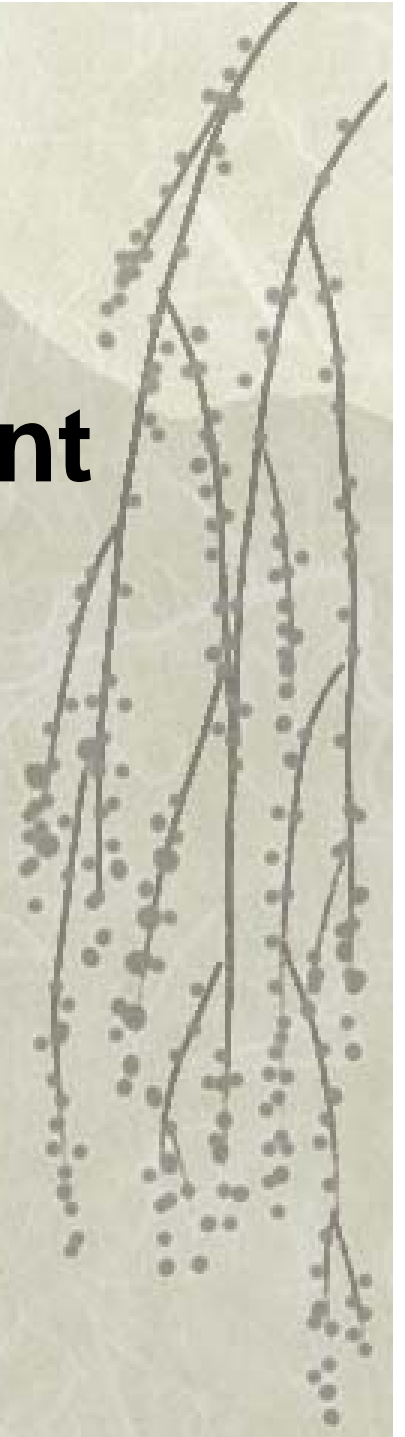


# Personal Protective Equipment

Tim Stock

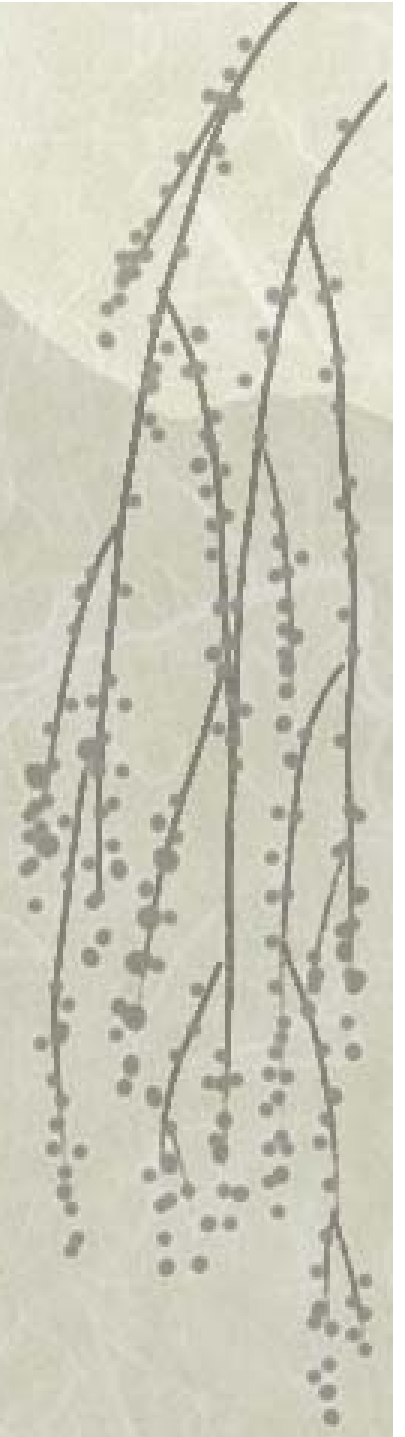
Integrated Plant Protection Center

Oregon State University



# Pesticides: How can they enter the body?

- ❖ Swallowing
- ❖ Inhaling
- ❖ Absorbing through the skin
- ❖ Eyes



- 
- ❖ What are the most common routes of entry in pesticide handlers?

Dermal and inhalation

- ❖ Which formulations absorb most rapidly through the skin?

Ones that are oil-based

- ❖ Remember – For those that mix and load pesticides:

The hands - 85% of all exposure

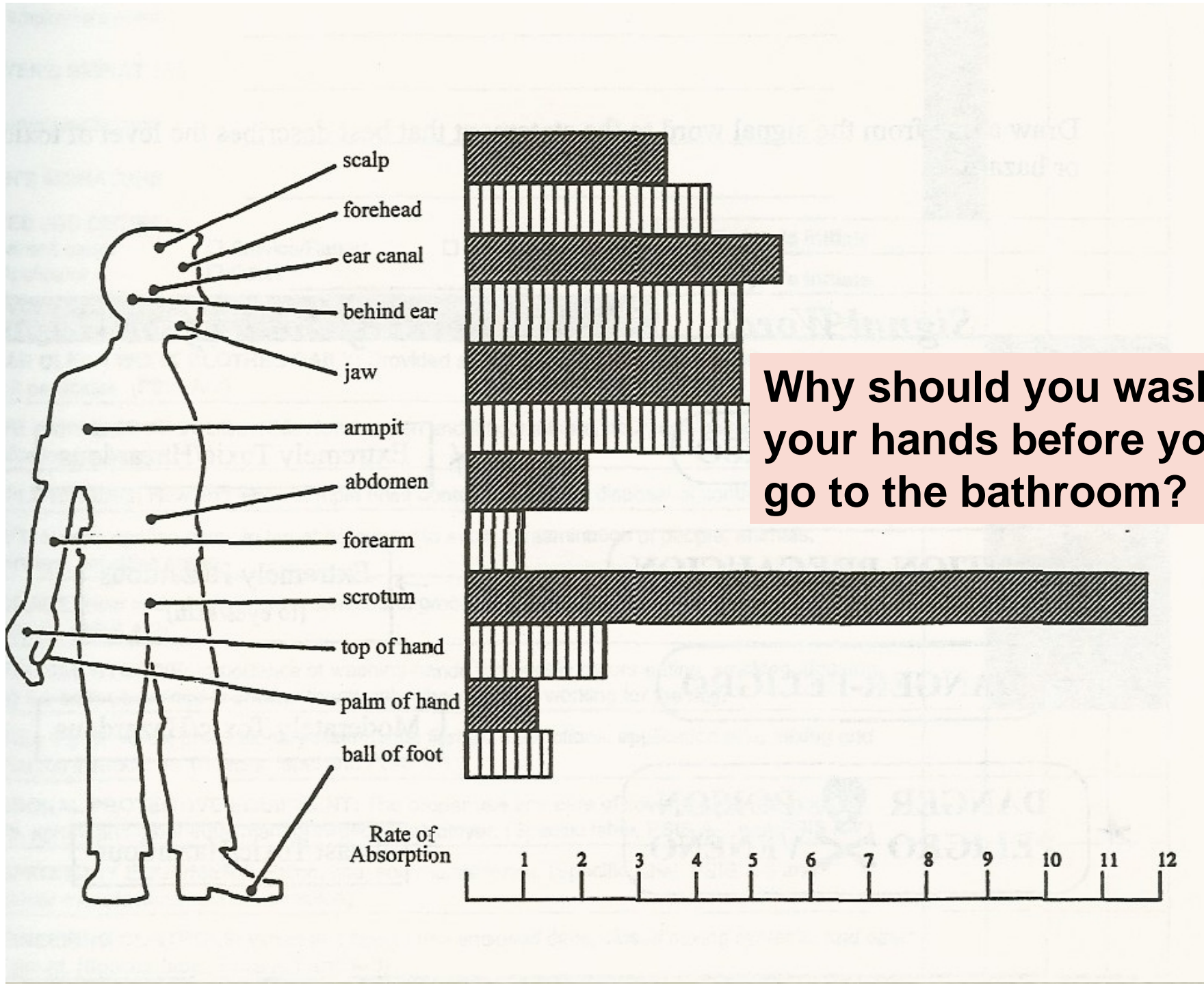
**MIXING  
AND  
LOADING**



**85%**

# What parts of the body absorb pesticides most rapidly?

- ❖ The ear canal
- ❖ The head (forehead & scalp)
- ❖ The armpits
- ❖ The genital areas



# What kinds of things do we need to consider before making an application?

- ❖ The Weather
- ❖ Identify the Pest
- ❖ Select the Correct Pesticide
- ❖ Sensitive Areas
- ❖ Proper Application Equipment
- ❖ Appropriate Personal Protective Equipment

Where do we get the information we need to choose the right PPE for the job?



# THE LABEL

- ❖ TIME TO LOOK AT LABELS TO SELECT PPE



## Pesticides: Health and Safety

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- Human Health Issues
- Protecting Children
- Protecting Pets
- Worker Safety & Training
- Using Pesticides Safely
- Public Health Issues
- Illegal Pesticide Products
- Reducing Pesticide Risk
- Emergency Information
- Human Exposure
- Spills
- Incident Reporting
- Resources
- Recursos en español

### Personal Protective Equipment

EPA Chemical Resistance Category Chart

<http://www.epa.gov/oppfod01/safety/workers/equip.htm>

For use when PPE section on the pesticide label lists a chemical resistance category.

The Worker Protection Standard requires that labels of pesticides used on farms, and in forests, nurseries and greenhouses list the type of personal protective equipment (PPE) that must be worn with each product. Labels will refer to chemical resistance categories (A-H) for PPE. Items in these categories are made of materials that the pesticide cannot pass through during the times indicated below the chart. Choose the category of resistance which best matches the handling task duration. The categories are based on the solvents used in the pesticides, NOT the pesticides themselves. Therefore, there will be instances where the same pesticide with two different formulations (wetable powder-WP and emulsifiable concentrate-EC, for example) will require PPE from two different chemical resistance categories.

Selection Category Listed on Pesticide Label	Types of Personal Protective Material							
	Barrier Laminate	Butyl Rubber ≥ 14 mils	Nitrile Rubber ≥ mils	Neoprene Rubber ≥ 14 mils	Natural Rubber ≥ 14 mils	Polyethelene	Polyvinyl Chloride (PVC) ≥ 14 mils	Viton ≥ 14 mils
A (a dry and water-based formulation)	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
E	high	slight	high	high	slight	none	moderate	high
F	high	high	high	moderate	slight	none	slight	high
G	high	slight	slight	slight	none	none	none	high
H	high	slight	slight	slight	none	none	none	high

**HIGH:** Highly chemical-resistant. Clean or replace PPE at end of each day's work period. Rinse off pesticides at rest breaks.  
**MODERATE:** Moderately chemical-resistant. Clean or replace PPE within an hour or two of contact.  
**SLIGHT:** Slightly chemical-resistant. Clean or replace PPE within ten minutes of contact.  
**NONE:** No chemical-resistance. Do not wear this type of material as PPE when contact is possible.

Nitrile: 14 mils or thicker



Active Ingredient	By Wt.
*Clethodim.....	26.4%
Other Ingredients .....	73.6%
Total .....	100.0%

Contains Petroleum Distillates

\*(E)-2-[1-[(3-chloro-2-propenyl)oxy]imino]propyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one

Contains 2.0 lbs. clethodim per gal.

U.S. Pat. No. 4,440,566; RE - 32,489

**KEEP OUT OF REACH OF CHILDREN**

**WARNING - AVISO**

**FIRST AID (Continued)**

**HOT LINE NUMBER**

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact **1-800-892-0099** for emergency medical treatment information.

**NOTE TO PHYSICIANS**

Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid, which can cause pneumonitis. If ingested, probable mucosal damage may contraindicate the use of gastric lavage.

**PERSONAL PROTECTIVE EQUIPMENT (PPE):**

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category G on an EPA chemical resistance category selection chart.

**Applicators and other handlers must wear:** long-sleeved shirt and long pants, chemical-resistant gloves such as Barrier Laminate or Viton  $\geq$  14 mils, shoes plus socks and protective eyewear.

**Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.** 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.

**Sample PPE Section**

# Sample PPE Section

## **Personal Protective Equipment:**

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category C on an EPA chemical resistance category selection chart.

**Applicators and other handlers must wear:** Long-sleeved shirt and long pants; Chemical-resistant gloves; such as Barrier Laminate or Butyl Rubber, or Nitrile Rubber or Neoprene Rubber or Polyvinyl Chloride or Viton; Shoes plus socks; Protective eyewear when mixing or loading, when performing maintenance or repairs (such as repairing/replacing hoses, cleaning, replacing or unplugging nozzles) on contaminated equipment or equipment containing residual carbofuran, or when cleaning the equipment or vehicle containing, or contaminated with carbofuran. For exposure in enclosed areas: A respirator with either an organic vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any R, P or HE prefilter; For exposures outdoors: Dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with any R,P or HE filter.

# Sample PPE section

## **PERSONAL PROTECTIVE EQUIPMENT**

Some of the materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category A on an EPA chemical resistance category selection chart.

**Pilots, flaggers and groundboom applicators must wear:**

- Long-sleeved shirt and long pants
- Shoes plus socks
- Protective eyewear

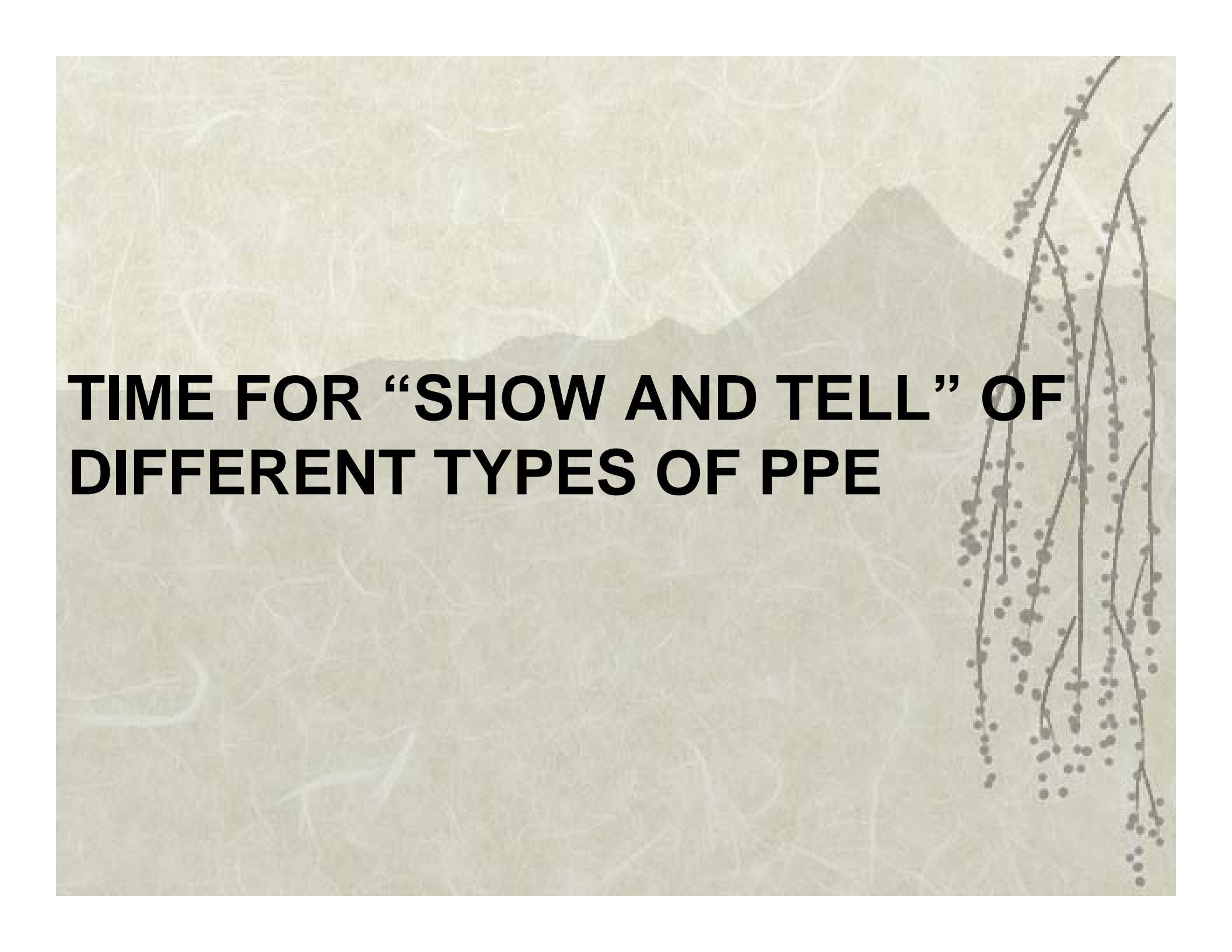
**Mixers, loaders, other applicators, and other handlers must wear:**

- Long-sleeved shirt and long pants
- Shoes plus socks
- Protective eyewear

Chemical resistant gloves made of any waterproof material such as polyethylene or polyvinylchloride.

A NIOSH approved dust/mist filtering respirator with any N, R, P, or HE filter or with approval number prefix TC-21C.

Chemical resistant apron when mixing, loading, or cleaning equipment or spills.



**TIME FOR “SHOW AND TELL” OF  
DIFFERENT TYPES OF PPE**

# PROTECTIVE EYEWEAR

- ❖ What are the minimum WPS requirements for PPE?
- ❖ What has been your experience with different types of goggles? Face Shields?
- ❖ How do you deal with your goggles fogging up?

**uvex**

**UVEX Stealth Goggles w/ Clear Lens**

Item No. G97801



 In stock! Usually ships within one business day.

<u>Qty</u>	<u>Price</u>
1 - 9	\$13.15
10 +	\$12.10

1

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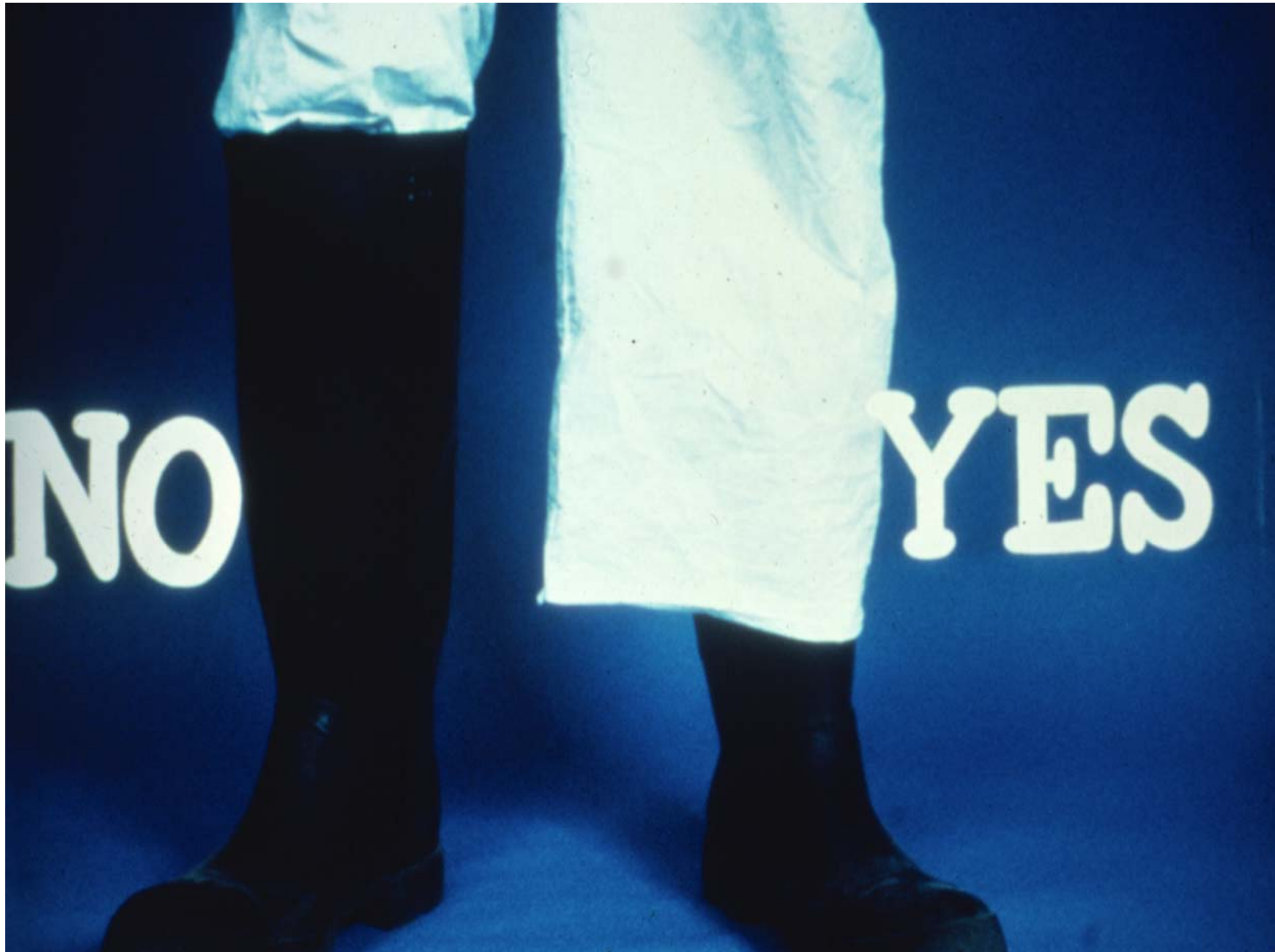
- ***The most comfortable splash goggle we have found***
- ***Meets ANSI Z87.1-2003 impact specs***
- ***Excellent for chemical mixing, brush cutting or grinding***

These goggles are extremely comfortable thanks to a soft seal that conforms to your facial contours. There is room inside for most prescription glasses. Sleek wraparound styling has dramatically improved peripheral vision. One-piece impact-resistant polycarbonate lens only takes seconds to replace. Save money by replacing the lens instead of the whole goggle! Spare lenses sold separately. Quick-adjust latex rubber headband for fast, easy fitting. Four ventilation ports. Uvextreme® lens coating protects against fogging and scratches. USA made. Meets ANSI Z87.1-2003. Clear lens.

**Stealth goggles – “Comfortable and resistant to fogging” (so say the folks from Washington State)**

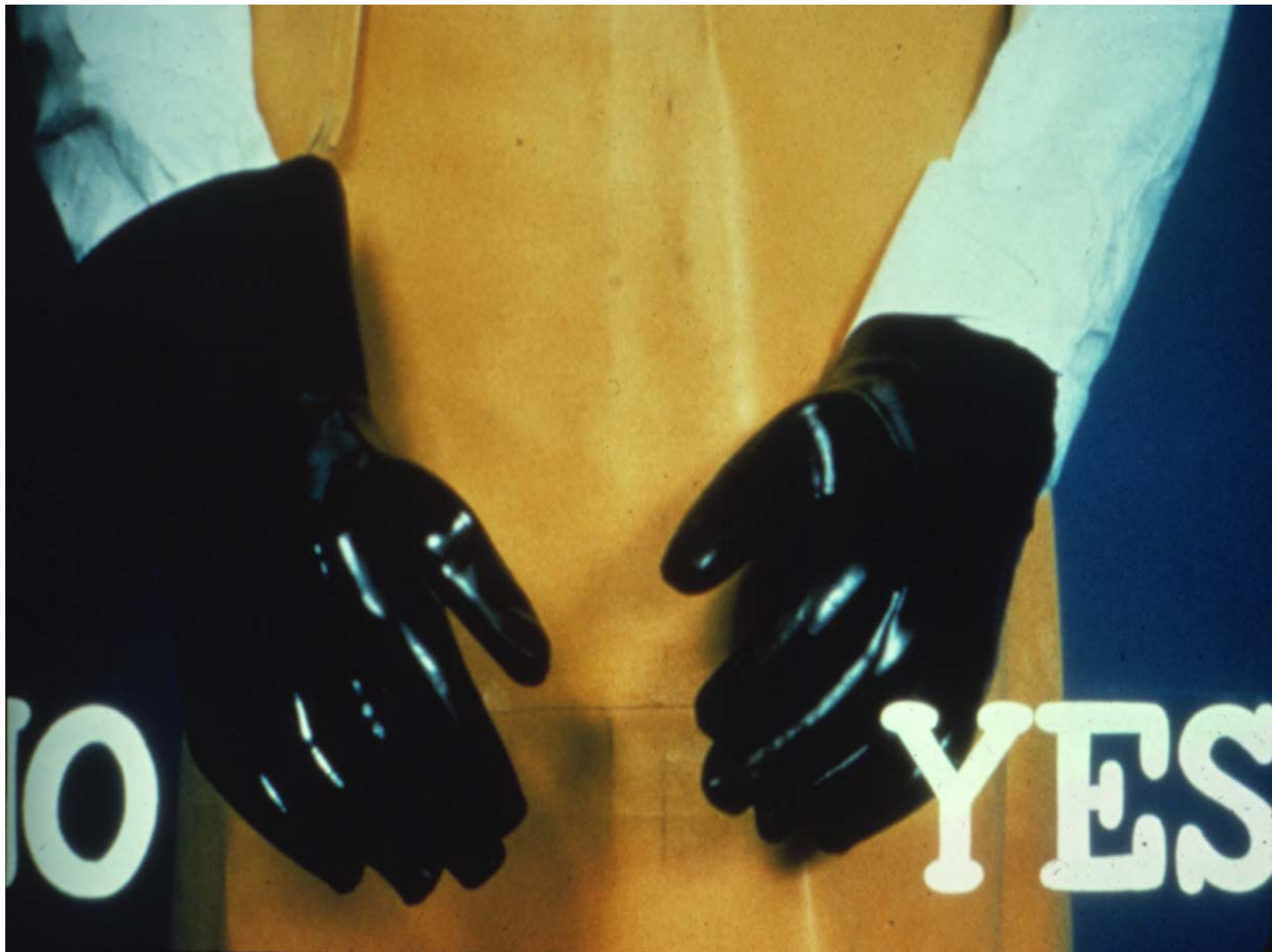
# BOOTS

- ❖ What has your experience with boots been?  
Which kinds do you like best?
- ❖ What about tennis shoes, leather boots, booties, etc.?



# GLOVES

- ❖ Cotton? Leather? Lined?
- ❖ Rubber? Nitrile? Other?
- ❖ Folding back cuffs? Duct-taping?



NO

YES

# RESPIRATORS


- ❖ Which of the samples are respirators?
- ❖ What's the difference between TC-21C and TC-23C?
- ❖ TC-21C = dust/mist. TC-23C = organic vapors
- ❖ When should you change cartridges?
- ❖ At the beginning of the day, unless the manufacturer's instructions say otherwise. ALWAYS STOP if you smell any kind of odor.
- ❖ What if you only use the cartridge for 5 or 10 minutes?
- ❖ Follow the manufacturer's instructions. If they don't say anything, you need to change them at the beginning of the day.
- ❖ Do you have to change the cartridges at the beginning of the day, or after 8 hours?
- ❖ Follow the manufacturer's instructions. If they don't say anything, you need to change them at the beginning of the day.
- ❖ What if we have a beard?
- ❖ Shave it off or use an air-supplied respirator
- ❖ How do we select respirators?
- ❖ Labels. Catalogs. Safety Supply Dealers.
- ❖ VOLUNTEERS DEMONSTRATE "FIT CHECK"

# Commonly used in Hood River



## Kasco K80S-T8 Battery-powered Helmet System

Item No. 0313195-1

 In stock! Usually ships within one business day.

Qty	Price
1 - 2	\$774.85
3 +	\$697.35

1

Add to Cart

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### KASCO K80S-T8 Battery-powered Pesticide Helmet

***NIOSH approved, battery-powered, air-purifying helmet is ideal for greenhouse spraying***

Kasco's versatile, battery-powered helmet assembly provides NIOSH-approved respiratory protection against pesticides requiring a TC-23C type of respirator. The 6-volt battery provides four hours of operation before it needs to be recharged. 7 cubic feet of air per minute are drawn through the two organic vapor/HEPA filters. Helmet features include a flip-up visor and a tough polyurethane coated shell. Inside the helmet is an adjustable headband which fits all head sizes up to 7-7/8 and has plenty of room for glasses and beards. Approval No. TC-23C-1572. Helmet, battery, battery charger, two pesticide filters, blower/motor unit, breathing tube, belt, electrical cables and instruction manual are included. Imported. Unit runs 4 hours on the battery. Order replacement filters and parts separately, see link below.

# Gempler's Technical Services Resource Center

GEMPLER'S - Technical Services

http://www.gemplers.com/a/pages/techserv.asp

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- ATV, Tractor & Vehicle Supplies
- Clearance **SALE**

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- Business Saver Plan
- GEMPLER'S® 100% Guarantee
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- Privacy & Security
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**Technical Services Resource Center**

GEMPLER'S® provides a wide variety of online technical documents for our customers which you will find organized by subject below. In addition, our Technical Services department is available 8 A.M. - 4:30 P.M. CST, Monday - Friday, to answer your questions, help you locate replacement parts, and order products you've been unable to find. To contact our Technical Services department, you can send an e-mail message to [techserv@gemplers.com](mailto:techserv@gemplers.com) or call 1-800-874-4755 toll free.

**Workwear**

- Big and Tall Sizes
- Carhartt® Headquarters
- Carhartt® Insulation Grades
- Carhartt® Outer Material
- Choose-a-Sock Comparison Guide
- Choosing a Glove
- Selecting Leather Gloves
- Selecting Rainwear
- Workwear and Footwear FAQS
- Workwear Sizing Chart

**Footwear**

- Choosing the Right Chore Boot
- Footwear and Workwear FAQS
- How to Care for Your Boots
- How to Choose Steel Toe Footwear
- How to Use the Boot and Shoe Dryer
- Shoe Sizing Conversion Charts
- The Right Fit for Happy Feet

**Safety**

- ANSI Hi-Vis Standard for Apparel
- Avian Flu Biosecurity Practices
- Avian Flu Signs of Infection
- Choose a Glove for Pesticide Use
- Choosing a Respirator
- Confined Spaces
- Donning/Fitting Your Respirator
- DOT Conspicuity Marking
- Eye Protection
- Fall Protection
- Fit Checking Respirators
- Fit Testing Respirators
- Gas Monitoring
- Hearing Protection
- Heat Stress
- PPE to Protect Yourself from Avian Flu
- Protective Clothing Selection Guide
- Skin Cancer
- Self-contained Breathing Apparatus
- Sun and Heat Protection

**Crop, Turf & Nursery Production**

- Basic Weed Identification
- Choosing the Right Shovel
- Comparing Wind Monitoring Equipment
- Controlling Birds
- Davis® Weather Stations
- D. B. Smith® Sprayer Parts
- EC Meters
- HOBO® Data Loggers
- How to Select a Harper Broom
- Implement a Wildlife Control Program
- IPM Lures
- IPM Lures Table
- Measuring Grain Moisture Levels
- Measuring Light Levels
- Monitoring Soil Temperatures
- Non-chemical Mosquito Control
- Operation of the Blacklight Trap
- Pest Management Web Resources
- pH Meters
- Pruning Basics
- Reduce Damage from Codling Moth
- Selecting a Weather Monitoring System
- Solo® Backpack Sprayer Parts
- Sweep Nets
- Testing Soil Fertility for Greater Profits
- The Best IPM Tool is a Magnifier
- Tips to Help Minimize Pesticide Drift
- Using a pH Meter
- Using Degree Days to Monitor
- Weather Information
- Wildlife Control
- Wildlife Control Statement (PDF Form)

**Integrated Pest Management (IPM)**

- Best Pesticide Practices
- Calibrating Your Field Sprayers
- Controlling Pests Inside Buildings
- Fly Control
- Getting Started with IPM (Integrated Pest Management)
- How to Take a Good Soil Sample
- Integrated Pest Management Checklists
- Managing Pests' Resistance to Pesticides
- Pest Management for Ornamental Plants
- Pest Management for Stored Products
- Pest Management Terminology
- Plant Disease Management
- Testing Soil Compaction
- Testing Soil Moisture
- Urban/Structural Pest Management
- Using Beneficial Insects for Pest Management
- Using Chemicals in a Pest Management Program
- Using Insect Traps and Lures

**Tires & Supplies**

- Choose the Tire Chain that's Right for You
- Dual Wheel Parts and Assemblies
- General Tire Safety Precautions
- How to Change a Tractor Tire
- How to Install Tire Chains
- How to Measure Tires and Wheels
- How to Use a Tube Deflator (Item No. G793)
- How to Use Tubeless Tire Irons

[www.gemplers.com/a/pages/techserv.asp](http://www.gemplers.com/a/pages/techserv.asp)

# HEAT STRESS

- ❖ What are the differences between heat stress and OP or Carbamate poisoning?
- ❖ HEAT STRESS:
  - ❖ DRY membranes, LARGE pupils, FAST pulse
- ❖ OP & CARBAMATE POISONING:
  - ❖ WET membranes, PINPOINT pupils, SLOW pulse
- ❖ Farm Safety Tip: [http://www.ipmnet.org/Farm\\_Safety-Main\\_Page.html](http://www.ipmnet.org/Farm_Safety-Main_Page.html)

# *HEAT STRESS & OP/CARBAMATE POISONING*

## **HEAT STRESS**

Sweating  
Headache  
Fatigue  
Nausea  
**Dry** Membranes  
**Fast** Pulse  
**Dilated** Pupils  
CNS Depression

## **OP & CARBAMATE**

Sweating  
Headache  
Fatigue  
Nausea  
**Moist** Membranes  
**Slow** Pulse  
**Pinpoint** Pupils  
CNS Depression

# Cooling Vest



# www.ipmnet.org

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### NEWS

[USDA RMA - Crop Insurance Coverage](#)

[New OSU IPM Resource Guide](#)

Web sites for Special Local Needs ([Section 24c](#)) and emergency exemption ([Section 18](#)) pesticide labels

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[Pesticides: Toxicology and Risk Assessment](#)

[On-Line IPM Handbooks](#)

[iSNAP Program](#)

[Farmscaping for Beneficials](#)

[IPMnet NEWS](#)

[Employment Opportunities with IPPC](#)



A small fishing village near the Senegal River. This is one of the study sites for an FAO (UN) sponsored project coordinated by IPPC that is investigating the fate and behavior of pesticides and the human and environmental risks associated with these chemicals. Methods developed within this project should feed back to the Pacific Northwest, where pesticide contamination of surface waters is also a concern.

### Temporary Links

[On-Line Plant Biosecurity Management Course](#)

[ODA Insect Management Website](#)

[OSU Pesticide Recertification Courses 2007](#)

[International Plant Protection Congress 2007](#)

[ODA: Pesticide Use Reporting System](#)



Growers sampling beneficial insects on a "Farmscaping for Beneficials" program farm walk at Persephone Farm, Lebanon, Oregon.

### Archives

[News](#)

[Temporary Links](#)

[Photos](#)

# Google this: Oregon pesticide safety

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## INTEGRATED PLANT PROTECTION CENTER

SEASON'S GREETINGS FROM IPPC !

OSU Extension Agriculture

# Pesticide Safety and IPM Education Program

### Program Areas

<p><b>Links</b></p> <ul style="list-style-type: none"><li>IPPCC Home</li><li>About IPPCC</li><li>IPPCC Staff</li><li>IPPCC Programs</li><li>IPM at OSU</li><li>IPM in the USA</li><li>International Links</li></ul> <p>Search Here! <input type="button" value="Go"/></p> <p><b>Quick Links</b></p> <ul style="list-style-type: none"><li>Pesticide Safety and IPM Education Program</li><li>Pesticide Education</li><li>Farm Safety</li><li>IPM in Schools</li><li>Contact Us</li></ul>	<p><b>Pesticide Education</b></p> <p>The Program organizes and provides training expertise in numerous pesticide safety events in English and Spanish. It provides technical and methodological support to county extension agents, personnel from community colleges, commodity commissions, and others who conduct pesticide safety education events.</p> 
<p><b>Farm Safety</b></p> <p>The Program promotes farm safety within the agricultural community via "Farm Safety Tips" and providing information on it's website. In the future, the Program will provide certification to OSU Extension faculty who want to conduct youth tractor safety training.</p> 	
<p><b>IPM in Schools</b></p> <p>The Program will develop an outreach and training program to promote the implementation of IPM in schools. It will also develop educational IPM programs for students in schools.</p> 	

*"Everybody knows something. Nobody knows everything. Although the individual may know little, the group as a whole knows a lot."*

# Safety Resources in Other Languages:

[http://www.ipmnet.org/Limited\\_English\\_Workforce.html](http://www.ipmnet.org/Limited_English_Workforce.html)

ms

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il Links

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## Pesticide Safety and IPM Education Program

### Safety & Health for the Limited-English-Speaking Workforce

#### Resources - all industries

Multilingual Health and Safety Resources on the Web – the most comprehensive of any single resource with documents in multiple languages

[www.dir.ca.gov/chswc/multilingualguide/multilingualguidemain.html](http://www.dir.ca.gov/chswc/multilingualguide/multilingualguidemain.html)

Oregon OSHA – General Safety in Spanish including access to OR-OSHA's PESO Program (Programa en Español de Seguridad e Higiene en el Trabajo de OR-OSHA)

<http://www.cbs.state.or.us/external/osha/espanol.html>

National Institute for Occupational Safety and Health (NIOSH) en Español – Publicaciones

<http://www.cdc.gov/spanish/niosh/pubs-sp.html>

U.S. Environmental Protection Agency (EPA) sobre pesticidas en Español

<http://www.epa.gov/espanol/pesticidas.htm>

WISHA Information in Spanish

<http://www.lni.wa.gov/Spanish/>

UCLA Labor Occupational Safety and Health Program – Videos and Fact Sheets on Safety and Health Topics in English & Spanish <http://www.losh.ucla.edu/catalog/index.html>

CROETweb Resources in Spanish

<http://www.croetweb.com/espanol.cfm>

SAIF Corporation Safety and Health Guides (English & Spanish)

<http://www.saif.com/WorkSafe/wssguides.htm>

#### Agriculture-Specific

National Ag Safety Database – Spanish/English Titles

[http://www.cdc.gov/nasd/menu/spanish/english\\_titles.html](http://www.cdc.gov/nasd/menu/spanish/english_titles.html)

Oregon Association of Nurseries Safety Articles in "Digger" (English & Spanish)

<http://www.oan.org/displaycommon.cfm?an=1&subarticlenbr=246>

Farm Safety Association Inc. - Farm Safety

<http://www.fsai.on.ca/factsheet-s.shtml>