

Use it or lose it: Personal Protective Equipment (PPE) & Weed Management

Maria Alfaro

Community Educator

Pesticide Safety Education Program

UC Statewide IPM Program

November 1, 2022

California Invasive Plant Council Symposium

pesticidesafety@ucanr.edu



University of California
Agriculture and Natural Resources

Why **YOU** should wear PPE



55% of handler illnesses involved eye injury

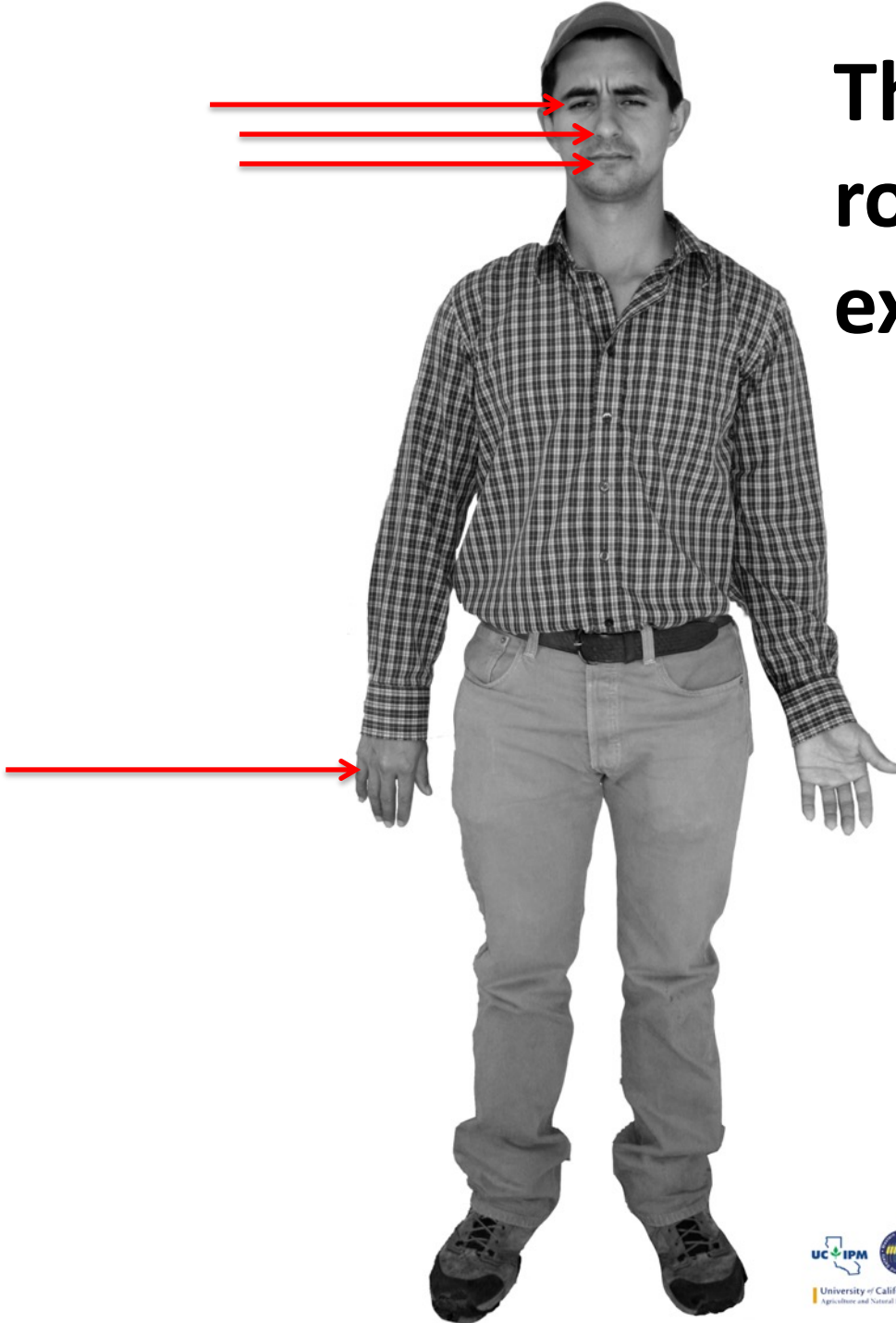
59% non-ag v 40% ag

28% of handler illnesses involved skin injury

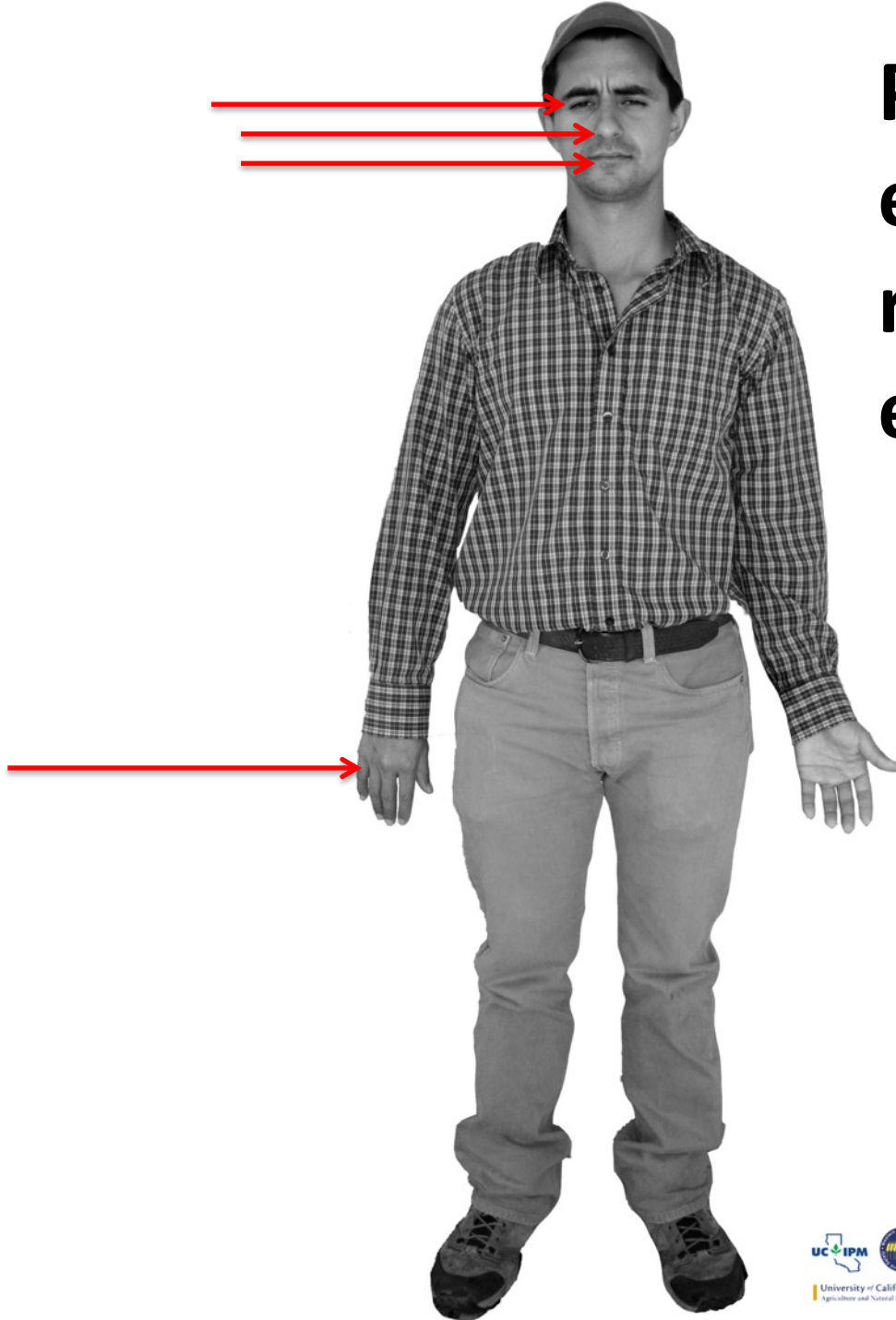
35% non-ag v 19% ag

32% of all handler pesticide illnesses were due to failure to wear PPE!

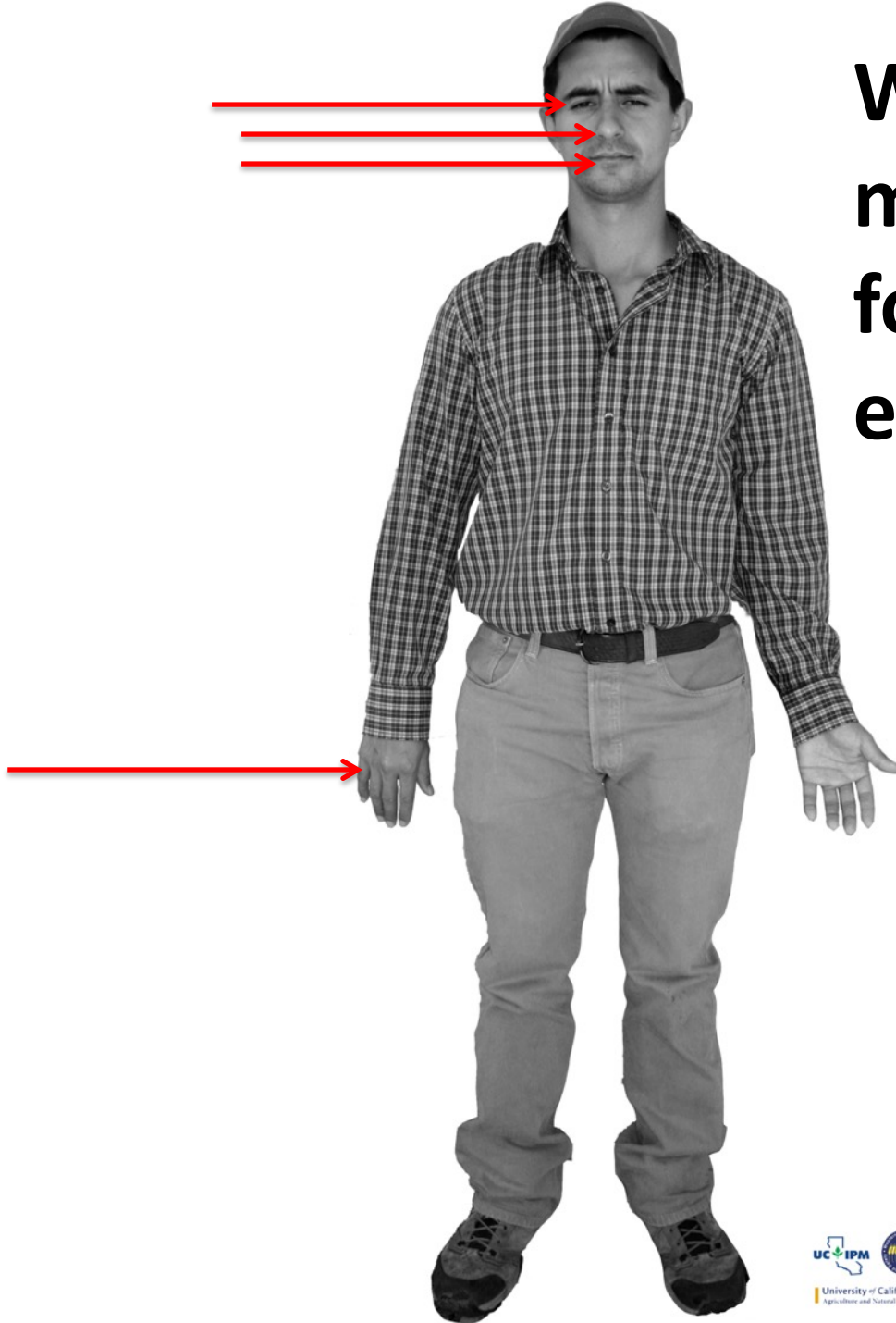
**There are 4
routes of
exposure**



**PPE can protect
each of these
routes of
exposure**

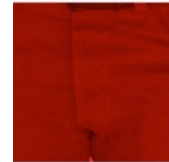


**Which way is it
more common
for pesticides to
enter our body?**

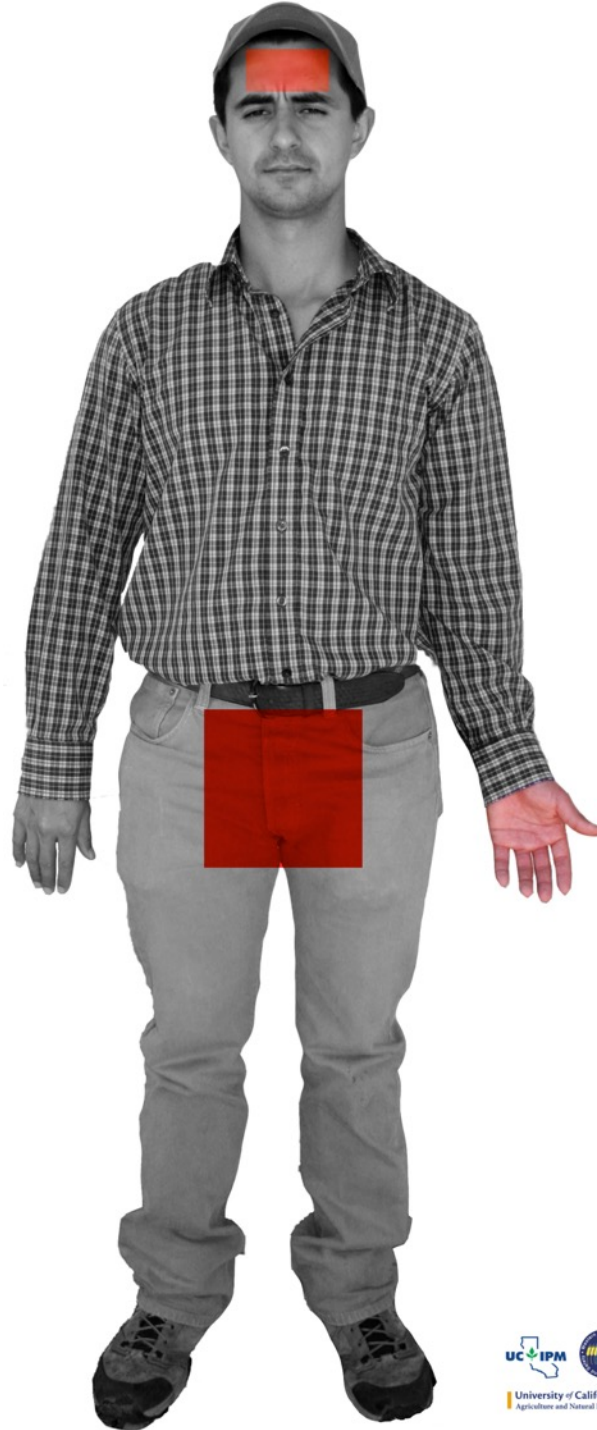


SKIN!









Personal Protective Equipment (PPE)



What is the MINIMUM Personal Protective Equipment (PPE) required in California?



How do you know what PPE to wear?

LABEL IS THE LAW

AND

DPR

LOCAL REGULATIONS

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%

PERSONAL PROTECTIVE EQUIPMENT (PPE):

Applicators and other handlers must wear long-sleeved shirt and long pants and shoes plus socks. 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 exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Long sleeved shirt
Long pants
Socks plus shoes
NO protective eyewear
NO chemical resistant gloves

3CCR Section 6738: PPE

- Protective eyewear
 - Z87.1 compliant
 - Front, side, and brow protection
- Chemical resistant gloves



Protective Eyewear - Z87.1



GROUP

14

HERBICIDE



Clipper® HERBICIDE



For the management of undesirable
aquatic vegetation in slow moving
or quiescent waters

Active Ingredient	By Wt.
*Flumioxazin	51%
Other Ingredients	49%
Total	100%
*2-[7-fluoro-3,4-dihydro-3-oxo-4-(2-propynyl)-2H- 1,4-benzoxazin-6-yl]-4,5,6,7-tetrahydro-1H-isoin- dole-1,3(2H)-dione	

Clipper® Herbicide is a water dispersible granule
containing 51% active ingredient.

EPA Reg. No. 59639-161 EPA Est. 11773-IA-01

KEEP OUT OF REACH OF CHILDREN

CAUTION

SEE BELOW FOR ADDITIONAL
PRECAUTIONARY STATEMENTS.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS & DOMESTIC ANIMALS

CAUTION

Harmful if inhaled or absorbed through the skin.
Causes moderate eye irritation. Avoid breathing dust
and spray mist. Avoid contact with skin, eyes or
clothing.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

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.

Applicators and other handlers must wear: long-
sleeved shirt and long pants, chemical-resistant
gloves made of any waterproof material such as
polyethylene or polyvinyl chloride, shoes and socks.

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

Long sleeved shirt

Long pants

**Chemical resistant gloves
made of any waterproof
material, such as...**

Shoes

Socks

NO protective eyewear

RESTRICTED USE PESTICIDE

DUE TO TOXICITY TO NON-TARGET INVERTEBRATES,
MAMMALS, AND AQUATIC ORGANISMS

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.



GROUP 6 INSECTICIDE

Agri-Mek[®] SC

Miticide/Insecticide

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

WARNING/AVISO

May be fatal if swallowed or inhaled. Do not breathe vapor or spray mist. Harmful if absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of: barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, polyvinyl chloride ≥ 14 mils, or Viton[®] ≥ 14 mils
- Shoes plus socks

long-sleeved shirt and
long pants
chemical resistant gloves
made of
socks plus shoes
NO protective eyewear
Coveralls???

Active Ingredient:

Abamectin¹: 8.0%*

Other Ingredients: 92.0%

Total: 100.0%

¹CAS No. 71751-41-2

*Agri-Mek[®] SC Miticide/Insecticide is formulated as a suspension concentrate and contains 0.7 lb abamectin per gallon.

**KEEP OUT OF REACH OF CHILDREN.
WARNING/AVISO**

GEMPLER'S. Unlined Nitrile Gloves**Combine chemical resistance with excellent dexterity**

100% nitrile gloves provide excellent protection for handling most agricultural chemicals, solvents, acids and caustics. Nitrile resists snags, punctures, abrasions and cuts better than other glove polymers. A nonslip grip makes wet or slippery work easier, while an ergonomic shape enhances fit and comfort. Unlined gloves can be washed and reused and are for use with pesticides whose label refers to Category A, C, E or F on the EPA Chemical Resistance Category Selection Chart.

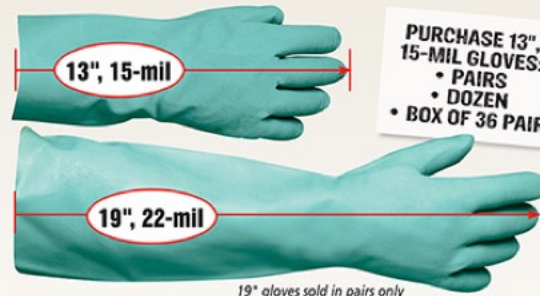
13", 15-mil Nitrile Gloves

The 13", 15-mil gloves offer increased dexterity that simplifies jobs like working with sprayer nozzles or other small parts. Sold by the pair, in packs of 12 pair or in a convenient wall mount dispenser box with 36 pair. Imported. See price chart below for available sizes: XS (7), S (8), M (9), L (10) or XL (11).

19", 22-mil Unlined Nitrile Gloves

The 19", 22-mil gloves offer added protection to the forearm where chemical splashes may occur. The tapered wrist ensures a comfortable and natural fit. Pairs are individually bagged. Imported. Specify size: L (9) or XL (10).

Type	Quantity	Size	Item No.	Price
13" 15-mil	1 pr.	XS, S, M, L or XL	727G	\$3.00/pr.
13" 15-mil	12 pr./pk.	XS, S, M, L or XL	12778	\$32.90/pk.
13" 15-mil	36 pr./box	S, M, L or XL	10212	\$91.30/box
19" 22-mil	1 pr.	L or XL	4082K	\$10.70/pr.



19" gloves sold in pairs only



PURCHASE 13", 15-MIL GLOVES:
• PAIRS
• DOZEN
• BOX OF 36 PAIR

Customer Favorite!

"I am a state-licensed applicator of herbicides, which I use as a national park volunteer on invasive plants. I consider these gloves essential personal protective equipment."
— Old Fred, Richfield, OH



Each pair individually bagged



Box can be hung on the wall

SAVE WITH OUR BOX OF 36 PAIR

DISPOSABLE GLOVE LINERS**Fingerless, Disposable Cotton Glove Liners**

100% natural, hypoallergenic cotton ribbed knit material allows air to circulate between your hand and the glove, keeping perspiration off your palm for all-day comfort. Unique, fingerless design retains tactile dexterity and reduces bulk inside the outer glove. Acceptable for food processing applications when used as a liner under an approved outer glove. 8 1/2" L ambidextrous glove liners come 100 per box. One size fits all. Imported.



Item No.	1-4	5-11	12+
24825	\$19.95/box	\$19.00/box	\$18.10/box

Full-finger Disposable Cotton Glove Liners

The EPA allows you to wear separable glove liners beneath chemical gloves for up to 10 hours or until contaminated

Wear inside rubber/chemical gloves to absorb perspiration. Cotton liners help to protect hands from dermatitis and other skin irritations. These liners are also excellent as a barrier from the cold when using for cold-weather applications. Sold in dozen pair packs. Available in Men's and Women's size. Imported.

	Item No.	1-11	12-24	25+
Men's	WL6701	\$10.00/doz.	\$9.20/doz.	\$8.50/doz.
Women's	WL6702	\$10.00/doz.	\$9.20/doz.	\$8.50/doz.

NO MORE SWEATY HANDS



UNLINED CHEMICAL GLOVES

UNLINED CHEMICAL GLOVES



Value Master™ 12" Rubber Latex Gloves

•For diluted, low-toxicity pesticides

•Used by canneries and food processors

Low-cost, heavy-duty, unlined "canners" type gloves offer excellent dexterity and elasticity. USDA accepted. 18-mil thickness and 12" L. For use with pesticides having labels that refer to **Category A** on the EPA's Chemical Resistance Category Selection Chart. Light yellow color. Dozen pair. Imported. Specify Women's size: S (7), M (8), L (9) or XL (10).

Item No.	1-4	5+
RLG2	\$16.85/doz.	\$15.50/doz.

18-MIL 12" gloves



Ansell 12" Economical Neoprene Gloves

These unlined neoprene gloves offer excellent resistance to a wide range of chemicals, including oils, acids, caustics and solvents. Gloves are case hardened to increase chemical and abrasion resistance and feature a textured finish to improve grip on slippery surfaces. Curved fingers and contoured palm for long-wearing comfort. For use with pesticides that have labels referring to **Category A, C and E** on the EPA's Chemical Resistance Category Selection Chart. Imported. Specify size: S (7), M (8), L (9), XL (10) or 2XL (11).

Item No.	1-11	12+
8159	\$7.50/pr.	\$6.90/pr.

17-MIL 12" gloves



Chloro-Flex™ II 18" Neoprene Gloves

Thick rolled cuff for easy on/off

30-mil, heavyweight unlined neoprene gloves offer excellent protection against agricultural chemicals, oils, acids, resins, alcohols, caustics and other petroleum-based materials. Ideal for applications involving oil spill cleanup and gear assembly. For use with pesticides having labels that refer to **Category A, C and E** on the EPA's Chemical Resistance Category Selection Chart. Imported. Specify size: L (9) XL (10) or 2XL (11).

Item No.	1-11	12+
54273	\$15.80/pr.	\$14.60/pr.

30-MIL 18" gloves



Heavy Natural Rubber Gloves

Unlined natural rubber gloves feature a smooth grip and a rolled cuff to catch drips. Extra-large sizing fits big hands and open cuffs allow for easy on/off. For use with pesticides that have labels referring to **Category A** on the EPA's Chemical Resistance Category Selection Chart. Imported. Size XL (11) only.

Length	Item No.	1-11	12+
18"	6028	\$15.25/pr.	\$14.10/pr.
24"	6024	\$25.00/pr.	\$23.00/pr.

35-MIL

24" gloves

6024

ELBOW LENGTH IDEAL FOR CLEANING TANKS

40-MIL

18" gloves

6028



Honeywell 11" Butyl Gloves

For certain high-toxicity pesticides, fumigants and anhydrous ammonia

Gloves offer good dexterity and broad-spectrum ag chemical protection. 11" L; unlined; rough finish. For use with pesticides having labels that refer to **Category A, B, C, D or F** on the EPA's Chemical Resistance Category Selection Chart. USA made. Specify size: S (8), M (9), L (10) or XL (11).

Item No.	1-11	12+
14971	\$27.30/pr.	\$24.95/pr.

16-MIL

11" gloves



Barrier™ 16" Chemical-resistant Multi-hazard Gloves

Five-layer laminated Barrier™ unlined gloves resist permeation and breakthrough to the broadest range of chemicals when the chemical hazard is not clearly identified. Often used as a liner inside leather gloves where mechanical damage is suspected.

2.5-mil; 16" L. For use with pesticides having labels referring to **Categories A, B, C, D, E, F, G, or H** on the EPA's Chemical Resistant Category Selection Chart. USA made. Size Large only.

Item No.	Price
182013	\$8.80/pr.

2.5-MIL

16" gloves



Honeywell 13" unlined nitrile gloves offer improved touch sensitivity

Nitrile offers stronger wear resistance to cuts, snags and abrasions than other elastomers, resulting in dependable, long-lasting protection. These gloves also resist common solvents, oils and acids. Its flexible curved hand design improves dexterity and provides a natural fit. Suggested uses include food processing, chemical processing, parts cleaning and automotive assembly. USDA accepted for food handling. 13" L with 10-mil thickness. Imported. Specify size: 8, 9, 10 or 11.

Item No.	1-9	10+
11966	\$2.10/pr.	\$1.95/pr.

10-MIL

13" gloves



Glove Selection



Glove Category Selection Key

Label Code	Materials Required by Law	Material Code
A	1,2,3,4,5,6,7,8	1: Laminate
B	1,2	2: Butyl
C	1,2,3,4,7,8	3: Nitrile
D	1,2	4: Neoprene
E	1,3,4,8	5: Natural
F	1,2,3,8	6: Polyethylene
G	1,8	7: PVC
H	1,8	8: Viton

All but Laminate and Polyethylene must be 14 mils or thicker

Glove Selection - Nitrile



Glove Category Selection Key

Label Code	Materials Required by Law	Material Code
A	1,2,3,4,5,6,7,8	1: Laminate
B	1,2	2: Butyl
C	1,2,3,4,7,8	3: Nitrile
D	1,2	4: Neoprene
E	1,3,4,8	5: Natural
F	1,2,3,8	6: Polyethylene
G	1,8	7: PVC
H	1,8	8: Viton

All but Laminate and Polyethylene must be 14 mils or thicker

Can you wear disposable gloves?



... when chemical-resistant gloves are used to make **fine adjustments to equipment or other activities that require high dexterity and motor control skill** the gloves must be made of an appropriate barrier material, as specified in (a) and (b) above, and only be used for a **maximum of 15 minutes**. Such gloves may only be **used once** for such specific tasks and must be discarded and not reused after the task is accomplished.

Glove Liners



HARVESTER[®]

LANDSCAPE & AQUATIC HERBICIDE

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are: barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils. If you want more options, follow the instructions for Category A on an EPA Chemical Resistance Category Selection Chart. Mixers, Loaders, Applicators and other handlers must wear: Coveralls over short-sleeved shirt and short pants or coveralls over long-sleeved shirt and long pants; Chemical-resistant gloves; Chemical-resistant footwear plus socks; Protective eyewear; Chemical-resistant headgear for overhead exposure; Chemical-resistant apron when cleaning equipment, mixing, or loading; and Face shield when mixing or loading. Exception: After this product has been diluted to 0.50% Harvester or less in water (i.e., the labeled rate for some spot applications), applicators for AQUATIC SURFACE APPLICATIONS must, at a minimum, wear (Note: Mixers and Loaders for this application method must still wear the personal protective equipment (PPE) as described in the above section): Long-sleeved shirt and long pants; Shoes plus socks; Waterproof gloves; and Protective eyewear. Exception: At a minimum, applicators for AQUATIC SUBSURFACE APPLICATIONS must wear (Note - Mixers and Loaders for this application method must still wear the personal protective equipment (PPE) as described in the above section): Short-sleeved shirt and short pants; Waterproof gloves; and Chemical-resistant footwear plus socks. 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 exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

**Coveralls over long-sleeved shirt and
long pants**
Chemical resistant gloves
Chemical resistant footwear plus socks
Protective eyewear

CAUTION

ACTIVE INGREDIENT:

Diquat dibromide [6,7-dihydrodipyrido (1,2-a:2',1'-c) pyrazinediium dibro- mide].....	37.3%
Other Ingredients.....	62.7%
TOTAL.....	100.0%

Contains 2 pounds diquat cation per gallon.
(3.73 lbs. diquat dibromide per gallon.)

Is This a Respirator?



YES!



YES!



YES!

This IS a Respirator!



- **NIOSH** → certifying agency
- **N, R, P** → resistance to oil degradation
- **95, 99, 100** → filter efficiency

Respirators – Change Out Schedule

Respirator Restrictions	
N Type	NO OIL IN MIX: Dispose End of Day
R Type	OIL IN MIX: Dispose After 8 Hours Per Day
P Type	OIL IN MIX: Dispose End of Day
Organic Vapor	Dispose End of Day

Always follow label directions and permit conditions.

For more information contact
your local Agricultural Commissioner or

 **California Department of Pesticide Regulation**
Worker Health and Safety (916) 445-4222
<http://www.cdpr.ca.gov>

May 2014

WEEDTRINE[®] D

AQUATIC HERBICIDE

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Harmful if inhaled. Harmful if swallowed. Causes moderate eye irritation. Avoid breathing spray mist. Avoid contact with eyes, skin or clothing.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

Some materials that are chemical-resistant to this product are made of waterproof material. If you want more options, follow the instructions for category "A" on an EPA chemical-resistance category selection chart. Applicators and other handlers must wear coveralls over long-sleeved shirt and long pants, protective eyewear, chemical resistant gloves, chemical resistant footwear plus socks, chemical resistant headgear for overhead exposure and a chemical resistant apron when cleaning equipment, mixing

or loading; and a dust/mist filtering respirator with NIOSH approval number prefix TC-21 C.

KEEP OUT OF REACH
OF CHILDREN

**CAUTION/
AVISO**

ACTIVE INGREDIENT:

Diquat dibromide
[6,7-dihydrodipyrido (1,2-a:2',1'-C)
pyrazinediium dibromide].....8.53%
OTHER INGREDIENTS.....91.47%
TOTAL.....100.00%

Contains 0.4 lb. diquat cation per gallon as
0.746 lb. salt per gallon

**Dust/mist filtering respirator
with NIOSH approval number
prefix TC-21C**

- Respirator must be worn when required by:
 - The pesticide label
 - Permit conditions
 - Regulation
 - Employer Policy





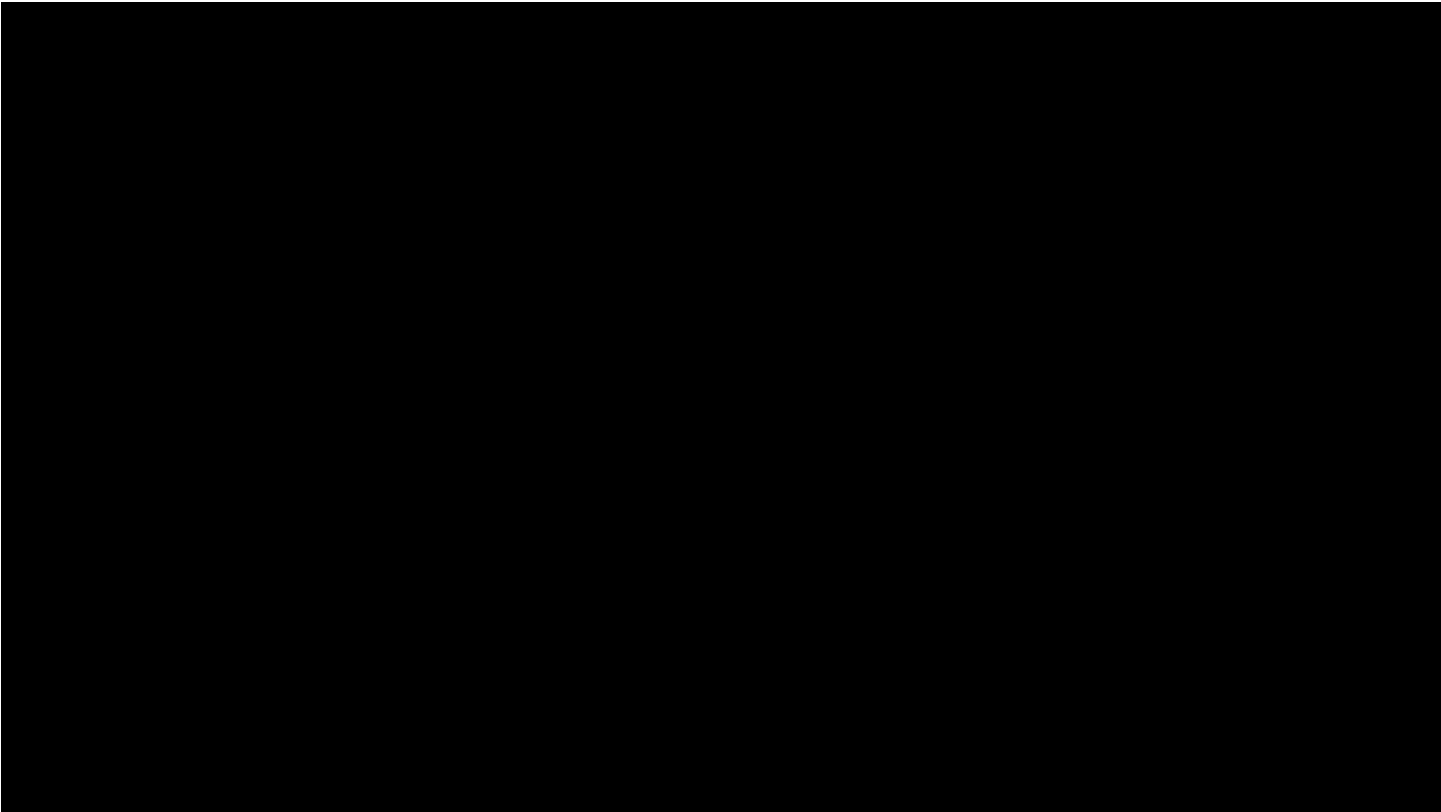
When to Wear a Respirator

- If you wear a respirator you must first complete the following:
 - Respirator training
 - Annual Fit test
 - For tight-fitting respirators
 - Medical evaluation before a fit test

Selection and Use of PPE

- Always follow the pesticide label
- AND
- Always remember that CA requirements are generally **stricter** than label requirements





Take-Home Messages

- Wear protective eyewear and chemical resistant gloves for all handling activities
- Check manufacturer's specifications for thickness, uses, lining type, etc.
- Wear coveralls when handling DANGER and WARNING pesticides
- Filtering facepieces (often called "dust masks") are respirators!

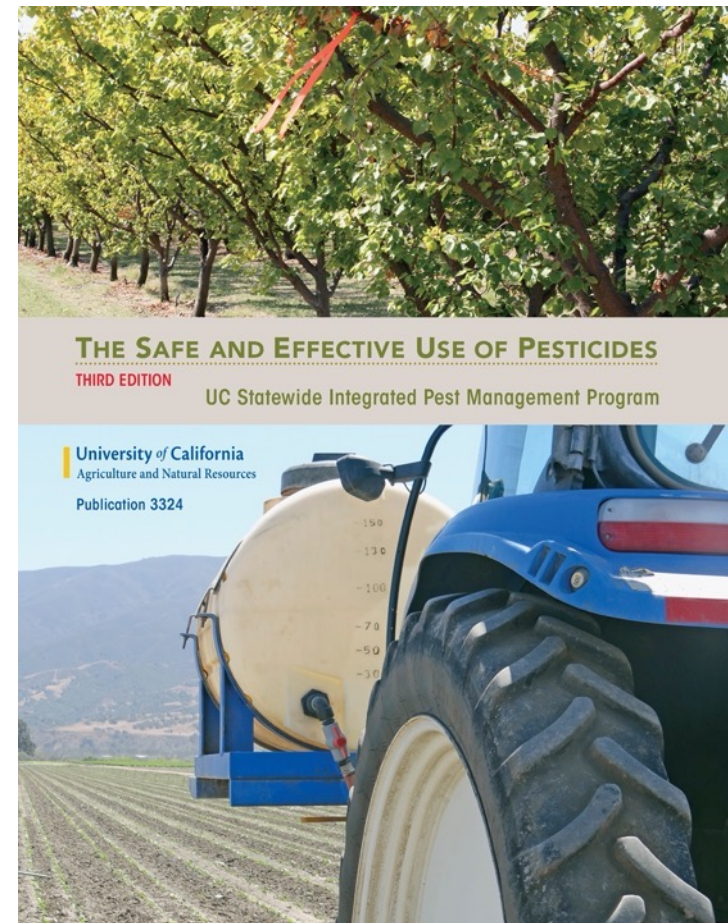


PPE - USE IT & keep your sight, your model-like hands pretty, your capacity for creating romantic moments and procreating or lose it!

Resources for You



[http:// ipm.ucanr.edu](http://ipm.ucanr.edu)



<http://anrcatalog.ucanr.edu/>



Questions?



Contact:

Maria Alfaro

Community Educator

Pesticide Safety Education Program

pesticidesafety@ucanr.edu

ucanr.edu/trainme



@PesticideSafeUC



@PSEPUC