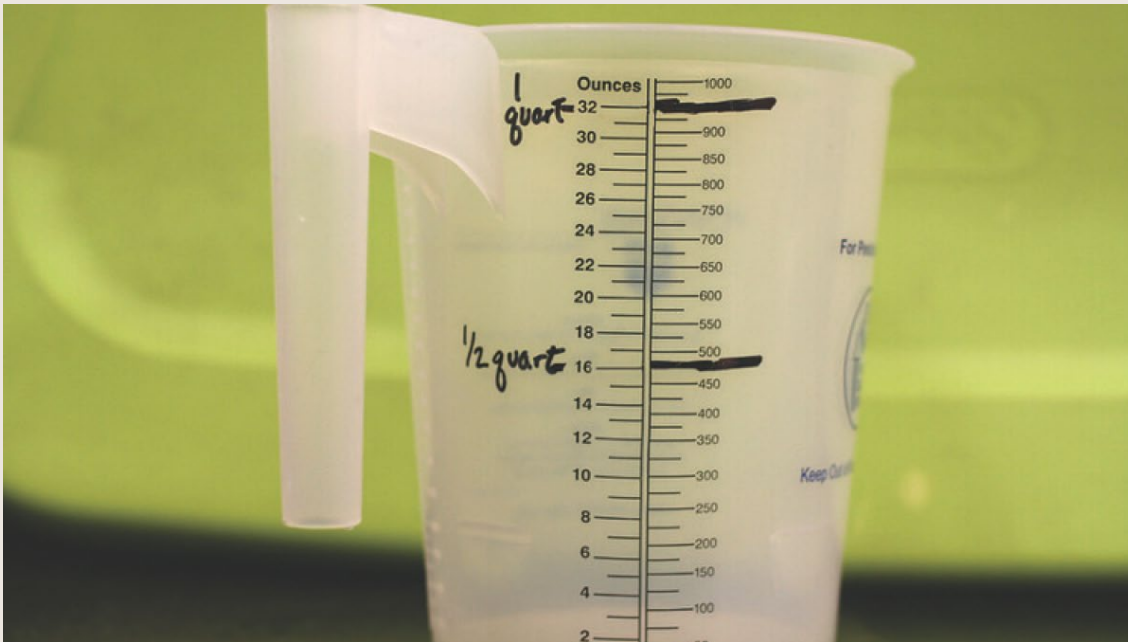
Alert

Use the water stream from the spray bottle to remove dirt and debris from the nozzle. **REMEMBER** to never blow on the nozzle as you may get pesticides on your lips.

Backpack sprayer and supplies to unclog nozzle. Image credits: PNASH. Practical Solutions for Pesticide Safety.



Measure liquid using pre-marked containers



Pre-marked pitcher. Image credits: PNASH. Practical Solutions for Pesticide Safety.

Measuring containers for agricultural chemicals are marked to help handlers accurately measure liquids.

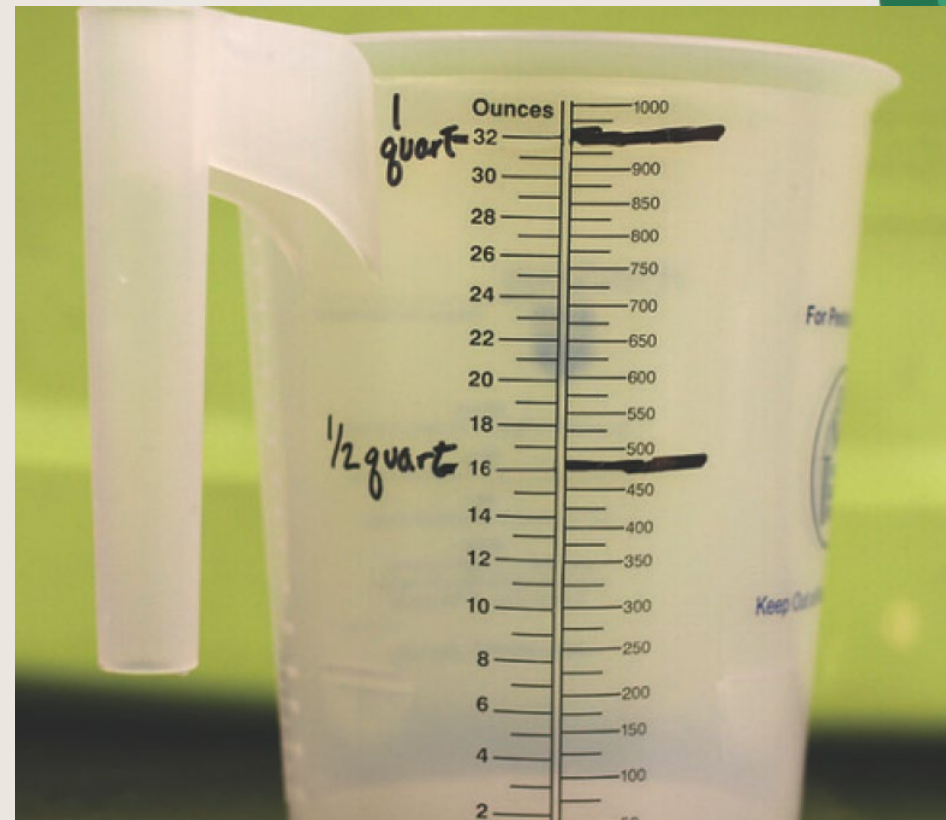
<https://deohs.washington.edu/pnash/psps/measure-liquid-using-pre-marked-containers>



Measure liquid using pre-marked containers

Pre-marking serves as a visual aid.

A manager thought of this idea when he had difficulty explaining gallon measurements to a handler who only knew the metric system.

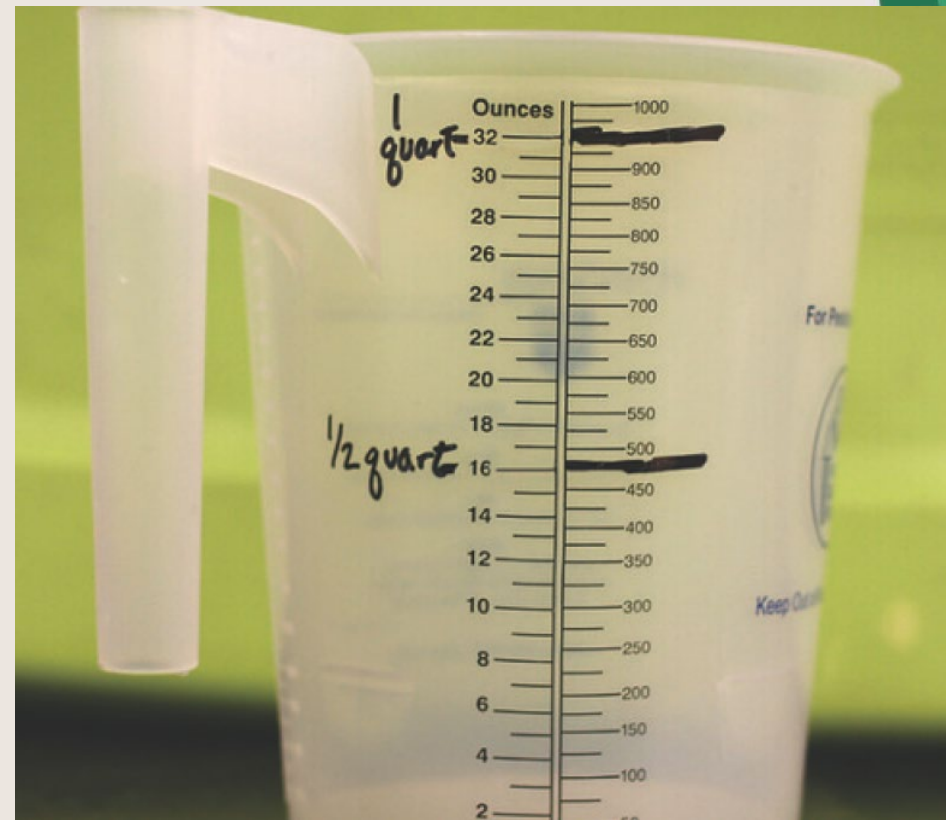


Pre-marked pitcher. Image credits: PNASH. Practical Solutions for Pesticide Safety.

Measure liquid using pre-marked containers

“Using these containers makes it easier to communicate with the pesticide handlers about the volumes (pesticides) to measure when mixing.”

-Manager



Pre-marked pitcher. Image credits: PNASH. Practical Solutions for Pesticide Safety.

Store work boots in a bin



Work boots stored in a bin. Image credits: PNASH. Practical Solutions for Pesticide Safety.

Minimize the incidental work-to-home transfer of pesticide residues by keeping dirty boots out of the house and away from your pets and family members.

<https://deohs.washington.edu/pnash/psps/store-work-boots-bin>



Store work boots in a bin

Research has shown that pesticide levels in farmworker's homes and vehicles were higher than non-farmworkers. Most of them did not have a place at work to change or store their work clothes and boots.



Pathways of pesticide exposure from work to home.
Source: PNASH. Practical Solutions for Pesticide Safety.

Store work boots in a bin

Do not wear work boots in your commute vehicle or home. Store your boots outside the house and away from children and pets.



Work boots stored in a bin. Image credits: PNASH. Practical Solutions for Pesticide Safety.



Work boots stored in a bin and in the car's trunk. Image credits: PNASH. Practical Solutions for Pesticide Safety.

Resources

- 1. Guía de Protección Respiratoria de la Ley de Protección al Trabajador (WPS).**
<https://www.porh.psu.edu/wp-content/uploads/PERC-WPS-Respirator-Guide-Spanish.pdf>
- 2. Label Review Training: Parts of the Label. EPA.**
<https://www.epa.gov/pesticide-labels/label-review-training-module-2-parts-label-page-1>
- 3. Pesticides and Health. Pacific Northwest Agricultural Safety and Health (PNASH) Center.**
https://deohs.washington.edu/pnash/pesticides_health

Resources

4. Protecting Farmworkers and Families from Pesticide Exposure. NIH.

https://www.niehs.nih.gov/sites/default/files/research/programs/translational/assets/docs/protecting_farmworkers_and_families_from_pesticide_exposure_508.pdf

5. Waving Wand" Broadcast Hand Application of Herbicides: Technical Basis and Usage. Newton et al. Oregon State University.

https://ir.library.oregonstate.edu/concern/technical_reports/g158bh71z

6. Worker Protection Standard (WPS) Respiratory Protection Guide. Pesticide Education Resources Collaborative (PERC).

<https://www.pesticideresources.org/migrated/wps/hosted/PERC-WPSRespirator-Guide.pdf>

Knowledge check



What is the most frequent type of pesticide applied in forestry?

Which are some parts of the pesticide label most consulted by users?

The pesticide label is a legal document. True or false?



Acknowledgements

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