

Handler Training

Worker Protection Standard
Pesticide Handler Safety Training



PERC Pesticide Educational
Resources Collaborative

EPA Handler PST 00018

EPA has approved this material for training pesticide handlers on pesticide safety in accordance with the 2015 WPS expanded training content (40 CFR Part 170). The approval number is EPA Handler PST 00018.

Using these slides to train: Pesticide Handlers

- This presentation provides the information required to train those who will train handlers under the Environmental Protection Agency's Worker Protection Standard. Additional state rules may apply.
- This handler training material can be used in 2017, 2018 and beyond.
- This presentation must be presented in its entirety.
- If you add or remove slides from this set, you must submit the training to EPA for approval before it may be used to train handlers.
- The notes section of the PowerPoint presentation contains important information for the trainer. Please review the notes prior to conducting the training.
- When training pesticide handlers, you must provide them with site-specific information relating to the agricultural establishment where they will be working. This includes the location of PPE, pesticide storage, pesticide application equipment, central posting, records, emergency contact information, decontamination supplies, and other WPS requirements.
- Trainings must be conducted in a manner such that the handlers understand the information completely.

Employee Tasks

Agricultural Worker Tasks

- Work in treated fields
- Agricultural activities
- Exposed to pesticide residues
- **DO NOT HANDLE PESTICIDES**



Early-Entry Worker Tasks



- Enter into a treated field during the restricted-entry interval (REI)
- Additional early-entry specific training and protections before entering a treated field
- Must be at least 18
- **DO NOT HANDLE PESTICIDES**

Pesticide Handler Tasks



- Mix, load, apply pesticides
- Fix application equipment
- YES! Mechanics MAY BE handlers
- Must be 18 years old

Where You May Encounter Pesticides at Work

Pesticide Types

- Insecticides – control insect
- Herbicides – control weeds
- Fungicides – control fungi and disease organisms



Pesticide Formulations



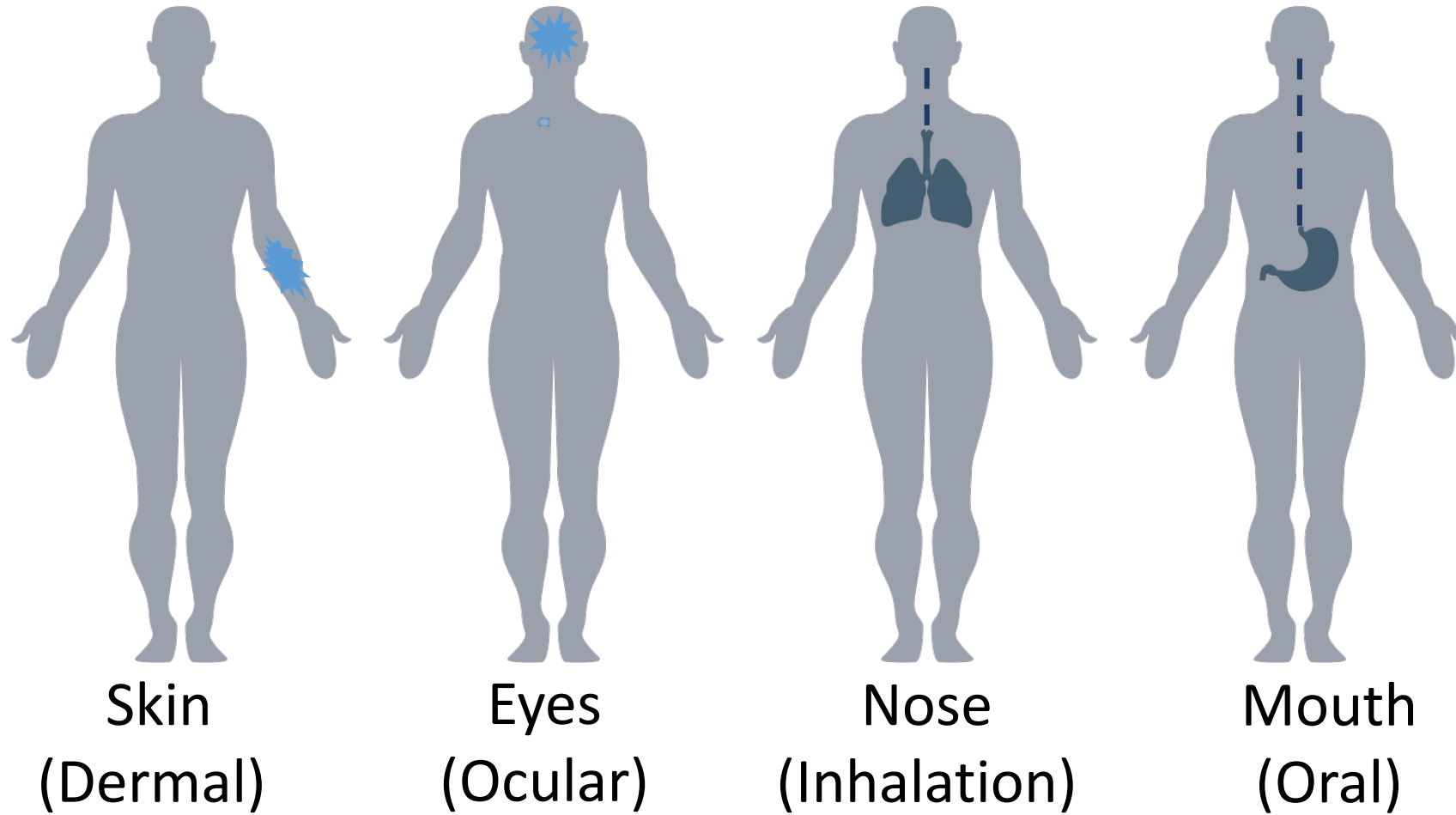
- Liquids
- Dusts
- Powders
- Granules
- Pellets
- Gases
- Gels
- Aerosols

At Work, Pesticides and Pesticide Residues May be Found:

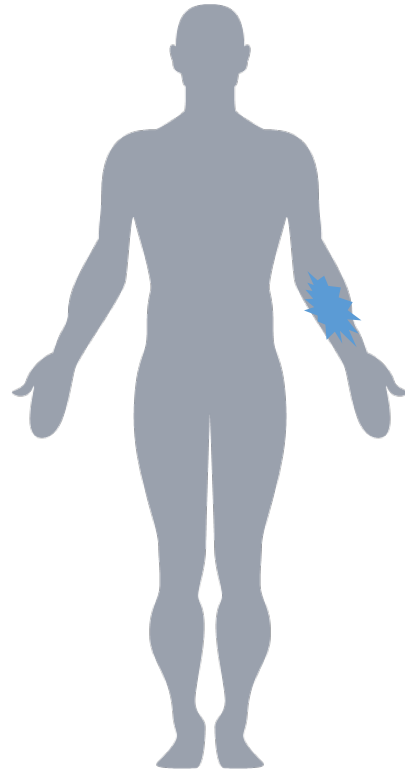
- In or on treated plants (leaves, stems, fruit and vegetables)
- In or on the soil where pesticides were applied
- Tractors, sprayers, and other application equipment
- Used work clothing, shoes, and personal protective equipment (including gloves)
- Pesticide mixing and loading areas
- In the air as drift from a nearby application
- In the irrigation water or irrigation equipment, if the irrigation system is used to apply pesticides, called chemigation
- In or on pesticide containers (including empty pesticide containers)

How Pesticides Can Enter Your Body

There are Four Routes of Pesticide Entry into the Body:

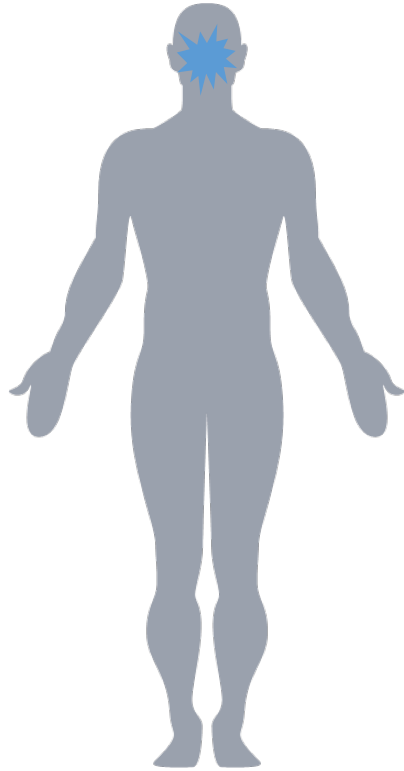


Routes of Entry: Dermal



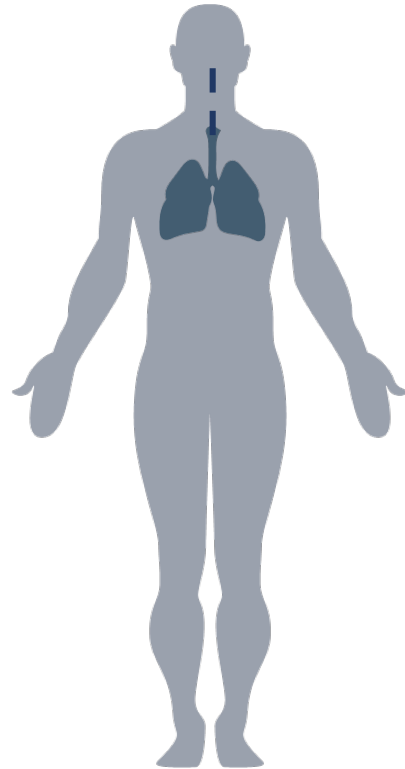
Some pesticides
when contacted
can pass through
the skin into the
blood stream

Routes of Entry: Ocular



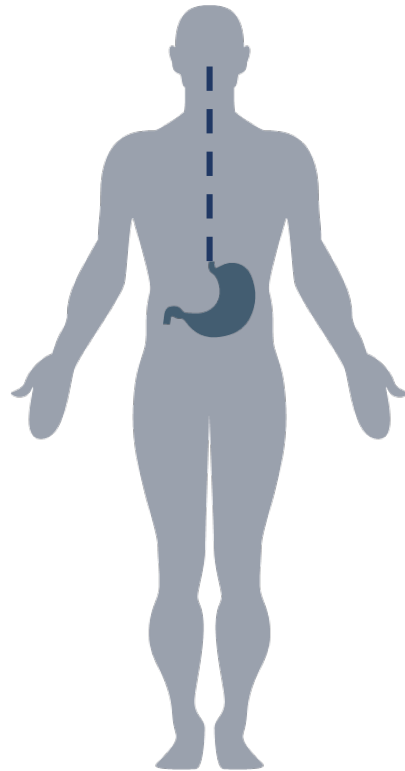
Significant amounts of pesticide can penetrate the outer tissues of the eye and enter the bloodstream

Routes of Entry: Inhalation



Once pesticides have been inhaled, they enter the lungs and bloodstream

Routes of Entry: Oral



Pesticide illness can occur if pesticide residues are transferred to consumed food from unwashed hands

Signs and Symptoms of Pesticide Poisoning

Common Signs and Symptoms

- Eye irritation
- Nose and throat pain
- Skin rash
- Dizziness
- Headache
- Muscle aches or cramps
- Exhaustion
- Nausea
- Diarrhea
- Chest pain
- Breathing difficulties
- Blurred vision
- Excessive salivation or drooling
- Very small, pinpoint pupils
- Lack of muscle control
- Convulsions or seizures
- Unconsciousness

Symptoms of Exposure to Fumigants

- Irrational behavior
- Elevated body temperatures

Pesticide Poisoning Symptoms Can be Confused with Other Illnesses



- Cold
- Flu
- Heat illness
- Food poisoning
- Hangover

Mild Symptoms



Nose and
throat pain



Dizziness



Eye irritation



Skin rash

Moderate Symptoms

- Excessive saliva or drool
- Breathing difficulties
- Blurry vision

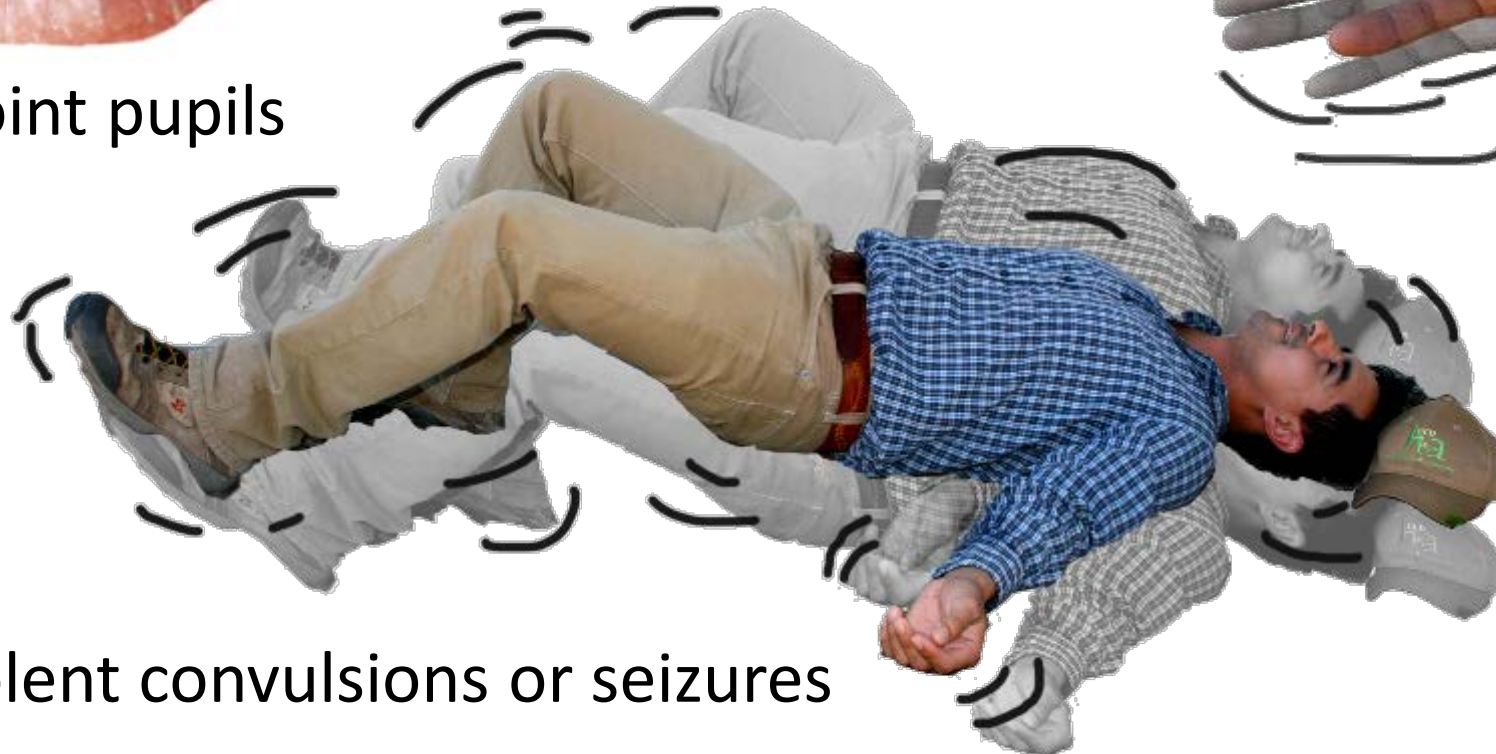
Severe Symptoms



Pinpoint pupils



Trembling, lack of
muscle control



Violent convulsions or seizures

The Type and Severity of Symptoms Depend on:

- The pesticide
- The route of exposure
- The length of exposure
- How often you are exposed
- Age of the person
- Health of the person

Potential Hazards

Hazards to Children and Pregnant Women

- Pregnant women
 - Miscarriage
 - Birth defects
- Children
 - Still small
 - Still developing



Potential Hazards from Pesticides

1. Acute

- Short-term
- Symptoms appear shortly after exposure
- Single exposure
- Mild to serious illnesses

2. Chronic

- Long-term
- Symptoms appear months or years later
- Repeated exposures to a small dose
- Mostly causes serious illnesses

3. Delayed effects

Chronic Pesticide Hazards

- Cancer
- Fertility problems
- Respiratory illness
- Nervous system disorders
- Birth defects
- Immune system disorders

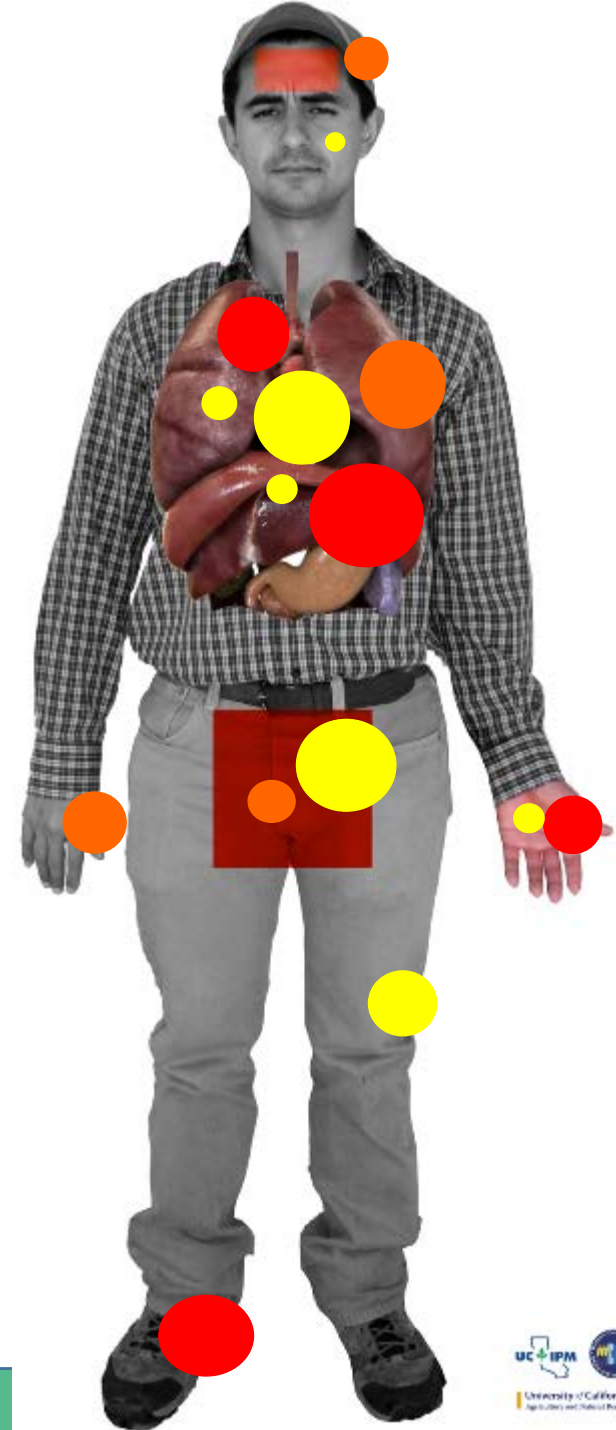


Image credit: Sarah Risorto, UC Statewide IPM Program

Sensitization



- Not overexposure or poisoning
- Allergic reaction that develops over time
- Skin irritation
- Respiratory problems

Ways to Reduce Pesticide Exposure

Using Protective Clothing

- Remember to use work clothes and/or personal protective equipment that protect your skin
- Keep out of areas indicated by your supervisor
- Leave the area if pesticides are carried towards the area where you are working
- Wash with soap and water after working and before eating, chewing tobacco or using the bathroom and before any physical contact with your family

Wash and Change into Clean Clothes



- Wash or shower with soap and water and shampoo hair as soon as you can after working with or in areas treated with pesticides.
- Change into clean clothes after washing

After Working in Pesticide Treated Areas

- Remove work boots or shoes before entering your home
- Remove work clothes and wash or shower before physical contact with children or family members



Reduce Pesticide Residue on Clothing

- Wear work clothes only once
- Put work clothes in a plastic bag after use

Wash Work Clothes

- Wash work clothes before wearing them again
- Wash work clothing separate from family laundry
- Use hot water
- Decontaminate washing machine



Do Not Take Pesticides or Pesticide Containers Used at Work to your Home

- Never take pesticides or pesticide containers home – they may contain pesticide residues that may harm you and/or your family
- Typically pesticides used in agriculture are not to be used at home

Keep Children and Family Members Away from Pesticide Treated Areas



- Keep children out of places where pesticides may be found
- Nonworking family members should not enter into pesticide treated areas
- At home – keep pesticide out of reach of children

Decontamination and First Aid

What is Decontamination?

Routine Decontamination

- Cleansing face, hands or the entire human body to minimize exposure to pesticide residues

Emergency Decontamination

- Removing pesticides from eyes, skin or clothes during emergency situations

Agricultural Workers Routine Decontamination

- Wash hands before eating, drinking, smoking, using the bathroom; before touching eyes or mouth; and before getting into vehicles
- Change into clean clothes and shoes
- Shower or bathe



Pesticide Handlers Routine Decontamination



- Follow routine procedures for workers
- Decontaminate pesticide application equipment
- Decontaminate reusable personal protective equipment (PPE)

Emergency Decontamination Procedures For Skin Exposure

- Remove any PPE as quickly as possible or remove contaminated clothing as quickly as possible
- Rinse the pesticide from the skin immediately with clean water
- Wash with soap and water and shampoo hair as soon as possible
- Put on clean, uncontaminated clothes
- Report to supervisor or person in charge
- Get medical care immediately if symptoms of pesticide poisoning develop or are suspected

Safety Data Sheets

- Provide information about the pesticide product
- Refer to the SDS if there is an exposure
- SDS for all pesticides used on the establishment are located at central location
- SDS should match up with the pesticide application records

How and When to Obtain Emergency Medical Care

- Seek medical attention immediately
- Employer will provide transportation



First Aid for Skin Exposure



- Help the victim to:
 - Remove contaminated PPE or contaminated clothing
 - Rinse with water
 - Wash with plenty of soap and water

First Aid for Eye Exposure



- Help the victim to:
 - Immediately, using a gentle stream of water, flush the eye
 - Keep the eye open and as wide as possible while flushing
 - Continue flushing for at least 15+ minutes
 - Report to supervisor and get medical attention

First Aid for Inhalation Exposure

- Move the exposed person into fresh air
- Loosen tight clothing
- Keep air passages clear
- Perform artificial respiration if necessary
- Get medical attention as soon as possible

First Aid for Oral Exposure



- Never induce vomiting if the person is not fully conscious, or suffering convulsions
- Never induce vomiting without specific instructions from the label or a medical professional
- Get person to a medical facility as quickly as possible

Your Employer's Responsibilities

Employer's WPS Responsibilities

1. It is your employer's responsibility to make sure you get annual pesticide safety training before you begin your work to remind you of the basic steps you can take to protect yourself, your family and other people and the environment from pesticides that can cause harm

Pesticide Safety Training

- Annual training is required
- Training must be provided to a
 - Worker before starting work in a treated area
 - Handler before performing any handling task
- You can ask for a record of the training

Employer's WPS Responsibilities

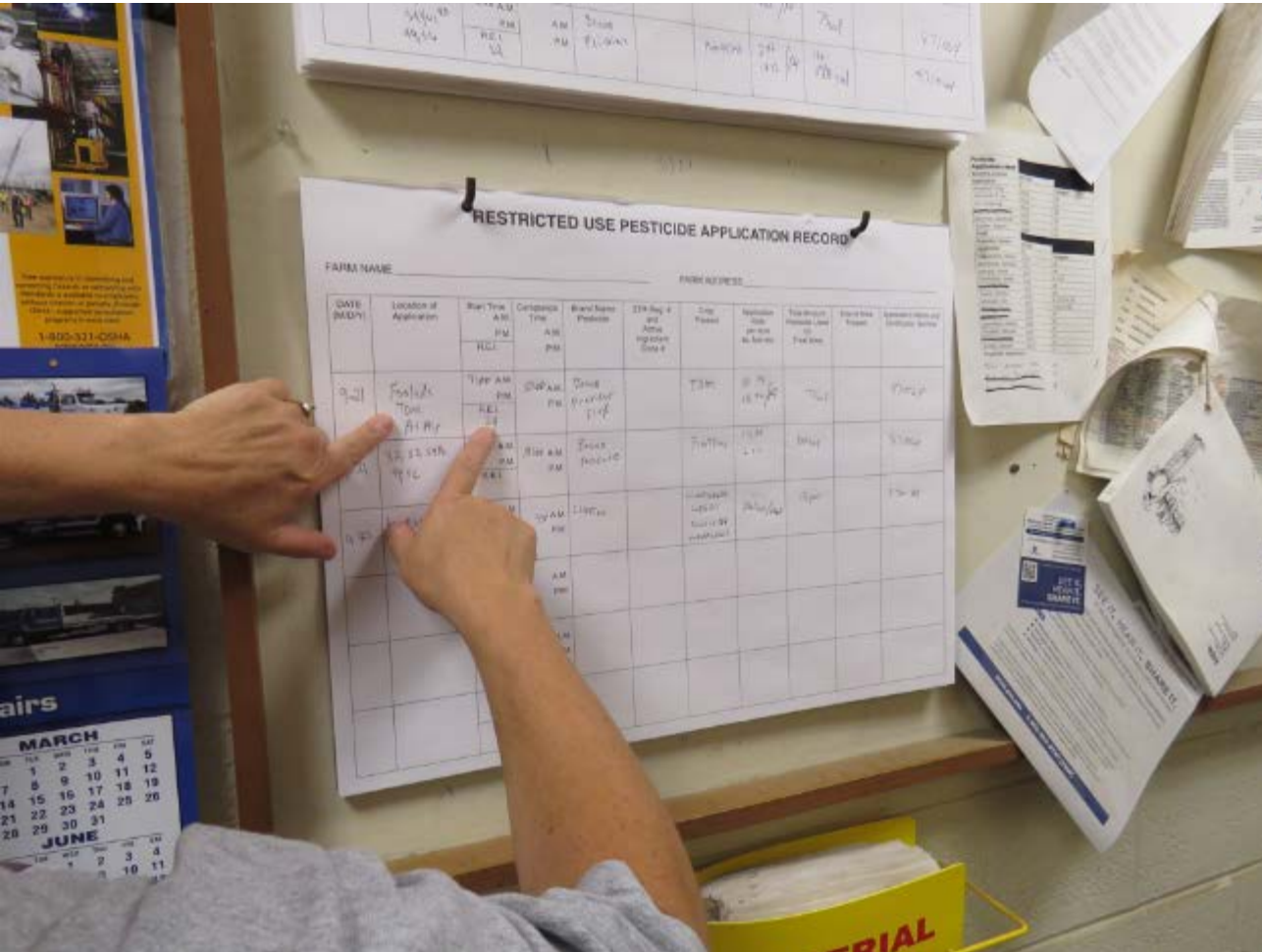
2. Your employer needs to provide pesticide application and hazard information, for you to refer to if you wish to know about pesticides used on the establishment, what kinds of risks those pesticides pose, and where those restrictions on entry into an area are on the establishment

Pesticide Safety Information

- Pesticide safety information must be displayed at:
 - Central location
 - Permanent decontamination supply sites
 - Other decontamination locations where supplies are provided for 11 or more workers or handlers



Pesticide Application Information and Safety Data Sheets



- Name, EPA registration number and active ingredient
- Crop or site treated and location and a description of treated area
- Date(s) and times the pesticide application started and ended
- Duration of the restricted-entry interval (REI) for that application
- A copy of the safety data sheet (SDS)

Employer's WPS Responsibilities

3. You can ask your employer for a copy of the application information and the safety data sheets, or you may designate a representative to ask on your behalf. The designation of a representative must be in writing

Requesting Pesticide Application Information and Safety Data Sheets

- You can request the pesticide application and SDS from their employer, or you may designate a representative to do so on your behalf
 - A treating medical person can also request access to or a copy of the application information and SDS

Employer's WPS Responsibilities

4. Your employer must tell you where the central location is and where the decontamination supplies are on the establishment

Other Employer Responsibilities in Relation to Pesticide Information

- Employers must inform you where the pesticide safety, application and hazard information is located
- You must have unrestricted access to the posted information

Employer's WPS Responsibilities

5. The safety information display at the central location and at some places with supplies for washing up (decontamination supplies) is a reminder about the steps you can take to reduce exposures. It has the name and address of a nearby medical facility, in case of an emergency where you are made sick from a pesticide. In case you need to report a violation involving a pesticide, contact information for enforcement is on the display

Employer's WPS Responsibilities

6. The employer must provide water, soap, and towels near where you are working so you can wash up when you leave the work area, and if there is an accidental exposure like a spill, the supplies may be used in an emergency to remove pesticides and reduce their effect. If you are using products that require eye protection, or are under pressure, you must have access to water for emergency eye flushing, too

Decontamination Supplies for Agricultural Workers

- Water
- Soap
- Single use towels



Decontamination Supplies for Pesticide Handlers

- Water
- Soap
- Single use towels
- Clean change of clothes to be used in case the handler's clothes or PPE become contaminated

Decontamination supplies must be located within $\frac{1}{4}$ mile of the pesticide handler, at mixing and loading site, and at the site where PPE is removed

Decontamination Supplies for Pesticide Handlers

- Emergency eye flushing station: a system or container of water that can provide a gentle stream to rinse the pesticide from the eye
- Located at any site where handlers are mixing or loading a pesticide that requires protective eyewear or are using a closed system that is under pressure
- Applicators using products that require protective eyewear must be provided a pint of water that they need to keep close by so they have ready access in case of an exposure to their eyes



Employer's WPS Responsibilities

7. If you are made sick, and pesticides may have been the cause, the employer needs to be told so he or she can make sure you are taken to a medical facility, and provide the medical personnel with information about the exposure

Provide Emergency Medical Assistance

- If you have been made ill and it is reasonable to think it was from pesticides, you should:
 - Inform your employer, who must make transportation available to a medical facility
 - Get first aid, if there is time, but do not delay getting to medical personnel!
 - The employer needs to give this information to the medical personnel: the safety data sheet for the product, the name of the product, its registration number and active ingredients, and the circumstances of the use of the product and of the exposure

Employer's WPS Responsibilities

8. Workers have to be notified by the employer of restrictions on areas where applications are taking place and where an REI is in effect. Those notifications may be in the form of oral warnings or the posted warning signs that will be around the treated area

Recognize and Understand the Meaning of Posted Warning Signs

- If you see this sign- or one similar to this one - Do Not Enter!
- This sign means that there may be pesticides or pesticide residues present in the area
- You need to receive training and special protection to enter those areas



Follow Directions and/or Signs About Keeping Out of Pesticide Treated Areas

- Workers must be notified by the employer of restrictions on areas where applications are taking place and where an REI is in effect
- Notifications may be in the form of oral warnings or the posted warning sign that will be around the treated area



Posting Treated Areas

- Required when applying a pesticide with an REI greater than:
 - 48 hours in outdoor areas
 - 4 hours in enclosed spaces
- Posting is also mandatory when required by the label
- Employer is responsible for checking the label for REI and posting requirements



Protections During Applications: Enclosed Space Production

- Ensure that no pesticide contacts any workers and other persons directly or through drift
- No worker entry to an enclosed space structure until the air concentration level specified on the label is met or, if no air concentration level is specified, until after proper ventilation criteria is met for certain types of applications

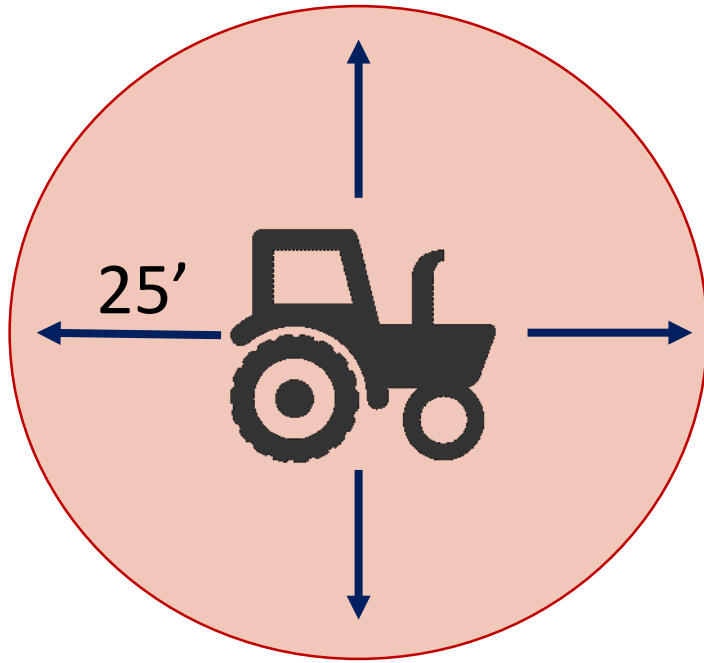
Protections During Applications: Outdoor Production

- Pesticide handlers are prohibited from applying pesticides in a manner that will contact workers or other people, either directly or through drift
- Drift can result in contact that can make you ill or contaminate your clothes worn home
- If you feel drift contacting you, leave the area immediately and wash up as soon as is practical

Reducing Hazards from Pesticide Drift

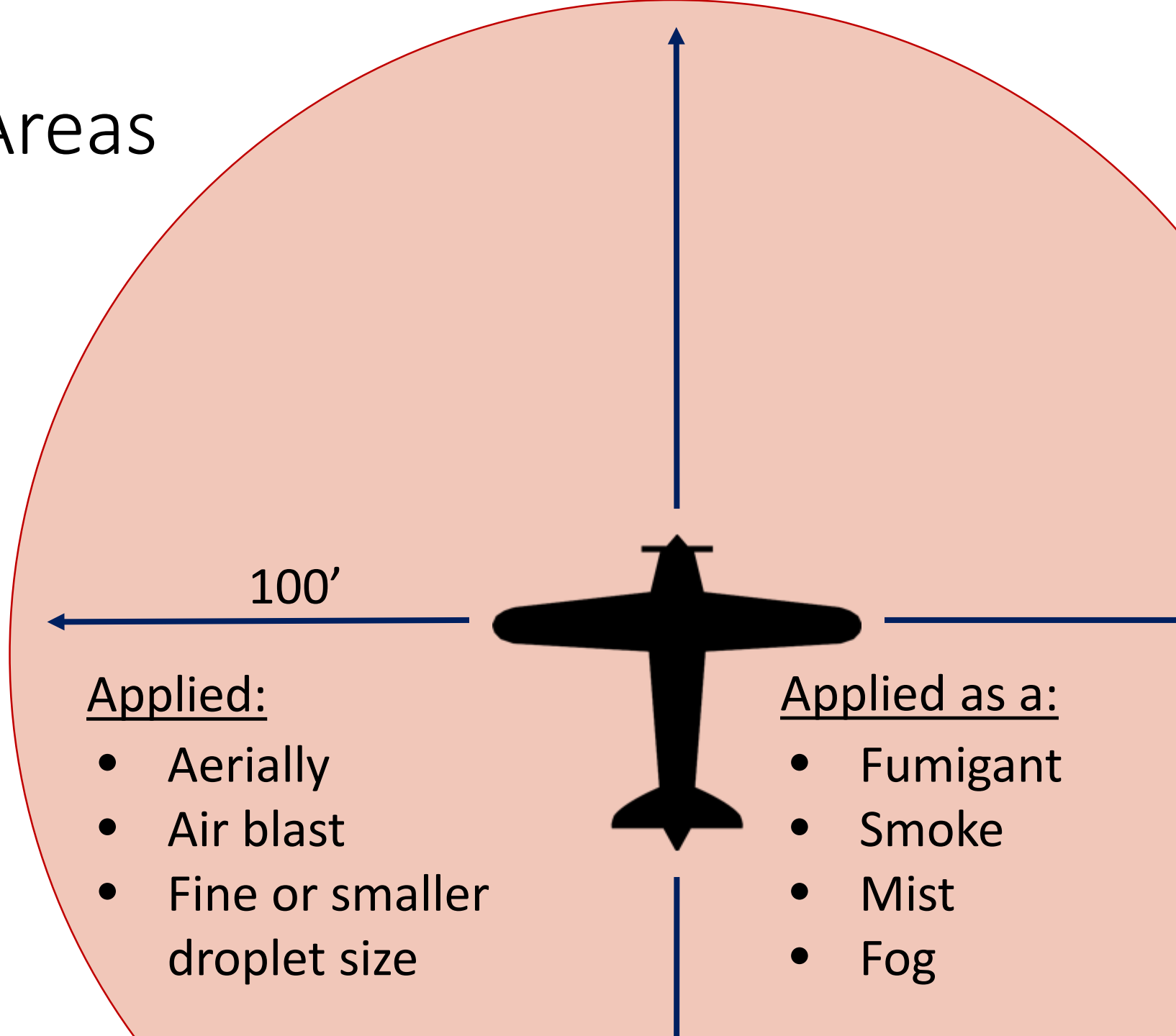
- Pesticides have a greater potential to drift when they are applied through nozzles designed to deliver small droplets
- Wind also plays an important role in the distance vapors or dust can travel
- Application exclusion zones (AEZ) are intended to protect people from drift

AEZs in Outdoor Areas



Applied:

- Medium or larger droplet size
- >12" off ground



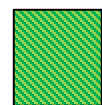
Applied:

- Aerially
- Air blast
- Fine or smaller droplet size

Applied as a:

- Fumigant
- Smoke
- Mist
- Fog

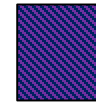
Application Exclusion Zone in Outdoor Production



Field

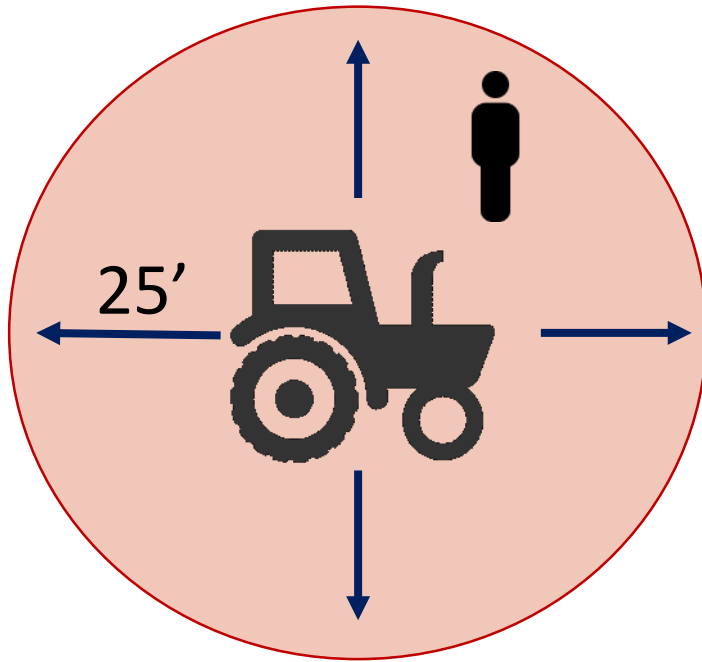


AEZ



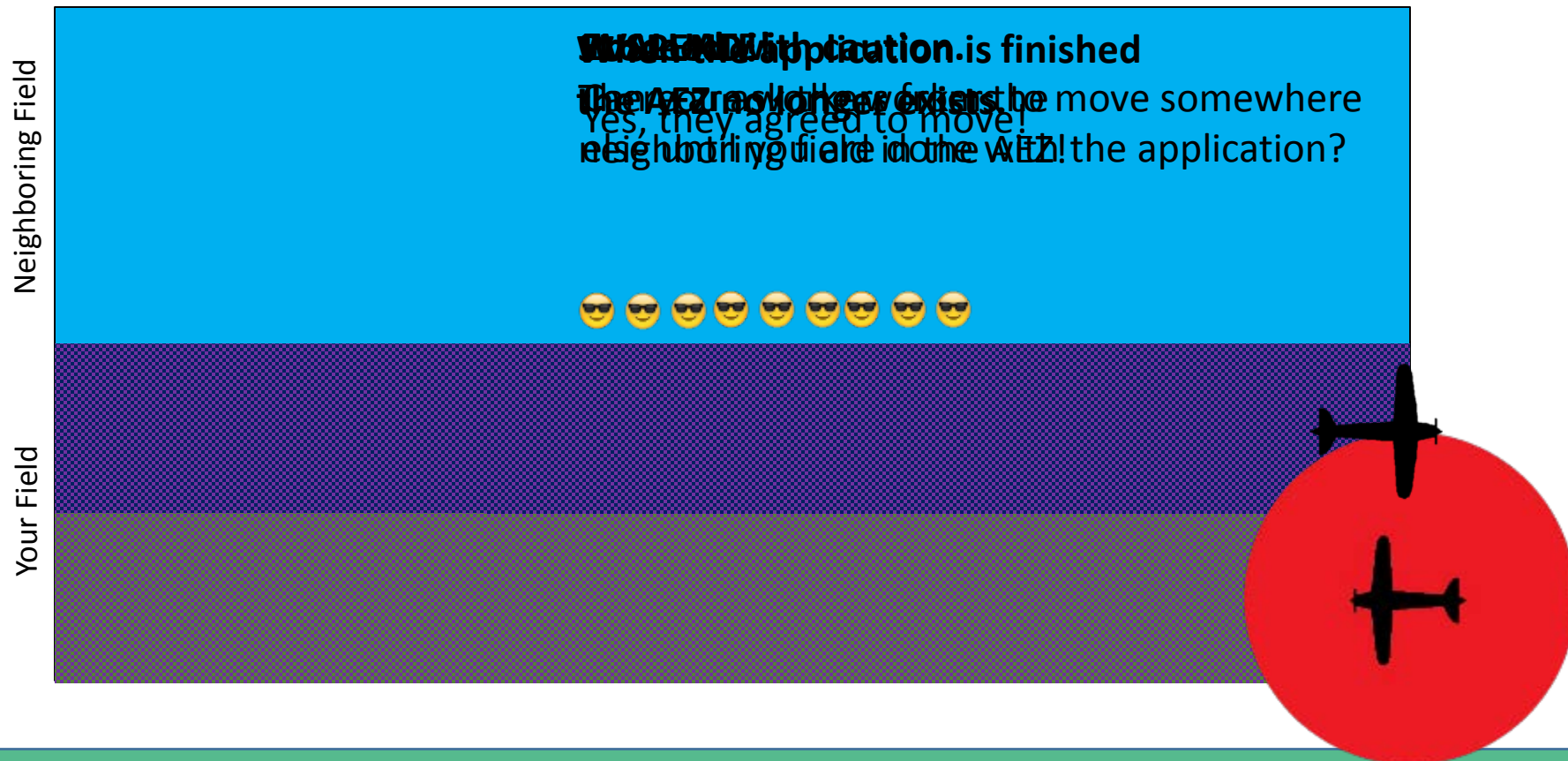
Treated Area

Suspend Applications if People are in the AEZ



- Handlers must suspend pesticide application if worker or other person is in AEZ

AEZs on Field Borders



Other WPS Topics

- Employer responsibilities:
 - Provide records or other information required by the WPS for inspection to an employee of EPA or any duly authorized representative of a federal, state or tribal agency responsible for pesticide enforcement
 - Employers cannot punish you for attempting to comply with WPS
- Workers and handlers:
 - Report suspected use violations

Pesticide Labels

Pesticide Labels

- Safety information
- Legal use information

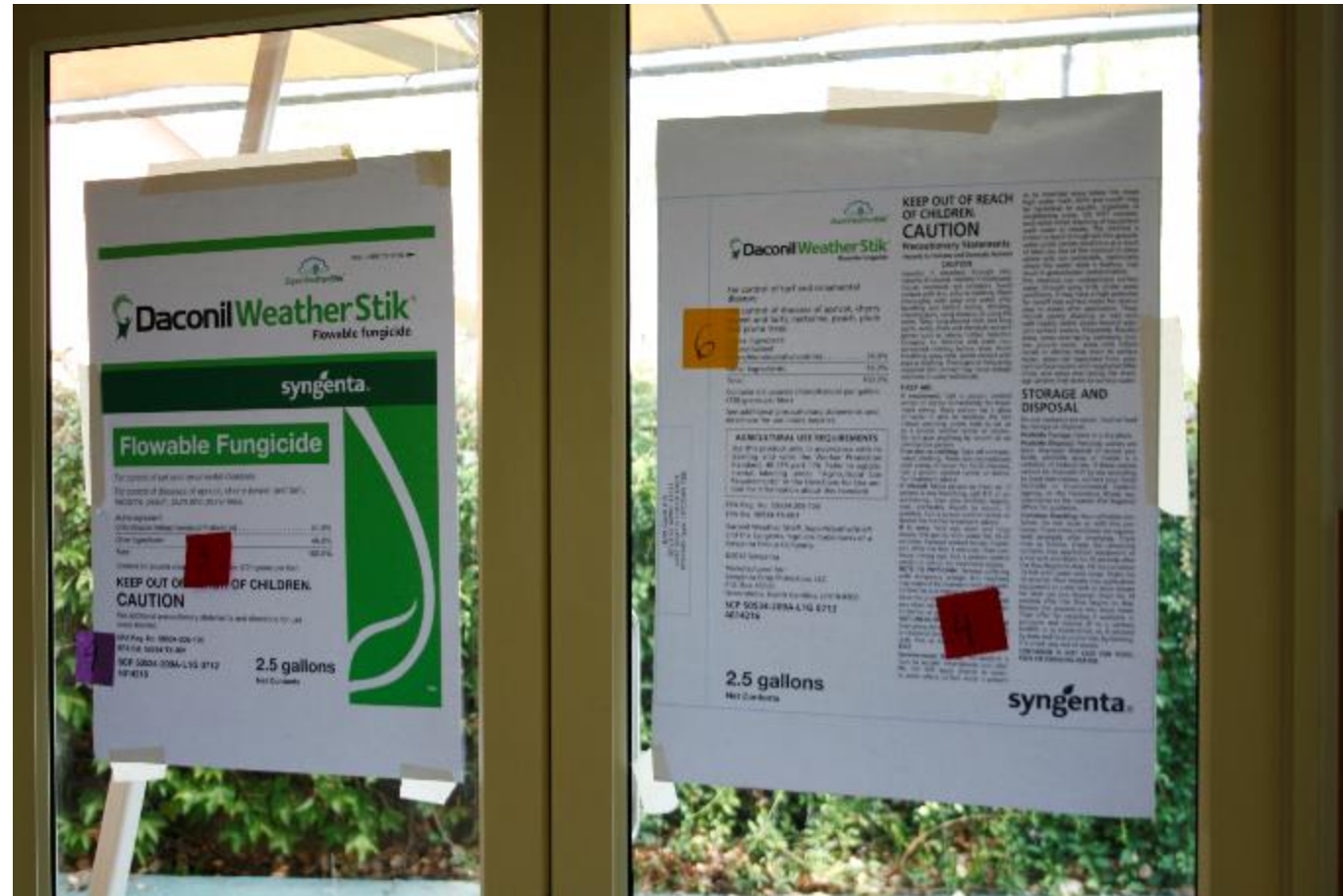


Read the Label BEFORE:

- Buying the pesticide
- Mixing the pesticide
- Applying the pesticide
- Storing the pesticide
- Disposing of the pesticide container



Parts of the Pesticide Label



Brand Name

- Commercial name



Knock 'em down 3SL Herbicide By ToxiK™

A weed, grass, and harvest aid desiccant/
defoliant herbicide.

Active Ingredients:

Paraquat dichloride

(tetrachloroisophthalonitrile)43.2%

Other Ingredients:..... 56.8%

Total: 100.00%

Pesticide Manufacturer

- Company that makes or distributes the pesticide

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Pesticide Type

HERBICIDES



WEEDS/PLANTS

INSECTICIDES



INSECTS

RODENTICIDES



RODENTS

FUNGICIDES



FUNGI/PLANT PATHOGENS

ACARICIDES or MITICIDES



MITES

MOLLUSCICIDES



SLUGS and SNAILS

Ingredients

- Active ingredient(s)
- Other ingredients

Sulfur DF

Fungicide / Acaracide

Active Ingredient: Sulfur80%
Other Ingredients:20%
Total 100%

Active Ingredient:
Chlorothalonil
(tetrachloroisophthalonitrile) 82.5%

Other Ingredients: 17.5%

Total: 100.0%

Pesticide Formulations

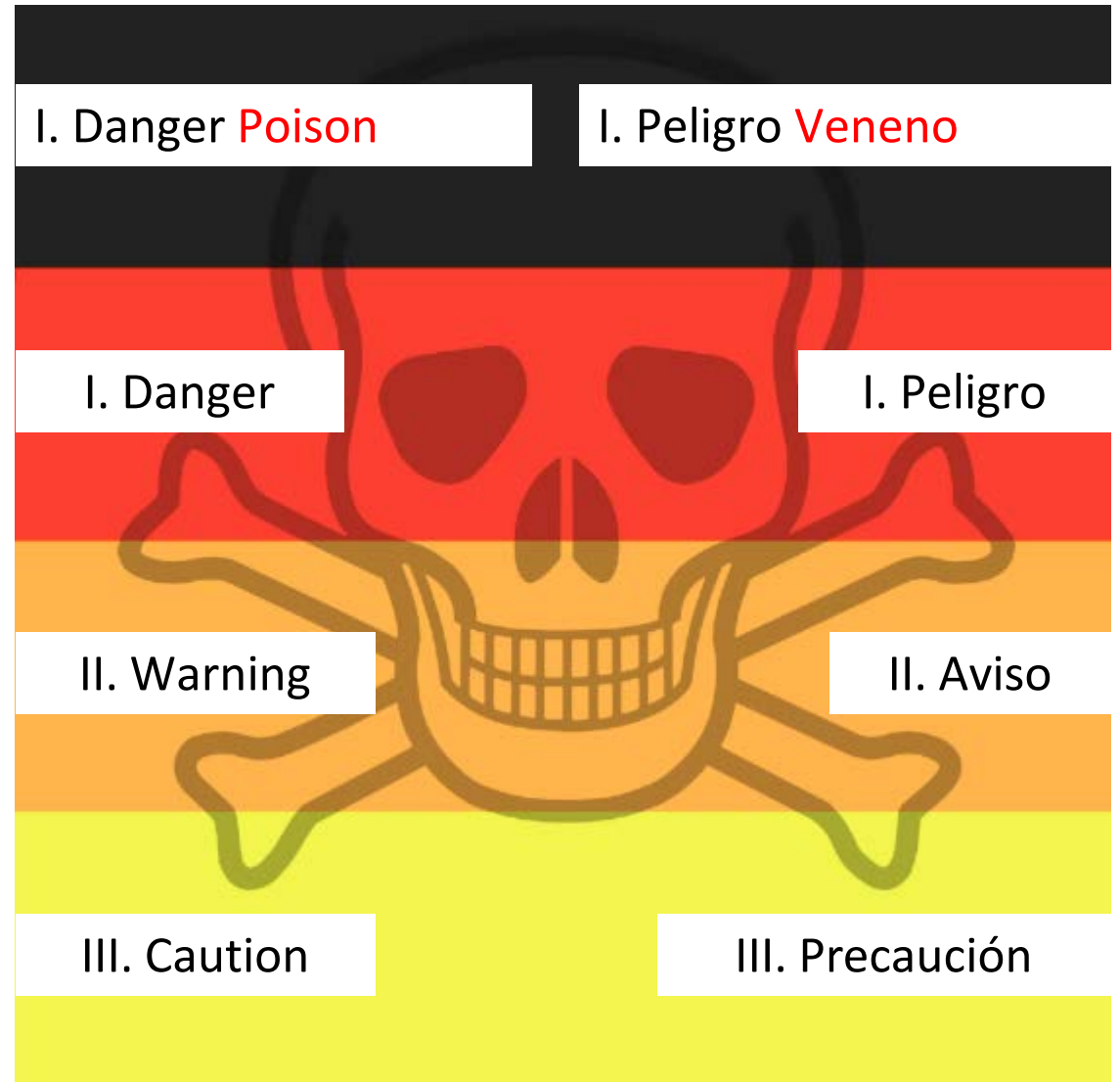
Liquid Formulations	Dry or Solid Formulations	Other Formulations
Emulsifiable concentrate (EC)	Dust (D)	Aerosol
Flowable (F)	Dry Flowable (DF)	Fogger
Liquid baits and gels	Wettable powder (WP)	Soil fumigant
Soluble liquids (SL)	Pellets (P)	Structural fumigant

EPA Registration Number

- Unique number
- Important for pesticide emergencies

Signal Words

- Danger Poison
- Danger
- Warning
- Caution



First Aid

- First aid for each route of exposure:
 - Eyes
 - Nose
 - Mouth
 - Skin

FIRST AID	
If in eyes	<ul style="list-style-type: none">• 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.• Rinse eye only with water. Do not put eye drops, drugs, or ointments in eyes unless specifically recommended by a medical doctor or a poison control center.• Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.• Call a poison control center or doctor for further treatment advice.
If on skin or clothing	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15-20 minutes.• Call a poison control center or doctor for treatment advice.

Personal Protective Equipment (PPE)

- PPE could be different for each of these different tasks:
 - Mixing and loading
 - Applying
 - Early entry

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. Wear long-sleeved shirt and long pants, socks and shoes and chemical-resistant gloves made of any waterproof material such as polyvinyl chloride, nitrile rubber or butyl rubber.

Personal Protective Equipment (PPE)

Some materials that are chemically 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 polyvinyl chloride, nitrile rubber or butyl rubber
- Shoes plus socks

User Safety Requirements

Follow the 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.

Precautionary Statements

- How to protect people and the environment

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

DANGER/PELIGRO POISON/VENENO

May be fatal if swallowed. Fatal if inhaled. Corrosive. Causes irreversible eye damage. Wear protective eyewear. Do not breathe spray mist. Wear a dust/mist respirator. Do not get in eyes or on clothing. Harmful if absorbed through skin. Avoid contact with skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

IMPORTANT: Inhalation is an unlikely route of exposure due to low vapor pressure and large spray droplet size, but mucosal irritation or nose bleeds may occur. Prolonged contact with this concentrated product can irritate your skin.

Environmental Hazard Statements

- Some pesticides are harmful to:
 - Birds
 - Fish
 - Beneficial insects
 - Water resources
 - Nontarget plants

ENVIRONMENTAL HAZARDS:

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply where runoff is likely to occur. Do not apply where weather conditions favor drift from areas treated. Do not contaminate water when disposing of equipment washwater or rinsate.

Restricted-Entry Interval (REI)

- Period of time between the end of the application and when re-entry into the field is permitted
- To enter during the REI to perform worker tasks, you must:
 - Wear label-required PPE
 - Receive training and information specific to the early entry from your employer

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), notification to workers, and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water is:

- Coveralls
- Chemical-resistant gloves made of any waterproof material such as polyvinyl chloride, nitrile rubber or butyl rubber
- Shoes plus socks

Directions for Use

- Sites allowed
- Pests controlled
- Application rates
- Mixing instructions
- Application restrictions

BRASSICA LEAFY VEGETABLES CROPS AND TURNIP GREENS

All members of the Brassica Leafy Vegetable Group 5, plus Turnip greens, including: Broccoli, Broccoli raab (rapini), Brussels sprouts, Cabbage, Cauliflower, Cavalo broccolo, Chinese broccoli (gai lan), Chinese cabbage (bok choy), Chinese cabbage (napa), Chinese mustard cabbage (gai choy), Collards, Kale, Kohlrabi, Mizuna, Mustard greens, Mustard spinach, Rape greens, Turnip greens

PEST	QUARTS OF THIS PRODUCT PER ACRE	SPECIFIC DIRECTIONS
Flea beetles Harlequin bug Leafhoppers	1/2 to 1	Repeat applications as needed up to a total of 4 times per year but not more often than once every 7 days.
Armyworm Aster leafhopper Corn earworm Diamondback moth Fall armyworm Imported cabbageworm	1 to 2	

DIRECTIONS FOR APPLICATION

CROP	DISEASES (Pathogen)	Lbs. Product/A (lbs. a.i./A)	APPLICATION DIRECTIONS
Asparagus	Rust (<i>Puccinia asparagi</i>) Purple spot (<i>Pleospora herbarum</i>) Cercospora blight (<i>C. asparagi</i>)	1.8 to 3.6 (1.5 to 3.0)	Use water volumes of 25 to 50 gallons per acre. Begin applications following final harvest of spears. Repeat applications at 14 to 28 day intervals (the minimum retreatment interval is 14 days), depending on disease pressure. Use the higher rate and shorter interval if disease severity begins to increase during the season or weather conditions are conducive for severe epidemics. Apply by ground.

Specific Use Restrictions:

- Do not apply more than 11 pounds of Bravo Ultrex (9.0 lbs. a.i.) per acre during each growing season.
- Do not apply within 190 days of the harvest of spears in the following season.

Storage and Disposal Instructions

- Storage temperature range
- Specific storage or disposal instructions

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

Pesticide Storage

Store in original containers only. Keep container closed when not in use. Do not store near food or feed. In case of spill on floor or paved surfaces, mop and remove to chemical waste storage area until proper disposal can be made if product cannot be used according to the label.

Pesticide Disposal

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative of the nearest EPA Regional Office for guidance.

Container Handling [less than or equal to 5 gallons]

Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use and disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration.

Using Pesticides Safely

Proper Application and Use of Pesticides

- You must stay alert during the entire application task and frequently check the area and application equipment to ensure that:
 - The pesticide is reaching the target site
 - The equipment is providing good coverage and even distribution
 - Tank mixes are properly agitated and appear uniform and are not separating or clumping
 - Hoses, valves, nozzles, hoppers, and other equipment parts are functioning properly

Safety Requirements for Handling Pesticides

- Choose a safe site
- Check for people and animals
- Read the pesticide label
- Check the SDS for additional safety precautions

Safety Requirements for Transporting Pesticides

- Transport pesticides in the truck bed, cargo area, or on the back of the spray rig
- Check containers for leaks before loading and unloading
- Protect containers from rain and other potential weather damage
- Secure or tie down all pesticide containers in the cargo area
- Monitor containers at all times during transportation
- Keep containers in a locked area

Storage and Disposal of Pesticides

- Storage and disposal instructions are usually found at the end of the label
- Storage and disposal regulations may vary between states or counties
- Employers should check with their local pesticide regulatory agency for additional storage and disposal regulations, container recycling services, and unused pesticide collection programs

General Procedures for Spill Cleanup

- Protect yourself by putting on the PPE listed on the label
- Control the spill by placing the container upright to stop more from spilling or by putting a broken or leaking container into a plastic bag or other secondary container
- Contain the spill and the area by using an absorbent material to keep the product from spreading
- Clean up the spill according to label directions



Protecting Sensitive Areas



- Be exceptionally careful when applying pesticides near or adjacent to:
 - Places where people and pets live, work, play, or travel
 - Water sources
 - Wildlife and beneficial insect habitats
 - Livestock areas
- The label will provide details about sensitive environmental areas, where you should remain careful of (under “Environmental Hazards”)

Other Impacts of Pesticides on the Environment

- Pesticides that are not absorbed by plants or soil can move from the site and contaminate other areas
- Applying pesticides when it is raining or shortly before it rains can result in runoff or pesticide movement off the application site
- Application during precipitation events may reduce the efficacy of the application, as well as lead to off-site movement of the pesticide

Personal Protective Equipment

Importance of PPE



PPE on the Pesticide Label

- Select PPE based on label instructions
- Some labels ask handlers to wear specific work clothing, such as
 - Long-sleeved shirt
 - Long pants
 - Shoes and socks
 - Short-sleeved shirts or shorts



PPE on the Pesticide Label

- Pesticide labels list the PPE handlers must wear, which may include:
 - Gloves
 - Aprons
 - Chemical-resistant footwear
 - Coveralls (cloth)
 - Chemical-resistant suit
 - Chemical-resistant headgear
 - Protective eyewear
 - Respirator
- If handling more than one pesticide, use the most protective PPE for that task

Read the Label CAREFULLY:

- Read the label thoroughly to make sure you understand ALL of the PPE requirements.
- Don't skim- it's easy to miss important details

Personal Protective Equipment:

Some materials that are chemical-resistant to this product are listed below.

Handlers who may be exposed to the dilute through application or other tasks must wear: Long-sleeved shirt and long pants, Chemical-resistant gloves, such as Nitrile, Butyl, Neoprene, and/or Barrier Laminate, and Shoes plus socks.

Handlers who may be exposed to the concentrate through mixing, loading, application, other tasks must wear: Long-sleeved shirt and long pants, Chemical-resistant gloves, such as Nitrile, Butyl, Neoprene, and/or Barrier Laminate, Shoes plus socks, and Protective eyewear.

Chemical-resistant PPE

- Chemical-resistant PPE doesn't allow a measurable amount of chemical to pass through
- Chemical-resistant can refer to different types of PPE including:
 - Gloves
 - Footwear
 - Suit
 - Aprons

Waterproof PPE

- Waterproof PPE refers to PPE that is made of a material that doesn't allow a measurable amount of water or pesticides mixed with water to pass through

Reusable vs Disposable PPE

- Reusable PPE must be cleaned after use
- Disposable PPE must be thrown out after the work day or if soiled by pesticides

Coveralls or Chemical-resistant Suits

- Must be loose fitting
- 1 or 2 piece garments
- Must cover entire body except the head, hands, and feet
- Coveralls = cloth/fabric
- Chemical-resistant suit = chemical-resistant material



Apron

- Aprons must be long enough to cover the front of the body from mid-chest to knee



Chemical-resistant Headgear

- A chemical-resistant hood or hat, with a wide brim

Hat or Overhead Protection

- Non-absorbent material
- Wash with soap and water at the end of the handling task
- **DO NOT WEAR** absorbent hats, such as baseball caps



Protective Eyewear



- Provide front, brow, and temple protection
 - Safety glasses
 - Chemical splash goggles
 - Face shield
 - Full-face respirators

Chemical-resistant Footwear

- Chemical-resistant shoes, boots or shoe coverings
- Must be made of chemical-resistant material such as rubber or vinyl

Gloves



- Gloves must be worn during handling, including repairing equipment and adjusting nozzles
- If the label requires a certain material, such as nitrile, gloves must be made of specified material
- You **MUST NOT** wear cotton, suede or leather gloves

Glove Liners

- Glove liners can be worn underneath gloves
- They must not extend outside of chemical-resistant glove
- Glove liners must be discarded either after 10 hours of use or within 24 hours after they are first put on, whichever comes first
- They must be removed if they contact pesticide directly, and they cannot be reused
- Glove liners should be separate from the glove itself
- Cotton-lined and fleece-lined gloves are not permissible

Respirators

- Respirators are important if there is the likelihood of exposure to droplets or vapors that are toxic by inhalation
- Respiratory equipment tested and certified by the National Institute of Occupational Safety and Health (NIOSH)
- Identified by a “TC” code



Respirators

- Make sure to use the respirator, cartridges and filters as listed on the label
- Respirators, cartridges and filters are product- and task specific

Respirator-Use Requirements

- When you use a pesticide that requires respiratory protection THE EMPLOYER is responsible for providing the following to you (at no cost) before you use a respirator required by the label:
 - Medical evaluation
 - Respirator fit test
 - Respirator use and maintenance training

Medical Evaluation

- Medical evaluation required before you use respirator and before conducting the fit test
- Medical history questionnaire
- Possible follow-up visit
- Repeat evaluation if there is a change in the conditions of use or your health status

Respirator Fit Test

- Fit tests must be performed before you use the respirator and at least annually after that
- Fit tests must be repeated if:
 - The respirator changes
 - There are changes to the size and/or shape to your face

Respirator Use and Maintenance Training

- If you use respirators you must be trained
 - Before you begin using respirator and
 - At least annually
- Training must be repeated if you demonstrate a lack of knowledge



Wearing PPE



- Wear PPE in a way that prevents pesticide spray from entering boots or sleeves

Removing PPE

- Wash the outside of gloves and other chemical-resistant items
- Then remove gloves, keeping the inside surface from becoming contaminated
- Determine whether contaminated items should be disposed of or cleaned for reuse

PPE Inspection

- Inspect PPE to make sure it is in good condition before wearing
- Inspect PPE when cleaning at the end of the work day
- If PPE is damaged or needs repair, you should report to employer who must fix or replace

PPE Inspection Checklist

- Inspect boots or chemical-resistant shoe coverings for holes, tears, or weak spots.
- Inspect re-usable gloves for damage, such as holes, cracks, tears, areas that have become bubbled or spongy, and any discoloration.
- Check coveralls and chemical-resistant suits for rips, tears, holes or separation along seams and zippers.
- Make sure that the coveralls or chemical-resistant suit that you will use is the correct size so that it will offer you optimal protection and doesn't interfere with movement.
- Check apron material for holes or damage. Make sure that apron strings are in good condition and enable you to wear the apron securely.

PPE Inspection Checklist cont.

- Inspect protective eyewear for scratched or cracked lenses and replace if needed.
- If you will use goggles, check the elastic parts for fraying, tears, wear, or loss of elasticity and replace if it is worn.
- If you will use overhead protection, check the protective headwear for cracks, holes, and worn adjustable fittings.
- Faceshields and protective headgear often have adjustable fittings for a secure fit and to prevent them from slipping or falling off. Inspect these fittings to make sure that they are working properly.

Replacing Respirator Filters and Cartridges

- Filtering facepiece respirators and respirator components such as filters and gas- or vapor-removing cartridges and canisters must be replaced periodically. Some of the WPS criteria for replacement are the same:
 - Breathing becomes difficult
 - When recommended by the respirator manufacturer
 - When instructed by the pesticide label
 - At the end of 8 hours of total use
- Also replace filtering facepiece respirators and filters when they are damaged or torn
- Also replace gas- or vapor-removing cartridges and canisters if:
 - The handler detects a pesticide taste, smell or any type of irritation
 - A different maximum use time determined under a OSHA-compliant respiratory program is reached

Employer's Responsibility

- Provide and pay for all PPE on label
- Ensure proper PPE use and care training for handlers
- Maintain all PPE
- Properly dispose of any damaged or disposable PPE
- Train handlers on cleaning, drying and storing re-usable PPE
- Provide a place away from pesticide storage for handlers to put on, remove and store PPE

PPE and Heat Stress

Early Stages of Heat Illness

- Fatigue
- Muscle weakness
- Dizziness
- Headache
- Nausea
- Heavy sweating

Severe Stages of Heat Illness

- Chills
- Severe thirst and dry mouth
- Fainting
- Lack of sweat as heat stress progresses
- Hot, dry, clammy skin
- Slurred speech
- Irrational behavior and confusion

Seek medical assistance if symptoms persist

Employers Should Reduce the Risk of Heat Stress



- Provide plenty of cool drinking water and shade
- Alter work hours to cooler times

Acknowledgments

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