



## Lesson 5: Personal Protective Equipment

In Lesson 3, you learned about the routes of entry into your body, and were introduced to ways you can protect vulnerable areas of your body from pesticides. In this lesson, you'll learn about your responsibility to equip yourself properly for the job—by reading and correctly interpreting the directions on pesticide labels.

### Key Learning Points

- Understand that different types of PPE are required for different application activities.
- Identify the location of PPE information in the Precautions section of a pesticide label.
- Describe how to clean and maintain protective clothing and equipment.

### Protect Against Prolonged Exposure

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#### "News flash: pesticides can be harmful to your health."

Scientific research has linked prolonged pesticide exposure with certain diseases.

The link is especially evident in people over the age of 50 who were in contact with pesticides for more than ten years<sup>1</sup>.

We know that pesticide exposure can be minimized with knowledge of routes of entries, and consistent wearing of the personal protective equipment indicated on the pesticide label.

### Wear and Care

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Personal Protective Equipment (PPE) refers to proper clothing, coveralls, footwear, gloves, aprons, respirators, eyewear and head coverings to protect the applicator from exposure to pesticides.

Pesticides can pose a serious health hazard to applicators. Personal protective equipment provides an applicator with a first line of defence against poisoning. PPE cannot eliminate exposure, but it can reduce the risk of exposure significantly when coupled with safe procedures.

Your supervisor is responsible for your health and safety—but as an assistant applicator, you also need to make sure you use the proper protective gear listed on the label for whatever pesticide you're working with. It's your responsibility to wear the protective clothing provided by the employer. If the right equipment is not provided, you have a right to ask for it.

<sup>1</sup>Brown TP, Rumsby PC, Capleton AC, Rushton L, Levy LS, 2006 Pesticides and Parkinson's Disease—Is There a Link?. Environ Health Perspect 114(2): doi:10.1289/ehp.8095



### Workers' Compensation Act and Worker Safety

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The Industrial Health and Safety Regulations of the *Workers' Compensation Act* include these regulations for Personal Protective Equipment use for applying pesticides.

- Workers must be equipped with, and wear, appropriate protective clothing.
- At least one change of outer clothing must be available for each worker at the mixing and loading site.
- Shower facilities must be available for anyone applying pesticides.

These regulations also help protect human safety with the following requirements:

- Workers who apply moderately toxic or very toxic pesticides must hold a valid pesticide applicator certificate or be in training to become certified.
- Pesticide MSDSs must be readily available to all workers.
- Written procedures for the handling and cleaning up after pesticides must be made available to workers.



If you have access to the Internet, download, or watch online, this video about wear and care for your PPE:

[Protective Clothing and Equipment for Pesticide Use](#)

The video asks you to write down, point by point, the things that you think the applicator in the video is doing properly while washing up after spraying. Did you note the following?

- Washes gloves first.
- Uses bins that are labelled for washing up, rinsing, and storing.
- Washes PPE with soap and water. Some pesticides will not require soap. Check the label for details about what is required for cleaning up after the pesticide's use.
- Rinses the equipment thoroughly with a hose.
- Leaves his gloves on to remove other equipment such as apron and coveralls.
- Remembers to clean the hose and detergent after the PPE is washed.
- Rinses the residue off his boots to begin with, then washes them, then rinses again.
- Puts gloves on to remove clothing for the laundry.
- Takes a shower.



## Lesson 5: Personal Protective Equipment

Did you notice anything in the video that was not done properly? There were a few things that could be improved.

- Washing could have been more thorough to ensure that all residues were removed.
- It's important to use labelled bins for washing so they aren't accidentally used for other purposes. The bins are not clearly labelled at the start of the video.
- Make sure the PPE is thoroughly dried before storing.
- The equipment should be rinsed with the hose last. This applicator rinsed with the hose, then dunked the equipment into a rinse container that gets more and more contaminated.
- The applicator misses the tops of his boots when washing them.

### Your basic PPE

#### What to look for: Gloves

The pesticide label may specify what type is required. If it does not specify or just says “chemical resistant,” then use unlined gloves made of Neoprene, Nitrile, or PVC. For adequate coverage they need to be long enough to cover the wrist when folded and still be covered by the sleeve.



Don't use the kind of rubber gloves you'd use to do the dishes! These won't protect you.



Don't use leather gloves! They may be tough, but leather will absorb pesticides and cannot be properly cleaned.





## Lesson 5: Personal Protective Equipment

### Glove Maintenance

You watched a demonstration of glove testing in *Protective Clothing and Equipment for Pesticide Use*. If you would like to review this instruction on how to test gloves, watch the excerpt, [Gloves](#).

Remember to check gloves for leaks, and replace your gloves regularly.

### CAUTION:

Chemical resistant gloves are almost always important. For a very small number of pesticides, however, they must not be worn; chemical resistant gloves can trap those pesticides next the skin where they can cause harm. Always read the label to find out what kind of glove, if any, you should be wearing.

### What to look for: Boots

Unlined rubber boots provide the best protection.

Be careful what kind of rubber boots you choose. Common rubber boots have a lining.

Don't wear work boots. Leather and canvas absorb pesticides and cannot be properly cleaned.



### What to look for: Hats

Wear a wide-brimmed, unlined hat to protect your head and neck. If wearing a rubber rain hat, make sure it does not have a cloth lining.





# Lesson 5: Personal Protective Equipment

Some waterproof coveralls have hoods. A waterproof hood will protect your head and neck.



The brim is wide, but cloth will absorb pesticides.



The cloth on this ball cap will absorb pesticides, and the neck will be unprotected.



Make sure there is no cloth or leather band inside your hat. The band will absorb pesticide and hold it against your skin.

## What to look for: Coveralls

Check the label to see what is required for coveralls. Some will ask for “chemical resistant,” some “waterproof” and some “water resistant.”

If the label says you “must wear coveralls over a long-sleeved shirt and long pants,” and does not specify which kind to wear, you may choose to wear regular cotton or polyester coveralls if they are not likely to become wet through from spray drift or spillage.

If in doubt about the type of coverall to use, you should select chemical resistant coveralls, to be safe.

A spray suit will cover your work clothes and keep you protected from exposure.



Disposable coveralls for pesticide use are designed not to absorb pesticides. They should not be washed and should be thrown out when contaminated, damaged or show signs of wear.

Don't use regular work clothes if there is a chance your clothes will become wet with pesticide spray.





## Lesson 5: Personal Protective Equipment

The kind of coveralls designed for dust and dirt can absorb pesticides. They may only be used when the label does not specify using chemical resistant coveralls, and when a 2nd layer of clothing will provide adequate protection.



### How to Wear Your PPE

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**Cuff your gloves.** This will help prevent a spill from running down the gloves and onto your arms.



**Wear your sleeves overtop of the gloves.**



**And keep your sleeves done up over your gloves.**



**Wear your pant legs outside of your boots.**



## Additional clothing

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Now you know what to look for when choosing PPE. Remember to check the pesticide label for any additional protective equipment you might need beyond your basic outfit.

### What to look for: eye protection

Glasses won't protect your eyes.  
Wear goggles.



Contact lenses do not provide eye protection.



Goggles will seal the area around your eyes to protect them. Unvented goggles can protect from pesticide vapours as well as splashes. If you wear glasses, be sure the goggles fit over the arms without leaving any gaps.



A face mask provides good splash protection for the eyes and face.





## Lesson 5: Personal Protective Equipment

### What to look for: Lung protection

Dust masks will not protect your lungs from pesticides. Many pesticides and vapours can pass through a dust mask.

Wear a respirator with cartridges and filters that protect against the type of pesticide you will be using. Often this will mean using organic vapour cartridges.

Below is a half-face respirator with cartridges.



This is a full face respirator with cartridges.



**Note:** If you ever need to use a respirator, you must check with your supervisor that the cartridges are not expired, and that you are fitting it correctly.

### Making Choices

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The type of equipment you use will depend on:

- The type of pesticide you are using.
- The formulation of the pesticide you are using.
- The conditions in which you are working.
- The recommendations on the label.



## Lesson 5: Personal Protective Equipment

For example, Ana will be using a fungicide in her client's gardens.

Dusts and wettable powders *can easily become airborne and then inhaled*. This fungicide is a powder, so Ana will use a respirator. She checks the label first, and finds the label says she will need a respirator. It also tells her to wear chemical resistant gloves, coveralls and goggles.

It's a warm day and Ana doesn't feel like putting on all that equipment—but she must! She doesn't want to get ill or risk transferring pesticides to her family when she gets home.

The degree of toxicity also affects your choice of PPE. Pesticides with greater toxicity usually require more PPE than less toxic pesticides. The warning symbols and words on the pesticide label are an indication of the degree of toxicity of the product. When the pesticide has been diluted, it will be much less toxic and may require less PPE. However, you must always keep the risk of chronic toxicity from long-term exposure in mind when you're working with pesticides.

### Interpreting label directions

You will have to interpret label directions in order to choose the right PPE. Look at the **secondary label information** – usually found on the back of the product or on an attachment to the label.

Sometimes, the label won't tell you what to wear. Sometimes, you have to interpret the cautions on the label, as some labels do not give explicit guidelines. You can also find information on the MSDS, and you can contact the manufacturer of the pesticide for more information.

The following table provides a good guideline for interpreting common directions given on pesticide labels:

When the label says this:	Wear this protection:
Avoid contact with eyes, skin and clothing.	Coveralls, gloves, boots and either goggles or a face shield.
Avoid breathing vapours or spray mist.	A respirator.
May be harmful or fatal if swallowed or absorbed through the skin.	Chemical resistant gloves, boots, hat, coveralls and a face shield.
Caution: Corrosive.	Chemical resistant gloves, boots, hat, coveralls and face shield.

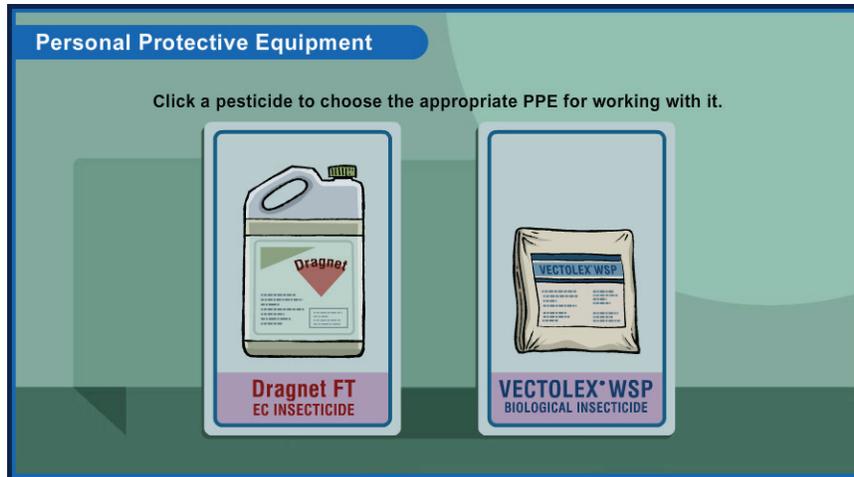
### PROTECT YOURSELF!

A Danish study looked at a group of 89 vegetable farmers in Cambodia. Because the farmers lacked adequate personal protection, nearly 90 per cent had experienced symptoms of acute pesticide poisoning.



## Lesson 5: Personal Protective Equipment

Now, if you have access to the Internet, get some practice suiting up for working with pesticides. Click on the image below.



### Care of personal protective equipment

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Reduce your risk of exposure by checking each part of your equipment.

#### Who is responsible for equipment?

Employers, employees and supervisors must cooperate to reduce exposure. As an assistant applicator, you may be responsible for the cleanup of your equipment. Check with your supervisor to make sure the responsibilities are clear.

#### What is secondary contamination?

You may not have pesticide spray contact you directly, but you can still be exposed to pesticides when removing your protective clothing, touching contaminated surfaces or contacting a target (such as brush) that was recently sprayed.

The hazard isn't just to yourself: you can contaminate your home if you do not clean yourself and your equipment thoroughly.

#### Post-application cleanup

If you use your coveralls for other work, you will continue to be exposed to any pesticide on them. Use coveralls designed for pesticide application and put them in a plastic bag immediately after use until you can wash them.



If you have not done so, be sure to watch the video showing the proper way to clean your PPE after an application, [Protective Clothing and Equipment for Pesticide Use](#).



## Summary

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In this lesson, you were provided with information and guidelines for using protective equipment to protect your health while working with pesticides.

## Lesson 5 Practice Activity

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1. What does your choice of PPE depend on? Name four things:

- |          |          |
|----------|----------|
| 1. _____ | 3. _____ |
| 2. _____ | 4. _____ |

2. Whose responsibility is it to provide adequate personal protective equipment?

\_\_\_\_\_

3. Whose responsibility is it to wear adequate personal protective equipment?

\_\_\_\_\_

4. If you are uncertain what PPE to wear, where should you look for information?

\_\_\_\_\_

5. Does the application method impact what PPE you will choose to wear? Yes, or No, and why?

\_\_\_\_\_

6. Can you use the PPE you use for pesticide work for any other type of work? Why or why not?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. What should you wear to protect the most exposed part of your body while mixing pesticides?

\_\_\_\_\_

8. Can you wear a baseball cap as adequate head protection when the label indicates head protection is needed? Why or why not?

\_\_\_\_\_



## Lesson 5: Personal Protective Equipment

9. Which of the following statements about eye protection are TRUE?
- a. Safety glasses are not an appropriate form of eye protection against pesticides
  - b. Face shields and goggles both provide eye protection
  - c. Contact lenses do not protect against pesticides
  - d. Goggles should be compatible with the respirator being used
10. Which of the following statements about gloves is TRUE?
- a. Leather gloves are appropriate for most pesticide uses
  - b. To provide effective protection, gloves must extend to the elbow
  - c. Wear gloves outside your sleeves
  - d. Gloves should be unlined for the best protection
11. Which of the following statements about footwear are TRUE?
- a. Vinyl or rubber running shoes provide adequate protection
  - b. Footwear should extend above the ankle
  - c. Protective footwear should be unlined
  - d. Footwear should be pesticide resistant
12. Identify six pieces of personal protective equipment shown in the picture below.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_





## Practice Activity Answer Key

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1. Any four of the following:
  - The type of pesticide used
  - The formulation used
  - Your working conditions (weather, for example.)
  - The label recommendations
  - Degree of toxicity of the pesticide
2. The employer's
3. Your own! Whether you are an applicator or an assistant applicator.
4. The label directions (precautionary information in the secondary information); the MSDS
5. Yes – some methods will increase your risk of exposure.
6. It is recommended that you have specific PPE that is used only for pesticide work. This will limit your exposure to any residues, and help prevent cross-contamination of other equipment and areas when you do other types of work.
7. Gloves—hands are the most exposed part of your body while mixing.
8. No—the band is made of absorbent material and will not protect your skin.
9. a, b, c, and d
10. d
11. b, c, and d
12. Any six of the following:
  - Brimmed waterproof hat
  - Goggles
  - Shirt covering arms
  - Waterproof gloves
  - Pants covering legs
  - Waterproof boots
  - Half face cartridge respirator



### Glossary

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**Personal Protective Equipment (PPE):** Clothes, materials or devices that offer protection from pesticides; especially important when handling or applying toxic pesticides, e.g., gloves, apron, boots, coveralls, hat, respirator and goggles.

**secondary information:** Usually on the back or side of a pesticide label or container, the secondary information gives instructions on how to use the pesticide and what to do in order to protect the health and safety of both the applicator and public.