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Protect Yourself from Pesticides -

Guide for Pesticide Handlers

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Protect Yourself from Pesticides—Guide for Pesticide Handlers was developed jointly by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Agriculture (USDA) Extension Service. It presents all the information required for training pesticide handlers under the EPA Worker Protection Standard (WPS). The handbook is also available in Spanish, titled *Protéjase de los Pesticidas: Guía Para los que Manejan Pesticidas.*

This handbook contains a complete WPS pesticide safety training program for pesticide handlers. It also includes valuable information for both trainers and pesticide handlers.

- **Trainers:** Each training unit includes objectives, opening questions, and suggested discussion questions for review. The supplementary material at the end of this handbook provides an overview of pesticide regulation and WPS training requirements, training notes, a summary of the training verification program, and details about the protections that WPS requires for pesticide handlers.
- **Pesticide Handlers:** After you attend the safety training program, use this handbook to review the material. The suggested discussion questions at the end of each training unit will help you focus on important safety information. Refer to the supplementary material at the end of the handbook to learn more about the WPS and the protections required for pesticide handlers.

Additional State or Tribal Training Requirements: Some States and Tribes have additional requirements for pesticide safety training for pesticide handlers. Contact the State or Tribal agency responsible for pesticide enforcement in your area to obtain the information you need to comply with all State or Tribal training requirements.

Other Materials Available: Other materials about the Worker Protection Standard include a handbook on pesticide safety for agricultural workers, a safety poster, and a manual for agricultural employers.

For more information about these or other publications and about the WPS, contact the State or Tribal agency responsible for pesticide enforcement in your area, your EPA regional office listed on the inside back cover of this handbook, or the—

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Introduction

Pesticides are chemicals that control pests. They include—

- Insecticides for insects.
- Herbicides for weeds.
- Fungicides for plant diseases.
- Pesticides for other pests, such as rodents and birds.

Pesticides vary in the ways they control a pest. They can kill the pest, inhibit its growth, affect pest reproduction, or serve as a barrier to the pest.

Unfortunately, pesticides can also hurt people, pets, other animals, and the environment if they are not used carefully and according to label directions.

By law, your employer must provide you with the information and equipment necessary to protect you from pesticides when you work in agricultural establishments—farms, forests, nurseries, and greenhouses. This law is called the **Worker Protection Standard.** It was issued by the United States Environmental Protection Agency (EPA).

But your employer cannot do the whole job. You need to learn as much as you can about pesticides and how to protect yourself and others. The Worker Protection Standard requires that pesticide handlers receive training in the safe use of pesticides.

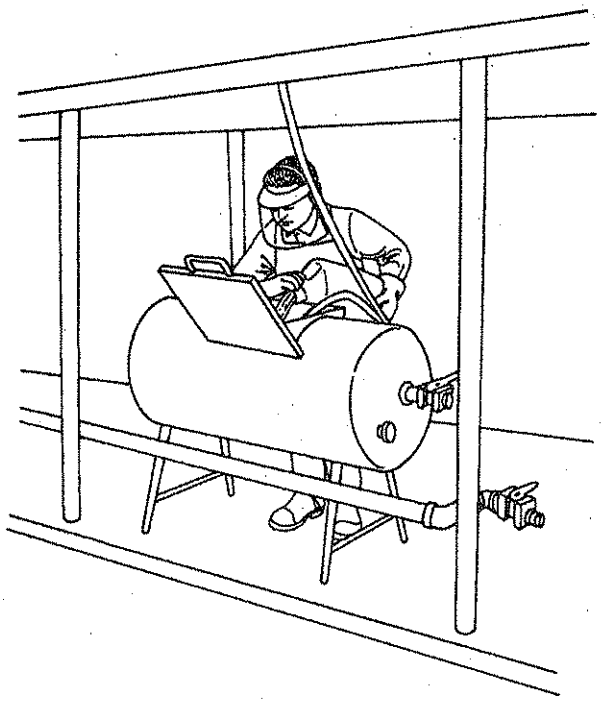
You are a pesticide handler if you—

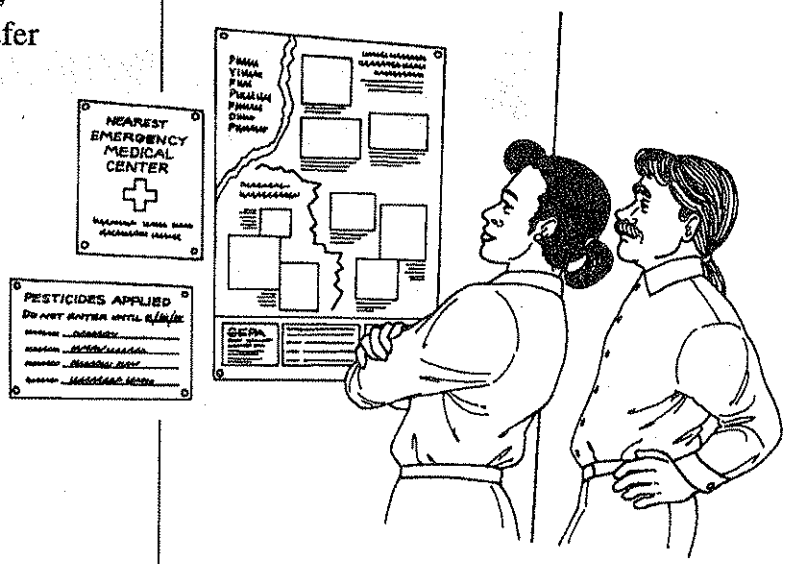
- Apply pesticides.
- Assist with pesticide applications.
- Clean, repair, or maintain pesticide application equipment—such as boom sprayers, backpack sprayers, or hoppers—that may contain pesticide residues.
- Mix, load, or transfer pesticides into application equipment.
- Dispose of pesticides or materials with pesticides on them, such as containers.
- Act as a flagger.
- Perform tasks as a crop advisor during a pesticide application or a restricted-entry interval (REI).

During any of these activities, you could come into contact with a pesticide and become sick or injured.

Therefore, it is important for you to receive training in how to—

- Deal with the health hazards associated with pesticide exposure.
- Recognize signs and symptoms of pesticide exposure and heat-related illness.
- Respond to emergencies involving pesticides (first aid, spill cleanup).
- Wear, use, and maintain personal protective equipment (for example, goggles, respirators, and gloves).
- Read and understand information on a pesticide label.
- Safely transport, mix, load, store, apply, and dispose of pesticides.
- Safely operate mixing, loading, application, and pesticide-transfer equipment.





UNIT 1

Objectives

After this section, you should be able to—

- Name three places where you are likely to find pesticide residues.
- Identify four ways that pesticides can enter the body.
- State how you are most likely to be injured by pesticides.
- Give five examples of when to wash so that you avoid getting pesticides in your mouth.

Opening Questions

Have you ever splashed pesticides on yourself? How did it happen?

Where do you take a break at work? Is it near an area where pesticides are mixed, loaded, used, or stored?

Pesticide Exposure

The best way to protect yourself is to keep pesticides from getting on or in your body. Watch out for—

- Splashes and spills.
- Sprays and dusts from pesticide applications.
- Residues, which are pesticides that remain on plants or soil or in the air after an application. Residues can sometimes be found in irrigation water, too.

A pesticide can poison or injure you—

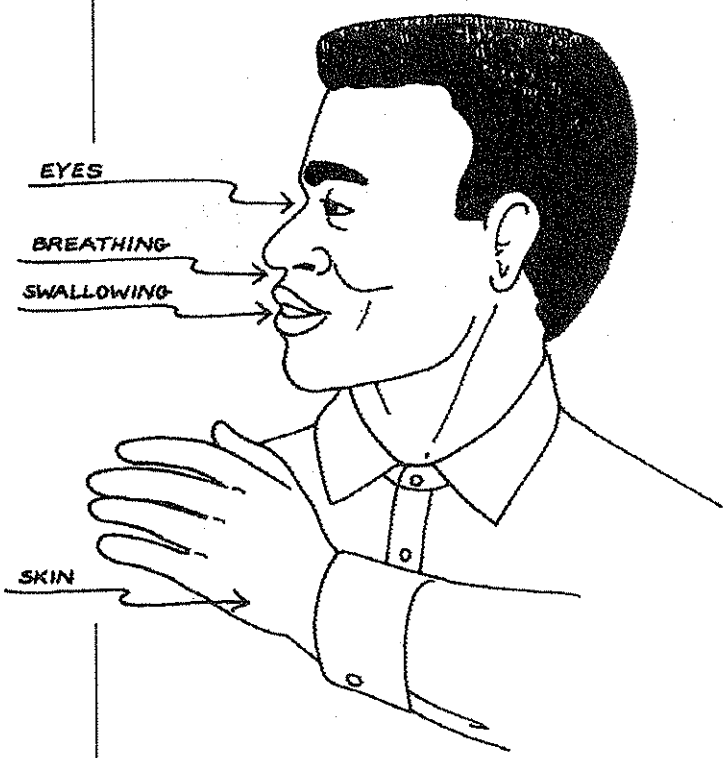
- If you swallow it.
- If it gets into your eyes.
- If you breathe it.
- If it gets on your skin.

If pesticides get on or in your body, they may make you sick. It is important for you to know that if handlers get sick from a pesticide, it is most often because the pesticide has spilled or splashed onto their skin. Pesticides can enter the body even more easily through cuts and wounds.

When you handle pesticides or work in areas where pesticides have been applied, wash your hands with soap and water every time you take a break. Leave the area where pesticides are located and wash your hands and face **before** you—

- Eat.
- Drink.
- Chew gum.
- Use tobacco.
- Put on makeup.

If you don't, you may wipe pesticides that are on your hands or face into your mouth and swallow them.

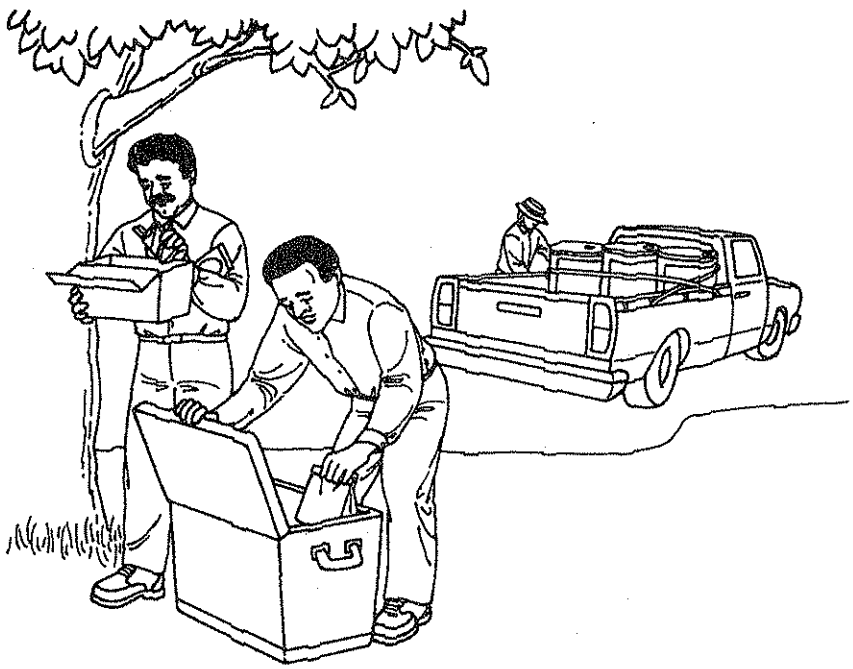


Because pesticides can enter your body through your eyes and skin, you should avoid wiping your eyes, face, and neck when you have been handling pesticides. It is also important to wash your hands **before** using the toilet.

Tobacco and food absorb pesticides, so don't carry them with you while you work. Leave them someplace where pesticides won't get on them.

Remember: Wash your hands and face **before** you—

- Eat.
- Drink.
- Chew gum.
- Use tobacco.
- Put on makeup.
- Use the toilet.



Suggested Review and Discussion

1. Where could pesticide residues be?

2. How can pesticides enter your body?

3. How are you as a handler most likely to be exposed to and harmed by pesticides?

4. How often should you wash your hands when working with pesticides?

5. Before what activities should you wash your hands after working with pesticides?

6. Name two items **not** to carry with you (in your pockets) when working with pesticides.

Responses to discussion questions appear on pages 70-83.

UNIT 2

Objectives

After this section, you should be able to—

- Name twelve different symptoms of pesticide poisoning.
- List four steps to follow in response to possible pesticide poisoning.

Opening Questions

Have you ever felt sick while working around pesticides? Which part of your body was affected? What did you do about it?

Signs and Symptoms of Poisoning

Some pesticides can make you sick very quickly if you are exposed to too much of them.

Too much exposure to some pesticides may make you feel tired and dizzy. Over-exposure to these pesticides can also cause stomach cramps, vomiting, diarrhea, headaches, or blurred vision. When you are sick from these pesticides, you may sweat too much, have pains in your chest, or have trouble breathing. You may even pass out.

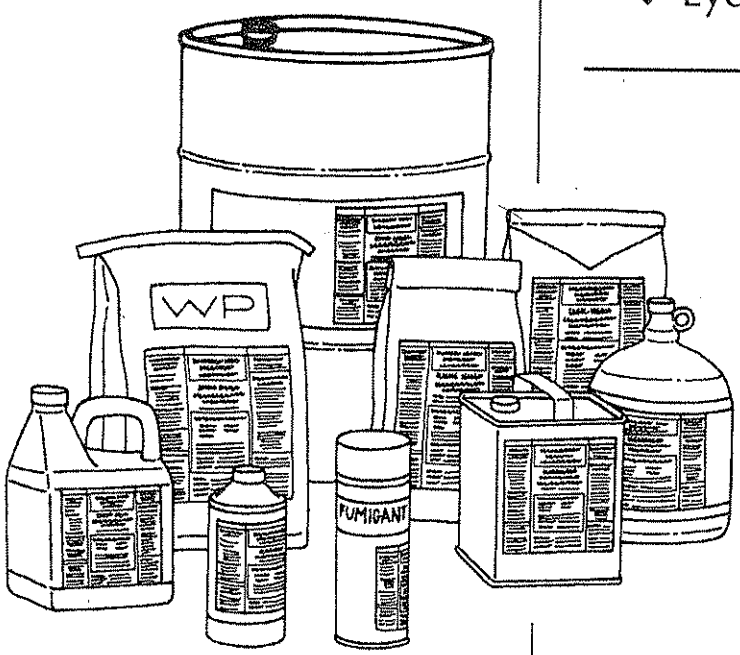
Some pesticides, especially some fungicides and herbicides, may give you skin rashes and burns and may irritate your eyes or make them burn. Some liquid pesticide formulations, such as ECs (emulsifiable concentrates), are especially likely to burn your eyes and skin.

Pesticides called fumigants are used as gases in soil and in greenhouses. These can be very dangerous if you breathe them or if they get into your body through your skin. They can damage your lungs and other body systems. People who have been poisoned by these pesticide gases may talk and act as if they are drunk.

When you are working with pesticides, if you feel dizzy or sick or have trouble breathing, stop what you are doing right away. Start following the emergency first aid procedures listed on the pesticide !abel to control the pesticide's harmful effects. Call your boss if possible or a co-worker for help. Have someone drive you to an emergency medical center if necessary.

Remember: These symptoms can be signs of pesticide poisoning—

- Tiredness or dizziness.
- Headaches or blurred vision.
- Sweating too much.
- Pains in your chest or trouble breathing.
- Throwing up.
- Stomach cramps or diarrhea.
- Skin rashes.
- Eye irritation.



Suggested Review and Discussion

1. Name the symptoms that may be signs of pesticide poisoning.

2. Name four things you should do if you have signs of pesticide poisoning.

3. What are emulsifiable concentrates (ECs) and how can they harm you?

4. Are pesticides in the form of gases harmful?

Responses to discussion questions appear on pages 70-83.

UNIT 3

Objectives

After this section, you should be able to—

- Tell where at work to find emergency information: (1) the name, address, and telephone number of the nearest emergency medical center and (2) first aid directions.
- Explain why it is important to read the pesticide label **before** working with pesticides.
- Identify four items that employers must supply for pesticide handlers.
- Explain what to do if you—
  - Get a pesticide on your clothes or skin.
  - Get a pesticide in your eyes.
  - Breathe a pesticide.
  - Swallow a pesticide.
- Tell how to help a co-worker who shows signs of poisoning from breathing a pesticide.
- Tell what information to give the doctor when calling about someone who may be poisoned by a pesticide.
- Tell what to take to the doctor.

Opening Questions

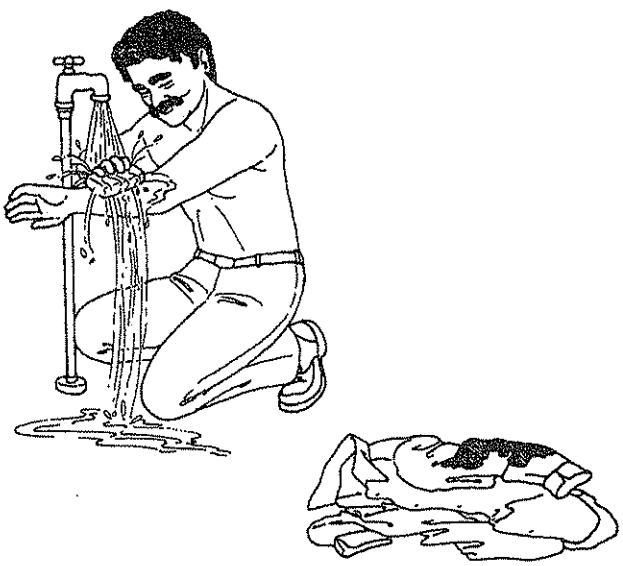
Have you ever known co-workers who got pesticides on their clothes or on their skin? What did they do? Did you help them? How?

Do you know where to find the name, address, and telephone number of the nearest emergency medical center?

Emergency First Aid

The name, address, and telephone number of the nearest place to get emergency medical help must be posted at the place where you work. Be sure you know ahead of time where this emergency information is located so that you can get help for yourself or others quickly in an emergency.

All pesticide labels have an emergency first aid section. Read it or have someone explain it to you before you handle the pesticide. You should know the emergency first aid procedures **before** you need to use them. If you do the wrong thing in an emergency, it could make you even sicker.



By law, your employer must provide you with soap, a clean change of clothing, towels, and enough water to wash pesticides off your body. These cleaning materials must be kept near the area where you are working. Do not use water from irrigation ditches and canals—it could have pesticides in it.

If pesticide gets on your clothes or skin, take your clothes off right away and wash your skin with **lots of soap and water**. The faster you act, the less likely you are to get sick or be harmed.

If pesticide gets in your eyes, rinse them right away with an eyeflush kit or allow a gentle stream of clean water to flow across them. Hold your eyelids open and keep rinsing your eyes for about **15 minutes**.

If you breathe in a pesticide, get to fresh air immediately. If you are having difficulty breathing, call for help, then sit down and try to breathe normally. It is not a good idea to walk around if you are having difficulty breathing.

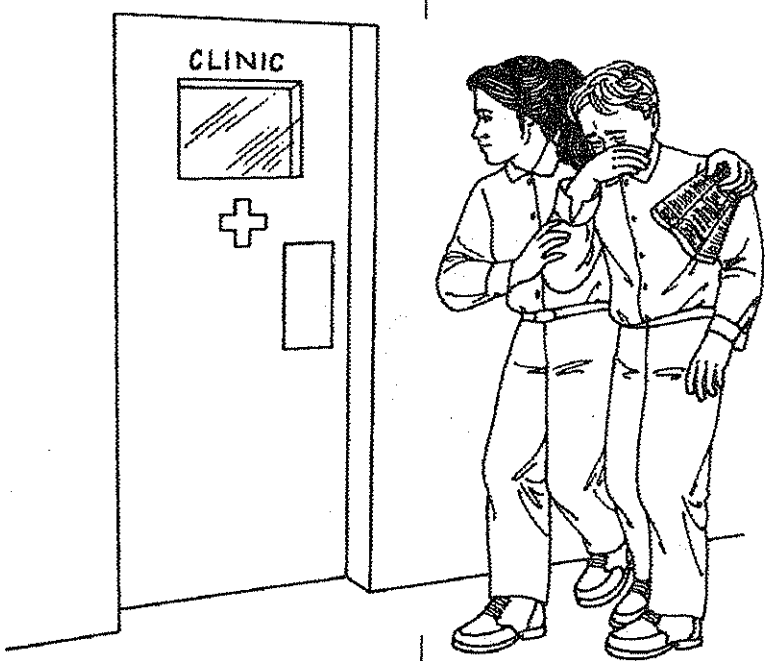
If you have to rescue someone who has breathed in pesticides and who may be unconscious, make sure that you do not expose yourself to the same danger. Wear the appropriate respiratory protection and move the victim to fresh air. Then remove the victim's respirator (if present), loosen the clothing, and give mouth-to-mouth resuscitation if the person is not breathing.

If you swallow some pesticide, it is essential to **follow the first aid directions** on the pesticide label. In particular, the label will tell you whether or not to make yourself throw up. The best way to induce vomiting is to put a finger to the back of your throat. Labels for some pesticides tell you **not** to induce vomiting. These pesticides are corrosive and will cause further damage if you try to vomit. If you are helping someone who has swallowed pesticides, never induce vomiting if the person is unconscious or having convulsions.

Get someone to take you to the doctor—

- If you swallow a pesticide or get it in your eyes.
- If you spill a concentrate or a lot of diluted pesticide on your skin.
- If you find it difficult to breathe.
- If your skin shows signs of burning.
- If you feel ill and think you may have pesticide poisoning.

Have someone call ahead to tell the doctor the brand name or common name and the EPA registration number of the pesticide and how you were exposed. The doctor needs these facts to decide how to help you. If possible, take a copy of the pesticide label with you.



Suggested Review and Discussion

1. Where can you find the name, address, and telephone number of the nearest emergency medical center?

2. Where can you find first aid information about a pesticide?

3. Why should you read the label before working with a pesticide?

4. Name four items that employers must supply for pesticide handlers to help them get pesticides off their skin.

5. What should you do if pesticide gets on your clothes or skin?

6. What should you do if pesticide gets in your eyes?

7. What should you do if you breathe in a pesticide?

8. What emergency first aid treatment should you give a co-worker who has breathed in a pesticide?

9. What should you do if you swallow a pesticide?

10. When should you **not** induce vomiting?

11. When should you have someone take you to a doctor?

12. What will the doctor need to know right away?

13. If possible, what should you take with you to the doctor?

Responses to discussion questions appear on pages 70-83.

UNIT 4

Objectives

After this section, you should be able to—

- Name three symptoms of allergic reaction to a pesticide.
- Identify the possible long-term effects of pesticide poisoning.
- Recall the critical safety rule to follow when handling pesticides.

Opening Questions

Do you find that you are more sensitive to some pesticides than you are to others? If so, how does your body react when you are working with these pesticides? What can you do to prevent the reaction?

Do you know anything about scientific studies on animals and their exposure to pesticides?

Have you heard anything about long-term effects of pesticide exposure on people?

Other Health Effects

Some people are allergic to certain pesticides. They may get a severe skin rash when the pesticide touches their skin. Or they may sneeze and have a runny nose and itchy eyes when they are near the pesticide. If a pesticide affects you this way, try wearing some extra protection (gloves, a respirator, etc.). If these symptoms continue, you may have to stay away from that particular pesticide.

Allergic reactions may not occur on your first or second exposure to a particular pesticide. However, your body may become sensitized to that pesticide, and if you are exposed to that pesticide again, you may experience an allergic reaction.

Some harmful effects from pesticides do not show up for a long time. Studies on laboratory animals show that some pesticides may cause cancer, permanent harm to body systems, miscarriages, or birth defects.

Scientists cannot always know about the long-term effects of pesticides on human beings, so don't take any chances. When you handle pesticides, or when you work in areas where pesticides have been applied, do everything you can to keep them from getting on or in your body.

Suggested Review and Discussion

1. What are the symptoms of an allergic reaction to pesticides?

2. What are possible long-term effects of pesticide contamination as shown in studies of animals?

3. How can you protect yourself from long-term effects of pesticides?

Responses to discussion questions appear on pages 70-83.

UNIT 5

Objectives

After this section, you should be able to—

- Explain the purpose of personal protective equipment (PPE).
- State what the law requires you to do with PPE.
- Name seven types of PPE.
- Tell what to do before putting on PPE.
  - Explain what to do if PPE is damaged or worn.
  - Identify the kinds of protective clothing often required in addition to PPE.
- Give nine rules for wearing PPE correctly.

Opening Questions

What kind of PPE do you usually wear?

How do you take care of your PPE?

Personal Protective Equipment (PPE)

Personal protective equipment (PPE) helps to keep pesticides from getting on or in your body. Your employer must provide you with all the PPE listed on the pesticide label for the job that you will be doing. You are required by law to wear it and use it correctly. PPE may include—

- Gloves.
- Boots or shoe covers.
- Coveralls.
- Hoods or wide-brimmed hats.
- Aprons.
- Protective eyewear: goggles, faceshields, or safety glasses with side and brow guards.
- Respirators. You should use different types of respirators for different pesticide formulations. See page 26 for details.

In addition, many pesticide labels require the use of protective clothing, which may be long-sleeved shirts and long pants with shoes and socks.

PPE can be made from many different materials. If the pesticide label does not specify which material to use, choose PPE that is chemical resistant. Chemical-resistant PPE can be made out of barrier laminate, PVC, or rubber (nitrile, butyl, natural rubber, or neoprene). These materials are also waterproof. They are good choices for gloves, footwear, aprons, and hats.

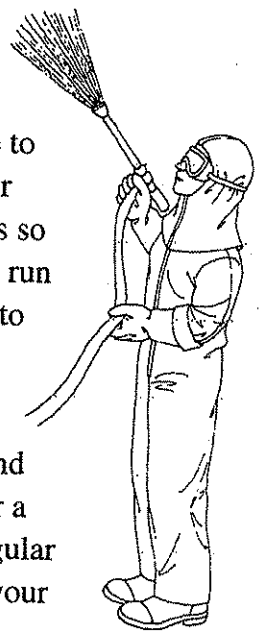
Do not wear cotton gloves when you are handling pesticides unless the pesticide label specifically says to use them. Never use leather gloves when handling pesticides because leather absorbs pesticides and cannot be washed clean.

PPE must be clean and ready to use. Before and during use, look for tears, holes, or other defects or signs of excessive wear, such as differences in color. If you find a problem with a piece of equipment, ask your employer to replace it.

Here are nine easy rules for wearing PPE correctly:

- Keep your pant legs over the top of your boots so pesticide won't run down into your boots.
- Wear chemical-resistant gloves that reach at least halfway to your elbow.
- If you are applying pesticides on the ground, wear your sleeves over the outside of your gloves so that pesticides will not run down into the gloves.

- If you are spraying above your shoulder, wear your sleeves inside your gloves. Also, choose gloves with cuffs.
- If you are spraying both above and below your shoulder, you can use duct tape to attach the tops of your gloves to your sleeves so that pesticides cannot run into your gloves or into your sleeves.



- Wear loose-fitting clothes for comfort and protection. Also wear a coverall over your regular work clothes to give your body good protection against most pesticides.
- Use a chemical-resistant apron to keep splashes and spills from soaking your coverall while you are mixing and loading pesticides or cleaning equipment.
- Button your collar at the neck to keep pesticides from getting inside your clothes.
- If your hood is separate from your coverall, keep the hood's bottom edges outside the coverall to protect yourself from pesticide runoff.

While you are working, pay attention to your PPE. If your gloves, apron, or boots get holes in them, stop work right away and replace them. If the pesticides get through the damaged equipment to your skin, wash first, then put on clean equipment.

Suggested Review and Discussion

1. What is the purpose of PPE?

2. How will you know what PPE to wear?

3. What does the law require you to do with PPE?

4. What kinds of PPE do handlers wear?

5. What kinds of protective clothing may also be required?

6. What should you do before putting on PPE and also while you are working?

7. What should you do if you see that the PPE is damaged or torn?

8. What are nine rules for wearing PPE?

9. What should you do if pesticides get through your PPE onto your work clothing?

Responses to discussion questions appear on pages 70-83.

UNIT 6

Objectives

After this section, you should be able to—

- Identify the different types of respirators.
- Explain how a respirator should fit and what to do if you have a beard.
- Give the general rule for replacing filters, cartridges, and canisters if there are no manufacturer's instructions.
- List the specific guidelines for when it is necessary to replace filters, cartridges, and canisters on respirators that—
  - Filter out dusts and mists.
  - Remove vapors and gases.

Opening Questions

Do you use respirators at work? If so, which types do you use?

How many different types of respirators are used at your workplace?

Respirators

Respirators protect you from breathing pesticide-contaminated air. You should use different types of respirators for different pesticide formulations.

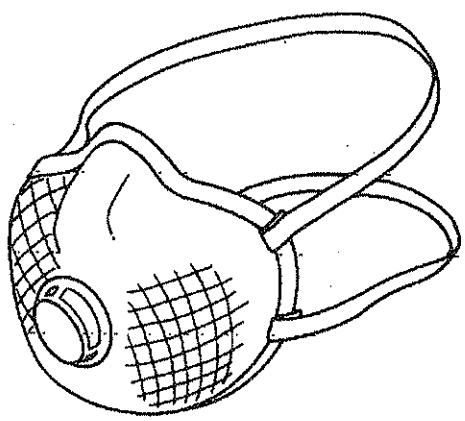
The product label will say whether you must use a respirator and, if so, what kind of filter, cartridge, or canister to use. When a respirator is required, the product label will also give the MSHA/NIOSH approval code prefix for the respirator. MSHA stands for the Mine Safety and Health Administration, and NIOSH for National Institute for Occupational Safety and Health. These Federal agencies evaluate and approve respirators.

Before you put on a respirator, double-check to make sure that the MSHA/NIOSH approval number on the respirator matches the number given on the product label.

The illustrations on these pages show different types of respirators. Styles include—

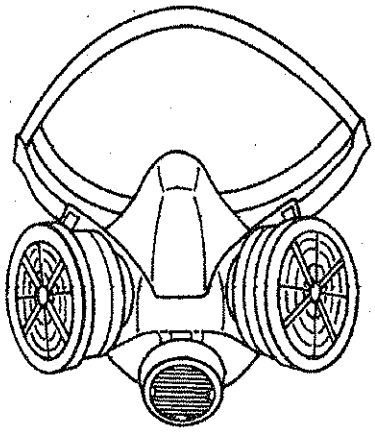
- Dust/mist filtering respirators.
- Chemical cartridge respirators.
- Canister respirators.
- Supplied-air respirators.
- The self-contained breathing apparatus (SCBA).

Dust/mist filtering respirators offer protection from small particles in the air. They cover the nose and mouth to filter out dusts, mists, powders, and particles. These respirators have MSHA/NIOSH approval number prefix TC-21C.

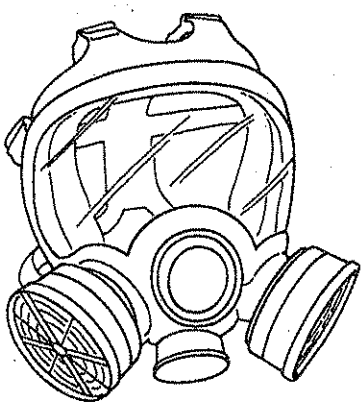


Example of a dust/mist filtering respirator, an MSHA/NIOSH TC-21C type respirator.

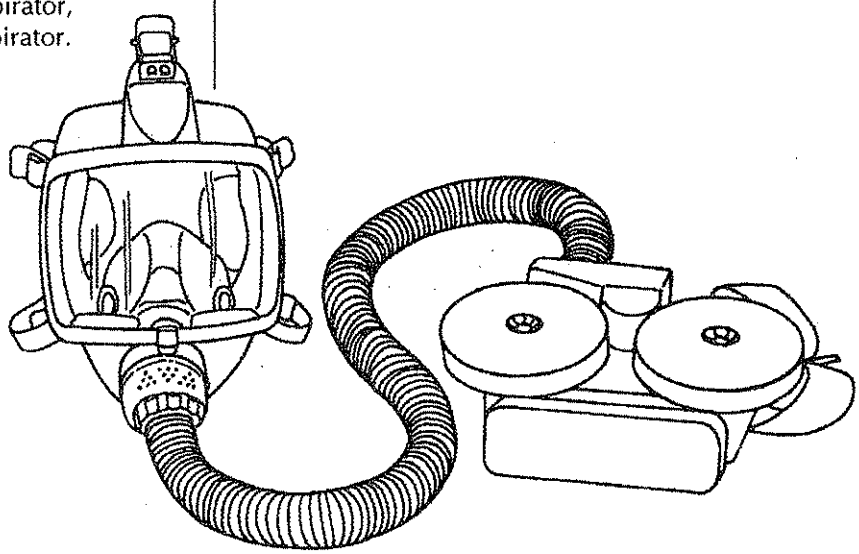
Chemical cartridge respirators use cartridges that contain chemicals to remove dusts and mists and to absorb harmful vapors or gases. Chemical cartridge respirators for use with pesticides have MSHA/NIOSH approval number prefix TC-23C. This type of respirator can have either a half-face mask or a full-face mask. Powered air-purifying respirators (PAPRs) may reduce respiratory stress and heat stress.



Example of a half-face chemical cartridge respirator, an MSHA/NIOSH TC-23C type respirator.

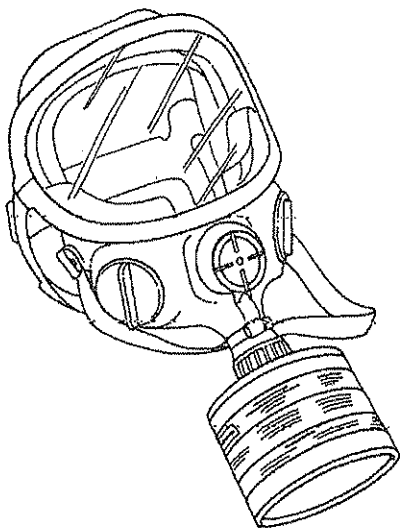


Example of a full-face cartridge respirator, an MSHA/NIOSH TC-23C type respirator.



Example of a powered air-purifying respirator (PAPR).

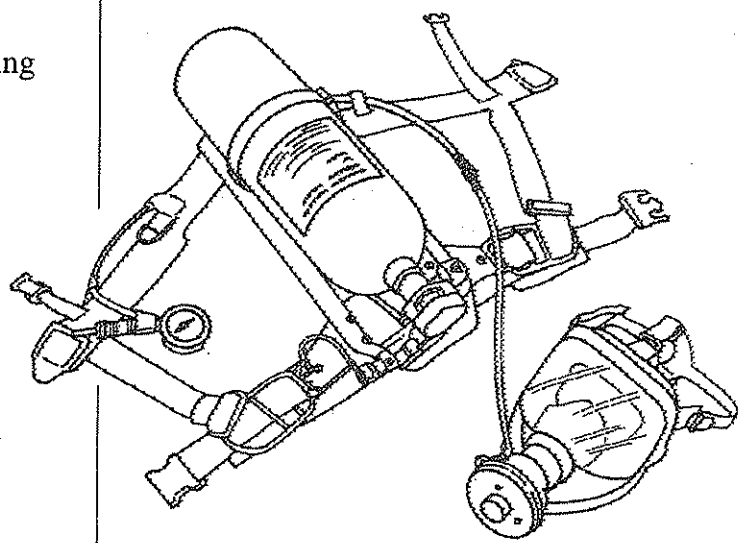
Canister respirators for use with pesticides have MSHA/NIOSH approval number prefix TC-14G. The canisters contain materials to remove dusts and mists and to absorb harmful vapors or gases. These respirators are designed to remove specific contaminants from the air. The lifespan of canister respirators is short, usually from 12 to 60 minutes, depending on size.



Example of a canister respirator or "gas mask," an MSHA/NIOSH TC-14G type respirator.

Supplied-air respirators use long hoses to supply air to a full-face mask. Some (but not all) supplied-air respirators have a blower or compressor. The MSHA/NIOSH approval number prefix for this type of respirator is TC-19C.

The **self-contained breathing apparatus** (SCBA) uses an oxygen tank and provides complete respiratory protection against toxic gases and oxygen deficiency. The MSHA/NIOSH approval number prefix for the SCBA is TC-13F.



Example of a self-contained breathing apparatus (SCBA), an MSHA/NIOSH TC-13F type respirator.

If you have to wear a respirator, have someone show you how to use it first.

To work correctly, most respirators must fit your face tightly around the edges. Every time you put a respirator on, check to be sure it forms a complete seal around your face so that air cannot leak in or out at the edges of the respirator.

Most respirator styles won't protect you if you have a beard or other facial hair that loosens the seal. If you have facial hair, you can protect yourself only by using hood or helmet-style respirators that are specially designed to supply you with fresh air, for example, a powered air-purifying respirator.

If you are wearing a respirator that filters out dusts and mists, **change the filter or respirator** when you find it hard to breathe through the respirator, or if your filter gets torn or damaged or very wet.

If you are wearing a respirator that removes vapors and gases, **change the cartridge or canister immediately** if you taste or smell pesticide, or you feel the pesticide burning or stinging your nose or throat.

Follow the manufacturer's instructions on when to replace filters, cartridges, and canisters even if you don't notice a problem. If there are no instructions, then filters, cartridges, and canisters should be replaced at the end of each day's work period.

Your employer should help you determine how often these parts need to be changed and should provide replacement parts for you.

Suggested Review and Discussion

1. Name the different types of respirators.

2. How must a respirator fit to be effective?

3. If you have a beard or other facial hair, what problem can occur when fitting the respirator? How can you solve the problem?

4. What general rule should you follow about replacing filters, cartridges, and canisters?

5. When should you change the filter on a respirator that protects you from mists and dusts?

6. When should you change the cartridge or canister in a respirator that removes vapors and gases?

Responses to discussion questions appear on pages 70-83.

UNIT 7

Objectives

After this section, you should be able to—

- Name four possible symptoms of heat illness that are similar to symptoms of pesticide poisoning.
- List four ways to cool down a person with severe heat illness.
- Tell how heat illness can cause a person to act.
- Suggest four ways to control heat stress.

Opening Questions

Do you ever get very hot when wearing PPE? What do you do to cool off?

Heat Stress

If the weather is warm or hot and you are wearing PPE, be aware of heat stress. You can get very sick if your body gets too hot.

Many symptoms of heat illness are like the symptoms of pesticide poisoning. You may feel tired and weak, have a headache, feel sick to your stomach, and get dizzy. If you are not sure what is making you ill, get help right away. Get out of the direct sunlight and away from pesticides if possible.

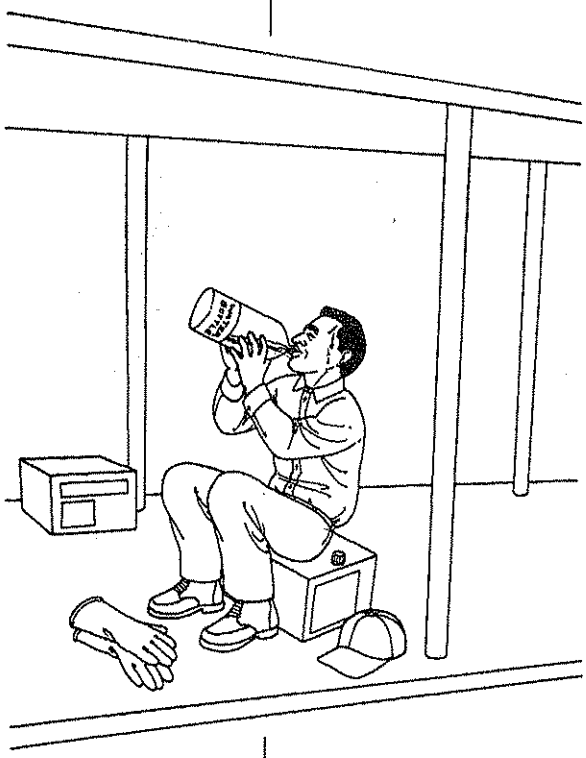
Look for signs of heat illness in your co-workers—they may not realize something is wrong. Severe heat illness can cause a person to act confused, get angry easily, or behave strangely. Without prompt first aid, the person could die.

If you suspect that someone has severe heat illness, it is very important to cool the person down as quickly as possible and then get the person to the doctor right away. To cool a person down, take off their outer clothing, pour water on them, fan them vigorously, and wrap them loosely in wet cloths or towels. Keep pouring water on and fanning the person while taking the person to the doctor.

If the weather suddenly becomes much hotter, if you are new to the job, or if you are returning to work after being sick, you may need to adjust gradually to working in the heat.

Avoid getting too much heat stress in the first place. On warm and hot days, drink lots of water before, during, and after work. Drink at least a cup of water every half hour—more if you are sweating a lot.

On hot days, try to do jobs that require PPE in the early morning or early evening when it is not quite so hot. Take rest breaks, in the shade if possible, to help cool your body down.



Suggested Review and Discussion

1. Name four possible symptoms of heat illness that are also symptoms of pesticide poisoning.

2. What is the worst possible effect of heat illness?

3. Name some ways that heat illness can cause a person to act.

4. What are the steps to take to cool down someone with severe heat illness?

5. How can you control heat stress?

Responses to discussion questions appear on pages 70-83.

UNIT 8

Objectives

After this section, you should be able to—

- Name two important sources of information about pesticides.
- Explain the meaning of the signal words *Caution, Warning,* and *Danger.*
- Tell the meaning of the skull and crossbones symbol.
- Name the major sections of the pesticide label and tell what kinds of information are in each section.

Opening Questions

How often do you read pesticide labels? Why do you read them?

Have you ever had difficulty finding information on a pesticide label? What were you looking for? How did you finally get the information?

Are some pesticide labels harder to understand than others? Why?

Pesticide Labels

There are two important places to get information about the pesticides you will be handling—from the pesticide label and from your employer.

Your employer must make sure you have all the information you need from the pesticide label. Even so, it is a good idea to study the label yourself.

The pesticide label has a number of major sections that you should be familiar with.

Brand Name, Ingredients, and Type of Pesticide

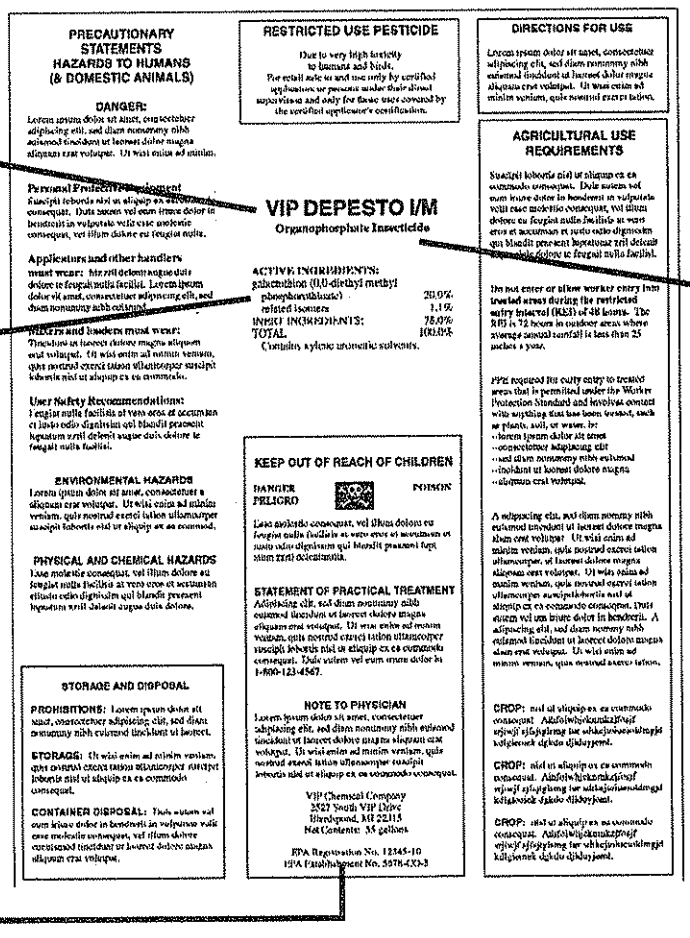
Look on the front of the label for the brand name of the pesticide. It is usually in large bold print. Directly below the brand name is the list of chemicals or active ingredients, the percentage of each active ingredient, and the inert ingredients. *Active Ingredients* is the term for the ingredients that kill or control the pest. *Inert Ingredients* don't work against the pest; they usually improve the product by making it spray out easily, stay on the plant, etc.

Pesticide products with very similar brand names may contain different active ingredients or different percentages of the active ingredients. It is important to read the label of a new product thoroughly even if the brand name is familiar to you.

Also on the front of the label is the type of pesticide—insecticide, herbicide, fungicide, or other kind of control agent.

The EPA registration number for the product is on the front of the label as well.

Sample Label



Signal Words and Symbols

The signal words—*Caution, Warning,* or *Danger*—tell you how likely the pesticide is to make you sick. Be sure to look at the signal word, which is in large type on every pesticide label.

The word *Caution* is used for pesticides that are the least poisonous. These pesticides can still harm you if you are not careful.

A pesticide with the word *Warning* is more poisonous or irritating than those with a *Caution* label. It doesn't take much of this pesticide to make you sick or to irritate your skin or eyes.

The word *Danger* means that the pesticide is very poisonous or irritating. Even a small amount (often less than a teaspoon) can cause serious harm. The labels of the products that can severely burn your skin and eyes carry the signal word *Danger* alone.

Along with the signal word *Danger*, other labels have a *skull and crossbones* and the word *Poison* printed in red ink. These pesticides are highly poisonous. They can make you very sick—or even kill you—if you are not careful. While you are handling these pesticides, your employer must have someone check on you every 2 hours to be sure that you are all right.

Statement of Practical Treatment and Precautionary Statements

Under the Statement of Practical Treatment, read what you should do if you swallow or inhale the pesticide, or get it on your skin or in your eyes. This is the first aid section.

On some labels a Note to Physician gives information on symptoms and treatment of poisoning. If you need medical treatment, it is important to bring a copy of the pesticide label with you so the doctor can treat you properly.

An emergency phone number to call in case of spills and exposure accidents is also listed.

Look under the Precautionary Statements to determine which parts of your body need special protection. Some labels tell you that the pesticide will burn your eyes or skin if it gets on them. Other labels tell you not to breathe the pesticide or not to get it on your skin.

Along with these warnings, the label must tell you if you need to wear PPE when you handle the pesticide.

Under the Environmental Hazards section, you can find out whether you must take extra care to protect certain wildlife or to keep the pesticide out of groundwater.

Sample Label

The parts of your body that need special protection

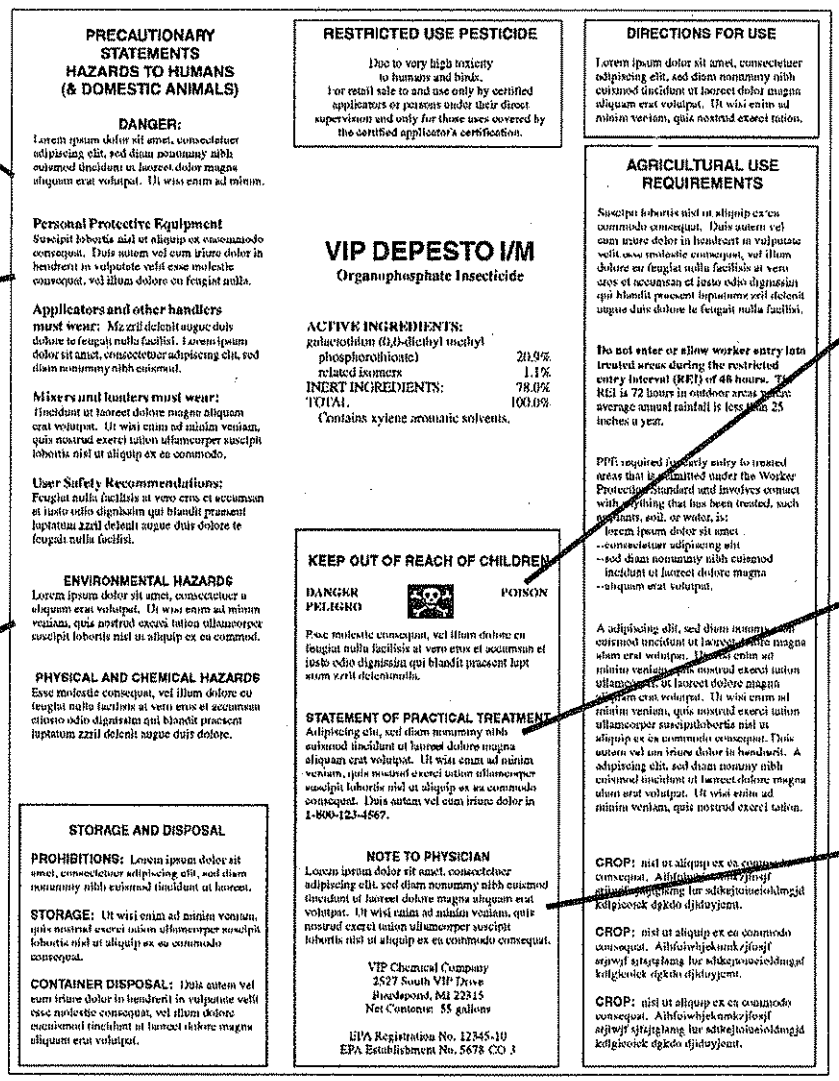
Handler PPE

Information about protecting the environment

Signal words

First aid directions

Symptoms and treatment of poisoning



PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS
(& DOMESTIC ANIMALS)

DANGER:
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Personal Protective Equipment
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User Safety Recommendations:
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RESTRICTED USE PESTICIDE

Due to very high toxicity to humans and birds.
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.

VIP DEPESTO I/M
Organophosphate Insecticide

ACTIVE INGREDIENTS:
galactotidun (0,0-diethyl methyl phosphorothioate) 20.9%
related isomers 1.1%
INERT INGREDIENTS: 78.0%
TOTAL 100.0%
Contains xylene aromatic solvents.

KEEP OUT OF REACH OF CHILDREN

DANGER PELIGRO POISON

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STATEMENT OF PRACTICAL TREATMENT
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VIP Chemical Company
2527 South VIP Drive
Steedpond, MI 22315
Net Contents: 55 gallons

EPA Registration No. 12345-10
EPA Establishment No. 5678 CO 3

DIRECTIONS FOR USE

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AGRICULTURAL USE REQUIREMENTS

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Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours. The REI is 72 hours in outdoor areas where average annual rainfall is less than 25 inches a year.

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

The Directions for Use section lists information on storage, disposal, mixing, loading, application, and Agricultural Use Requirements.

The Agricultural Use Requirements section states that this pesticide must be used 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 and handlers of agricultural pesticides on farms, forests, nurseries, and greenhouses. 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 PPE, notification of workers, and restricted-entry intervals.

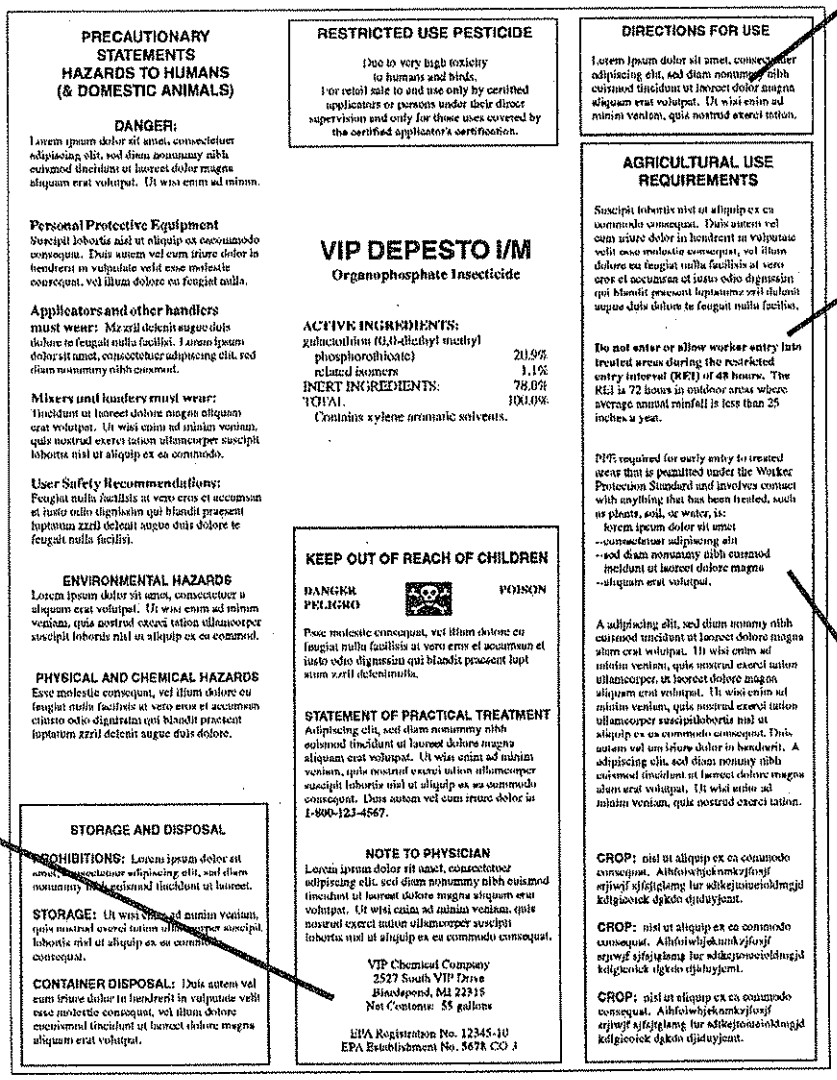
All pesticides have a restricted-entry interval (REI). The REI is the time immediately after a pesticide application when entry into the treated area is limited. This interval can be from 12 hours to 3 days. The REI is listed on the pesticide label under Agricultural Use or next to the crop or application method to which it applies.

With certain strict exceptions, only early-entry workers and pesticide handlers who are properly trained and wearing appropriate PPE may enter the treated area during an REI.

Name and Address of Manufacturer

You can obtain further information about the pesticide that you are using from the manufacturer of the pesticide. The name and address of the manufacturer is listed on the pesticide label.

Sample Label



PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS (& DOMESTIC ANIMALS)

DANGER:
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Personal Protective Equipment
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Mixers and loaders must wear:
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User Safety Recommendations:
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ENVIRONMENTAL HAZARDS
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RESTRICTED USE PESTICIDE
Due to very high toxicity to humans and birds.
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.

VIP DEPESTO I/M
Organophosphate Insecticide

ACTIVE INGREDIENTS:
galacotilion (0,0-diethyl methyl phosphorothioate) 20.9%
related isomers 1.1%
INERT INGREDIENTS: 78.0%
TOTAL 100.0%
Contains xylene aromatic solvents.

KEEP OUT OF REACH OF CHILDREN
DANGER PELIGRO POISON
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VIP Chemical Company
2527 South VIP Drive
Blandspond, MI 22315
Net Contents: 55 gallons

EPA Registration No. 12345-10
EPA Establishment No. 5678 CO 3

DIRECTIONS FOR USE
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AGRICULTURAL USE REQUIREMENTS
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Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours. The REI is 72 hours in outdoor areas where average annual rainfall is less than 25 inches a year.

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

The restricted-entry interval (REI)

Information about the manufacturer

PPE for early-entry workers

Suggested Review and Discussion

1. What information is printed below the brand name of the pesticide?

2. What do the signal words, *Caution*, *Warning*, and *Danger* mean? What does the word *Poison* together with the skull and crossbones symbol mean?

3. What kind of information can you find in the Statement of Practical Treatment?

4. What can you find in the Precautionary Statements section?

5. What kind of information is in the Note to Physician?

6. What is in the Environmental Hazards section?

7. What can you find in the Directions for Use section?

8. What is in the Agricultural Use Requirements section that is especially important to you?

9. What is an REI, and why is it important?

10. If you need information from the pesticide manufacturer, what help does the label provide?

Responses to discussion questions appear on pages 70-83.

UNIT 9

Objective

After this section, you should be able to state the safety rules to observe when transporting pesticides in a car or truck.

Opening Questions

Do you ever transport pesticides? How? How often? Where?

Transporting Pesticides

If you move pesticides from place to place in a car or truck—

- Before you leave, ask your employer what to do if you have a spill. Carry spill cleanup materials with you. (See Cleaning Up Pesticide Spills, p. 50)
- Make sure the pesticides are in the back of the truck or in the trunk of the car—not inside with you.
- Do not allow people, pets, or livestock to ride in the same compartment with the pesticides. Don't put food, feed, or clothes near the pesticides.
- Tie the pesticide containers down or secure them in other ways to make sure that they do not fall over or roll around.

Suggested Review and Discussion

1. What are important safety rules to remember when you carry pesticides in a car or truck?

Responses to discussion questions appear on pages 70-83.

UNIT 10

Objectives

After this section, you should be able to—

- Name at least three important safety rules to follow when storing pesticides.
- Say why the storage area should be locked.

Opening Questions

Where are the storage areas at your workplace?

Do you ever work there? If so, what do you do?

Storing Pesticides

If you work in a storage area for pesticides or pesticide containers—

- Make sure the containers are closed tightly and are stored upright, so they cannot tip over and spill.
- Check all containers for leaks, breaks, or weak spots. Tell your boss right away if you see a problem.
- Clean up spills and leaks right away. (See Cleaning Up Pesticide Spills, p. 50.)
- Lock the storage area to make sure that people and animals cannot get into the storage area when no one is working there.

Suggested Review and Discussion

1. If you work in a storage area for pesticides, what safety rules do you need to observe?

2. Why should the storage area be locked?

Responses to discussion questions appear on pages 70-83.

UNIT 11

Objectives

After this section, you should be able to—

- Say why it is especially important to observe safety rules when mixing and loading pesticides.
- State the key safety practices that relate to using PPE, opening containers, pouring pesticides, mixing pesticides, and protecting water resources.

Opening Questions

How often do you mix pesticides or load pesticides into application equipment?

Why is this job dangerous?

Mixing and Loading Pesticides

You may sometimes have to mix and load pesticides—a job that requires special care. Because pesticides that have not yet been mixed are often in a concentrated (stronger) form, they can be especially dangerous to you.

When mixing and loading, follow the label directions and these safety practices:

- Give yourself extra protection. Wear chemical-resistant gloves and an apron over your other PPE. You probably need to wear protective eyewear, too.

- Read the label directions to find out how much pesticide you need, and then measure it carefully. Using too much or too little can cause problems for the applicator, the crop, and the environment.
- Use the label information to determine how much pesticide you will need based on (1) the area that you will be treating, such as a 10-acre field or a greenhouse, and (2) the size of the application equipment that you will be using, such as a 100-gallon or 250-gallon spray tank.
- Put the pesticide container on a flat surface and open it carefully. Use a sharp knife or scissors to open paper and cardboard containers. If you rip them open, dust can fly out and get on your skin and into your eyes, mouth, and lungs—and the pesticide will not pour as evenly. Label the knife or scissors *For Pesticide Use Only.* Wash the knife or scissors with soap and hot water before using them again.
- Pour carefully to avoid splashes. Be sure your face and eyes are well above the container while you are pouring. Get someone to help you pour if the container is too big or too heavy for you to lift easily.
- When you add water to the mix tank or the spray tank, don't let the pesticide mix run backwards through the hose and into the water source. Keep the hose above the level of the liquid in the tank, or use special equipment (a check valve) to prevent backflow.
- Never mix, load, or clean equipment near ponds, streams, wells, or ditches because rinsewater containing pesticide could overflow and run off into these water sources.

Suggested Review and Discussion

1. Why is it especially important to observe safety rules when mixing and loading pesticides?

2. What are the safe procedures to follow when opening pesticide containers?

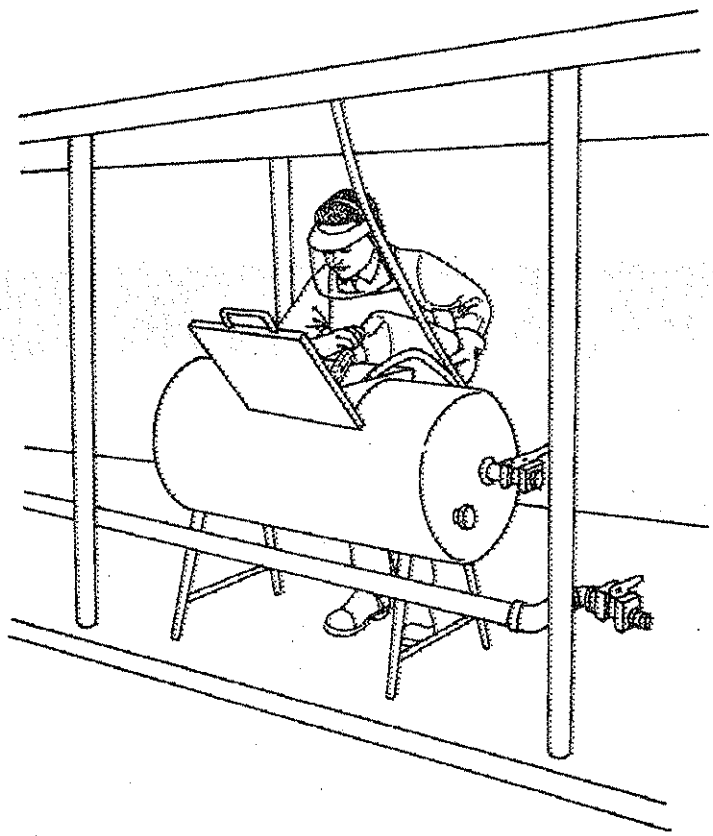
3. What can you do to avoid splashes when pouring?

4. What kinds of PPE should you wear when mixing and loading pesticides?

5. Why do you need to follow the label directions when measuring?

6. Why is it important to keep the hose above the level of the liquid in the tank?

7. Why should you avoid mixing, loading, or cleaning equipment near ponds, streams, wells, or ditches?



Responses to discussion questions appear on pages 70-83.

UNIT 12

Objectives

After this section, you should be able to—

- List the basic safety principles to follow if a pesticide spill occurs.
- Name the three "Cs" of spill management and explain the actions to take under each category.

Opening Questions

Have you ever had to clean up a spill? What kind was it? What did you do?

Cleaning Up Pesticide Spills

Pesticide spills can occur during any handler task. Here are steps you should take if a spill occurs:

- Think first of protecting yourself, other people nearby, and the surrounding area—especially water sources.
- Never try to clean up a spill unless you have the right PPE and cleanup materials.
- If you don't know what to do, call for help and wait until it arrives.
- If it is a big spill, send someone for help if you can. Don't leave if no one else is there—someone must be there to warn others of the danger.

Practice the **three Cs of spill management:**

Control the spill—make sure that the spill is stopped:

- Shut off the mixing or application equipment if it is leaking.
- Turn the container upright if it has fallen.
- If the container is broken or leaking, put it inside another container.

Contain the spill—stop the spill from spreading:

- Use a mound of dirt or other material to make a dike around the edge of the spill.
- Rope off the area so that other people cannot walk through it.

Clean up the spill:

- Do not use water. It will spread the spill and make it worse.
- Soak up liquid spills with special spill sponges or with soil, sawdust, clay, cat litter, or other absorbent materials.
- If the pesticide or absorbent material is likely to blow around, moisten it very slightly with water or cover it with a tarp.
- Sweep the spill and cleanup materials into plastic containers or special drums. Then ask your employer what to do with the waste.

Suggested Review and Discussion

1. What are the basic safety principles to follow when dealing with a pesticide spill?

2. What are the three Cs of spill management?

3. Name three actions to take to control a spill.

4. How can you stop a spill from spreading?

5. How should you clean up a spill?

6. What should you do if the spilled pesticide or the cleanup material is likely to blow around?

7. What should you do with the spilled pesticides and contaminated cleanup materials?

Responses to discussion questions appear on pages 70-83.

UNIT 13

Objectives

After this section, you should be able to—

- Describe the steps involved in rinsing containers.
- Explain what to do with containers that cannot be rinsed.
- State three *don'ts* for handling empty pesticide containers.

Opening Questions

Are you responsible for cleaning containers?

What do you do with the cleaned, empty containers?

Cleaning Pesticide Containers

Your employer will tell you what to do with empty pesticide containers. Many containers should be **triple rinsed** immediately after you empty them. Follow these steps:

- If you use water to mix the pesticide in a mixing tank, use clean water to rinse the empty container as soon as you have finished mixing.
- First, fill the empty container with clean water until it is 1/4 full.
- Put the cap on, or tightly close the opening. Carefully shake or roll the container so that the water rinses the inside completely.
- Pour the rinse water from the container into the mixing tank. Repeat the rinsing at least two more times.

Instead of triple rinsing, you can **pressure rinse** pesticide containers by using a pressure-rinse nozzle. Follow these steps:

- Insert the nozzle into the side of the container.
- Turning the nozzle in all directions, rinse the inside of the container for at least half a minute.
- Drain the container as well as you can into the mix tank.

If a container cannot be rinsed, empty it as well as you can. Then close it tightly.

Empty containers should be locked away until they can be disposed of properly. Even well-rinsed containers may still contain small amounts of pesticides. Don't use them for any other purpose, and **do not take them home** under any circumstances. Never leave empty containers lying around the worksite or anywhere else. Some pesticide containers can be returned to the dealer, but they must be properly cleaned first.

Suggested Review and Discussion

1. How many times should you rinse empty containers?

2. What are the steps for washing empty containers?

3. What should you do if a container cannot be rinsed?

4. What should you do with empty containers?

5. Name three things **not** to do with empty containers.

6. If in doubt about what to do with empty containers, what should you do?

Responses to discussion questions appear on pages 70-83.

UNIT 14

Objectives

After this section, you should be able to—

- Explain where to look first for directions on safe disposal of leftover pesticides.
- State who to contact for more information about disposal.

Opening Questions

Do you know your state's regulations for disposal of pesticides? How can you find out about them?

Disposing of Pesticides and Pesticide Containers

Occasionally, you may have leftover pesticides that you can no longer use. Store them carefully in a locked storage area until they can be disposed of properly.

Although the label has general directions for disposal of pesticides and pesticide containers, disposal requirements vary from state to state, and even within states. Your employer should check with local pesticide enforcement authorities and tell you what to do.

Suggested Review and Discussion

1. Where can you look for directions about what to do with leftover pesticides?

2. Who should know about state requirements for disposal?

3. Is it safe to store leftover pesticides before getting rid of them?

Responses to discussion questions appear on pages 70-83.

UNIT 15

Objective

After this section, you should be able to describe the safe practices to follow when working as a flagger for aerial pesticide applications.

Opening Questions

Do you work as a flagger? Why can this job be dangerous?

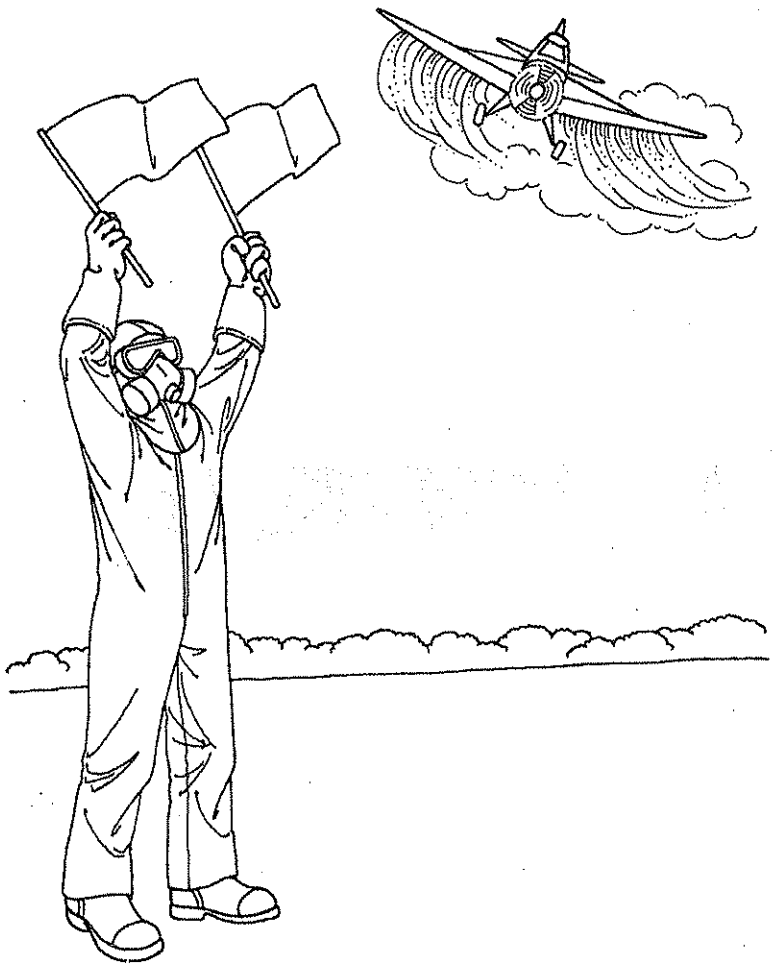
Flagging

Both the flagger and the pesticide applicator must be careful during aerial applications so that pesticides do not get on the handler. Be careful if you flag for an aerial application:

- Wear all the PPE that the label requires.
- Make sure no people, pets, or livestock are in the treatment area or in nearby areas where the pesticide could drift.
- Move out of the way before the airplane flies overhead so that pesticides won't get directly on you. Move upwind so that any wind would blow the pesticide away from you.

Suggested Review and Discussion

1. What are safe practices to follow when flagging for aerial application of pesticides?



Responses to discussion questions appear on pages 70-83.

UNIT 16

Objectives

After this section, you should be able to—

- Describe at least five safe practices to follow **before** applying pesticides.
- Name at least five safe practices to follow **while** applying pesticides.
- Explain what to do **after** applying pesticides.

Opening Questions

Do you apply pesticides as a regular part of your job?

How do you prepare for the task?

What equipment do you usually use?

Applying Pesticides

Your job may sometimes require you to apply pesticides. Be sure to protect yourself, others, and the environment. Make sure you follow the application instructions on the pesticide label.

Before you start, put on all the PPE you need. Wear at least the PPE listed on the pesticide label. Then carefully check out the application equipment. Make sure there are no leaks. If you need to fix the application equipment, turn it off first to keep pesticide from getting on you. Remember to keep your PPE on while you are fixing the equipment.

Never apply pesticides so they can get on people—either directly or through drift. When you are ready to start, check the area where you will be working. Make sure no people, pets, or livestock are in or near the area.

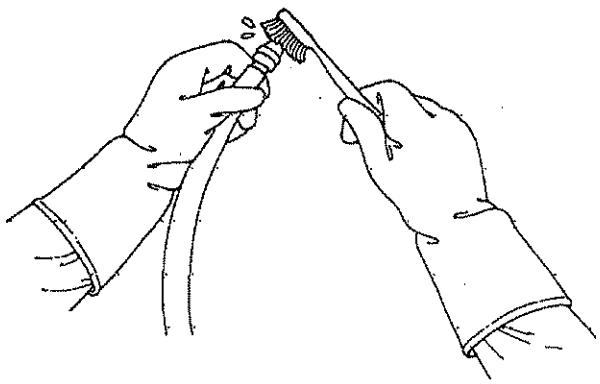
If you will be applying pesticides outdoors, check the weather conditions before you start. Don't apply pesticides when there is a wind blowing that could carry the pesticide out of the treated area. Even a light wind can blow pesticides away from the area where you want to apply them. Don't apply pesticides when rain is expected if the pesticide is one that could be washed off the treated surface.

Look to see if there are ponds, streams, or wells in or near the area to be treated. Take the time and care to keep pesticides out of surface water supplies. Never apply a pesticide so that it can drift or run into water supplies.

Check the Environmental Hazard Statement on the pesticide label. Take special care to avoid harming wildlife that may be in or near the area you plan to treat.

Stay alert while you are applying the pesticide. Look at the area you have just treated to be sure you are applying the pesticide evenly and the coverage looks right.

Watch for clogged nozzles or hoppers. **Do not use your mouth to blow out the nozzle.** If you need to clean a nozzle, use a nonmetal nozzle-cleaning tool. Sharp metal can ruin the nozzle.



When you finish the application, put your equipment away. Don't leave it in the treated area, and don't let it sit for a long time with pesticides on or in it. Your employer should tell you how to clean it. Follow his or her instructions and remember to keep your PPE on until the application equipment has been put away.

Suggested Review and Discussion

1. What are safe practices to follow before applying pesticides to any area?

2. While applying pesticides, what should you be careful about?

3. After applying pesticides, what should you do?

Responses to discussion questions appear on pages 70-83.

UNIT 17

Objectives

After this section, you should be able to—

- Describe safe practices to follow when removing PPE.
- Tell what to do with PPE after taking it off.
- Explain how to clean PPE if your boss asks you to do it.
- List the types of equipment that cannot be cleaned.
- Describe what to do for personal cleanliness whenever you finish a pesticide handling job and at the end of the workday.
- Give directions for washing protective clothing and PPE in a washing machine.

Opening Questions

Do you usually keep your gloves on or take them off when you remove your PPE?

Does your boss ever ask you to clean PPE?

Cleaning Up

When you finish any pesticide handling job, take off your PPE. That way, you and others won't risk contacting any pesticides that may be on the PPE. When taking off PPE, be careful not to get pesticides on your skin or inner clothing. Here are some safe practices for removing PPE:

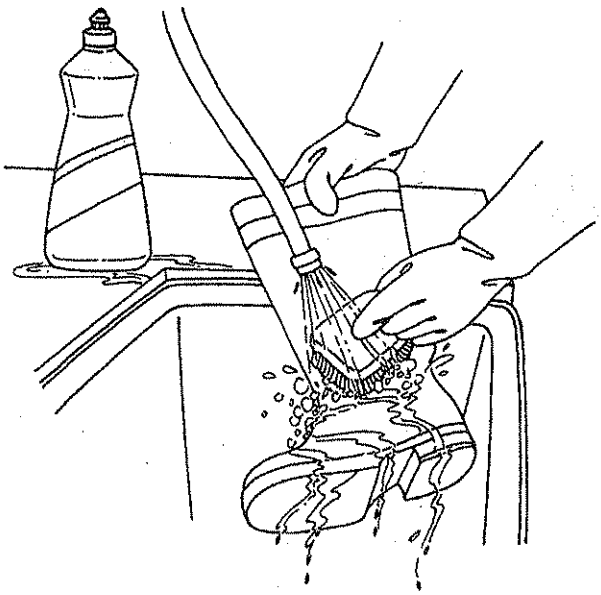
- Wash the outside of your gloves while you are still wearing them.
- If possible, keep your gloves on while taking off your other PPE.
- Peel down your coverall and take off other PPE. If you've already removed your gloves, touch the outsides of the PPE as little as possible.

Wash your hands. Wash your face and any other exposed skin, too. Use lots of soap and water.

Put all your used PPE in a place by itself until it can be cleaned or disposed of. You must not wear home or take home PPE that has not been cleaned.

If your employer asks you to clean PPE at work, be sure you know how to do it safely. Wear gloves. Hand wash the inside and outside of PPE like gloves, boots, and respirator facepieces.

Use mild soap or mild detergent and very warm water to wash most PPE. For coveralls and other machine washable items, follow the washing procedure on page 66.



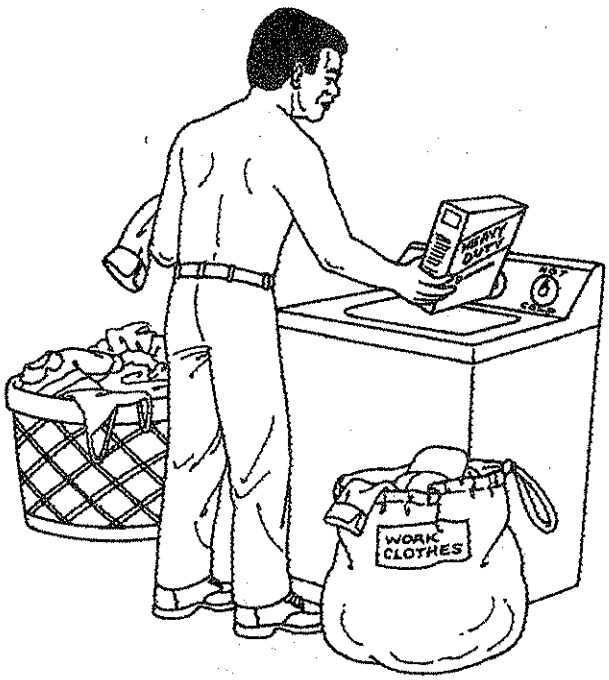
Some types of equipment cannot be cleaned—they should be thrown away when they can no longer protect you. These include respirator filters, cartridges, and canisters and some kinds of disposable coveralls, gloves, shoe coverings, and aprons. Your employer should tell you when to throw them out. Throw away coveralls or other work clothes that are soaked with pesticides because, in this case, even thorough washing will not remove all the pesticide.

At the end of your workday, take off your work clothes, shower, and put on clean clothes. Put your used work clothes into a container until they can be washed. Don't ride home with pesticides on your clothes—you will contaminate the vehicle.

Don't let other people touch any of your work clothes that may have pesticides on them. Even when you wear a coverall over regular work clothes, the work clothes can pick up small amounts of pesticides. The pesticides can rub off onto anyone who touches the clothes. At home, be sure to keep your contaminated work clothes out of reach of children and pets.

Washing procedure for work clothes—

- Always keep your work clothes separate from your family's clothes. Wash work clothes in a separate load in the washer.
- Wash only a few items at a time to allow plenty of agitation and water for dilution. Use the highest water-level setting.
- Use a heavy-duty detergent and hot water for the wash cycle.
- Rinse your work clothes twice in warm water. Using two rinse cycles helps remove even more pesticide residue.
- Use two complete machine cycles to wash items that are moderately to heavily contaminated.



- If possible, hang your work clothes **outside** on a clothesline to dry (for 24 hours). Try not to use a clothes dryer because pesticide residues may contaminate the clothes dryer over a period of time. If you must use a clothes dryer, use the hottest setting possible to help break down pesticide residues.
- Before doing family laundry, it is a good idea to clean the machine by running the washer through at least one more complete cycle without clothing, but with detergent and hot water.

Suggested Review and Discussion

1. What is the first thing to do after you finish working with pesticides? Why is this so important?

2. What are safe practices to follow when taking off your PPE?

3. Which parts of your body should you wash immediately after peeling off PPE?

4. What is a safe way to wash PPE by hand?

5. Which PPE should be thrown away after use?

6. At the end of the workday, what should you do to ensure that you have no pesticides anywhere on you?

7. How can you protect your family from pesticide contamination?

8. What is the procedure for machine washing work clothes or coveralls that have been exposed to pesticides?

9. What is the recommended way of drying work clothes that have been exposed to pesticides?

10. How should you clean your washing machine after doing your work clothes and before doing family laundry?

Responses to discussion questions appear on pages 70-83.

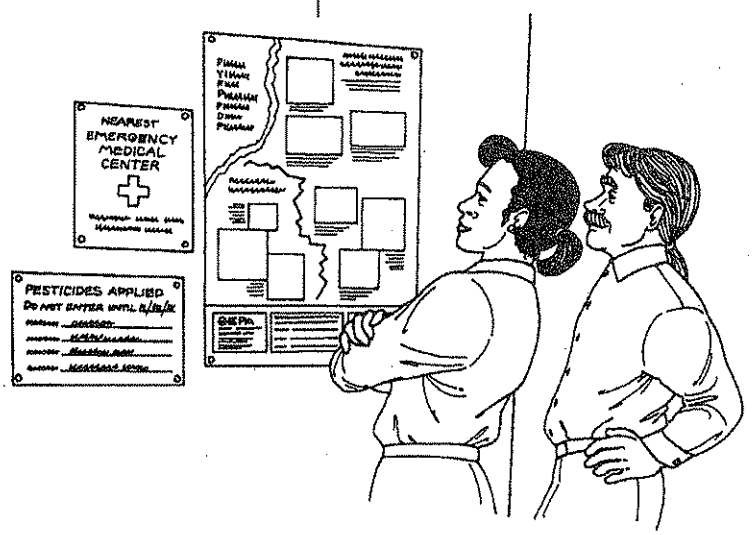
Conclusion

Working safely with pesticides is important. Your safety and the safety of others around you depends on how careful you are.

Don't be afraid to ask for the protections that your employer must provide under the Worker Protection Standard. You have the right to—

- Information about pesticides that you handle—pesticide labels and safety data sheets or other fact sheets.
- Information at a central location:
  - A safety poster.
  - Information about the pesticides applied within the last 30 days at your workplace.
  - The name, address, and phone number of the nearest emergency medical center.
- Adequate safety training in a language that you can understand.
- The PPE necessary for safe handling of pesticides. The PPE must be properly cleaned and maintained.
- Plenty of soap and water, towels, and a change of clothing available when you are working around pesticides.
- A clean location to remove PPE, wash yourself, and change into clean clothing after handling tasks.
- Transportation from the worksite to a medical center if there is reason to believe you are sick or injured because of pesticides or heat stress.

The law says that your employer may not punish you in any way for making sure you get all the protections you are entitled to.



Suggested Discussion Questions and Responses

Pesticide Exposure

1. Where could pesticide residues be?

   On plants, on the soil, in the air, and sometimes in irrigation water.

2. How can pesticides enter your body?

   If you swallow them, breathe them, or get them on your skin or in your eyes.

3. How are you as a handler most likely to be exposed to and harmed by pesticides?

   When pesticides spill or splash on your skin.

4. How often should you wash your hands when working with pesticides?

   Every time you take a break.

5. Before what activities should you wash your hands after working with pesticides?

   Before eating, drinking, chewing gum, using tobacco, putting on makeup, or using the toilet.

6. Name two items **not** to carry with you (in your pockets) when working with pesticides.

   Tobacco and food.

Signs and Symptoms of Poisoning

1. Name the symptoms that may be signs of pesticide poisoning.

   You may feel tired and dizzy, have stomach cramps or diarrhea, or vomit. You may have a headache or blurred vision. You may be sweating too much, have pains in your chest, have trouble breathing, or even pass out. You may have rashes and burns on your skin or irritation in your eyes.

2. Name four things you should do if you have signs of pesticide poisoning.

   Stop what you are doing. Follow emergency first aid procedures on the pesticide label. Call your boss if possible or a co-worker for help. Have someone drive you to an emergency medical center.

3. What are emulsifiable concentrates (ECs) and how can they harm you?

   ECs are liquid pesticides that can burn or irritate your eyes and skin.

4. Are pesticides in the form of gases harmful?

   Yes. If you breathe them, they can harm your lungs and other systems of the body.

Emergency First Aid

1. Where can you find the name, address, and telephone number of the nearest emergency medical center?

   This information should be posted at work.

2. Where can you find first aid information about a pesticide?

   In the emergency first aid section on the product's label.

3. Why should you read the label before working with a pesticide?

   So that you are familiar with the first aid procedures **before** you need to use them.

4. Name four items that employers must supply for pesticide handlers to help them get pesticides off their skin.

   Soap and water, towels, and a clean change of clothing.

5. What should you do if pesticide gets on your clothes or skin?

   Take your clothes off right away and wash your skin with lots of soap and water.

6. What should you do if pesticide gets in your eyes?

   Rinse them right away with an eyeflush kit or allow a gentle stream of clean water to flow across them. Keep rinsing them for about 15 minutes.

7. What should you do if you breathe in a pesticide?

   Get to fresh air immediately. If you are having difficulty breathing, call for help. Then sit down and try to breathe normally.

8. What emergency first aid treatment should you give a co-worker who has breathed in a pesticide?

   (1) Wear a respirator to protect yourself, (2) move the victim to fresh air, (3) remove his/her respirator, (4) loosen his/her clothing, and (5) give mouth-to-mouth resuscitation if the victim is not breathing.

9. What should you do if you swallow a pesticide?

   First, check the label on the pesticide to see if you should make yourself vomit. If the directions say to induce vomiting, put your finger in the back of your throat.

10. When should you **not** induce vomiting?

    If the victim is unconscious or having convulsions, or if the label tells you not to.

11. When should you have someone take you to a doctor?

    If you swallow a pesticide, get it in your eyes, spill a lot on your skin, find it hard to breathe, have burning skin, or if you feel ill and think you may have pesticide poisoning.

12. What will the doctor need to know right away?

    The name of the pesticide and how you were exposed.

13. If possible, what should you take with you to the doctor?

    A copy of the pesticide label.

Other Health Effects

1. What are the symptoms of an allergic reaction to pesticides?

   Skin rash, sneezing and runny nose, itchy eyes.

2. What are possible long-term effects of pesticide contamination as shown in studies of animals?

   These studies show that some pesticides may cause (1) cancer, (2) permanent damage to one or more of the body's systems, and/or (3) miscarriages or birth defects.

3. How can you protect yourself from long-term effects of pesticides?

   Do everything possible to keep pesticides off you.

Personal Protective Equipment (PPE)

1. What is the purpose of PPE?

   PPE helps keep pesticides from getting in or on your body.

2. How will you know what PPE to wear?

   The label tells you what PPE is required.

3. What does the law require you to do with PPE?

   Wear it and use it correctly.

4. What kinds of PPE do handlers wear?

   Gloves, boots or shoe covers, coveralls, hoods or hats, aprons, eyewear, and respirators. All of these should be made of chemical-resistant materials.

5. What kinds of protective clothing may also be required?

   Long-sleeved shirts, long pants, shoes and socks.

6. What should you do before putting on PPE and also while you are working?

   Check your PPE for holes or damage.

7. What should you do if you see that the PPE is damaged or torn?

   Ask your employer to replace it.

8. What are nine rules for wearing PPE?

   Keep your pant legs over the top of your boots. Wear chemical-resistant gloves that reach halfway to your elbow. Wear sleeves over your gloves if you are applying pesticides on the ground. Wear sleeves inside your gloves if you are spraying above your shoulder or use duct tape to tape your gloves to your sleeves. Wear only loose-fitting clothes. Wear a coverall over your regular work clothes. Wear a chemical-resistant apron when mixing, loading, or cleaning equipment. Keep the button at your collar buttoned up. If your hood is separate from the coverall, keep the bottom edges outside the coverall to protect yourself from runoff.

9. What should you do if pesticides get through your PPE onto your work clothing?

   Take everything off right away, wash yourself, and change into clean PPE.

Respirators

1. Name the different types of respirators.

   Dust/mist filtering respirators; half-face or full-face chemical cartridge respirators; powered air-purifying respirators (PAPRs); canister respirators; supplied-air respirators; and the self-contained breathing apparatus (SCBA).

2. How must a respirator fit to be effective?

   Tightly.

3. If you have a beard or other facial hair, what problem can occur when fitting the respirator? How can you solve the problem?

   The seal will not be tight enough. Wear a hood or helmet-style respirator especially designed for people with facial hair.

4. What general rule should you follow about replacing filters, cartridges, and canisters?

   Follow the manufacturer's instructions. If there are no instructions, replace the filters, cartridges, and canisters at the end of each workday.

5. When should you change the filter on a respirator that protects you from mists and dusts?

   If you find it hard to breathe or if the filter gets torn, damaged, or very wet.

6. When should you change the cartridge or canister in a respirator that removes vapors and gases?

   If you taste or smell pesticide or feel it burning or stinging your nose or throat.

Heat Stress

1. Name four possible symptoms of heat illness that are also symptoms of pesticide poisoning.

   Feeling tired and weak, having a headache, feeling sick to your stomach, and being dizzy.

2. What is the worst possible effect of heat illness?

   You could die.

3. Name some ways that heat illness can cause a person to act.

   They may act confused, get angry easily, or behave strangely.

4. What are the steps to take to cool down someone with severe heat illness?

   (1) Get them out of the direct sun and away from pesticides, if possible, (2) take off their outer clothing, (3) wrap them loosely in wet cloths or towels, (4) pour water on them, and (5) fan them vigorously.

5. How can you control heat stress?

   Give yourself time to adjust to working in the heat. Take rest breaks. Drink lots of water throughout the day—at least a cup of water every half hour on hot days. Do work that requires PPE either early in the morning or late in the afternoon when the sun is not so strong.

Pesticide Labels

1. What information is printed below the brand name of the pesticide?

   The active ingredients, percentages of active ingredients, inert ingredients, and the type of pesticide.

2. What do the signal words, *Caution, Warning,* and *Danger* mean? What does the word *Poison* together with the skull and crossbones symbol mean?

   Caution is used for the least poisonous pesticides. *Warning* is used for pesticides that are more poisonous or irritating. *Danger* is used for pesticides that are very poisonous; these products can severely burn your skin and eyes. The skull and crossbones with the words *Poison* and *Danger* mean that the pesticide can make you very sick or even kill you if you are not careful.

3. What kind of information can you find in the Statement of Practical Treatment?

   What to do if you swallow or inhale the pesticide or get it on your skin or in your eyes. First aid information.

4. What can you find in the Precautionary Statements section?

   Information about which parts of your body need special protection.

5. What kind of information is in the Note to Physician?

   Information for the doctor about the symptoms and treatment of poisoning.

6. What is in the Environmental Hazards section?

   Information about how to protect wildlife and the environment.

7. What can you find in the Directions for Use section?

   Information on storage, disposal, mixing, loading, application, and agricultural use requirements.

8. What is in the Agricultural Use Requirements section that is especially important to you?

   Information about the requirement to comply with the Worker Protection Standard when using this pesticide.

9. What is an REI, and why is it important?

   REI stands for *restricted-entry interval,* or the time after pesticide application when entry into the treated area is strictly limited. The time ranges from 12 hours to 3 days. Handlers may enter an area during an REI only if they have been properly trained and equipped.

10. If you need information from the pesticide manufacturer, what help does the label provide?

    The name and address of the manufacturer and an emergency number to use in case of spills and exposure accidents.

Transporting Pesticides

1. What are important safety rules to remember when you carry pesticides in a car or truck?

   Ask your employer what to do if you have a spill while traveling. Take spill cleanup materials with you. Keep pesticides in the trunk of the car or in the back of the truck, not in the cab. Keep pesticides separated from people, pets, or livestock while traveling. Don't put your food and clothing or animal feed near the pesticides. Tie down the pesticide containers or take other steps to make them secure.

Storing Pesticides

1. If you work in a storage area for pesticides, what safety rules do you need to observe?

   Make sure that the containers are closed and stored upright. Check containers for leaks. Lock the area. Report problems to your boss immediately.

2. Why should the storage area be locked?

   To keep people and animals away from the pesticides and potentially harmful exposure.

Mixing and Loading Pesticides

1. Why it is especially important to observe safety rules when mixing and loading pesticides?

   Because unmixed pesticides are often in a concentrated form and can be very dangerous.

2. What are the safe procedures to follow when opening pesticide containers?

   Wear chemical-resistant gloves and an apron over your other PPE, and wear protective eyewear. Put the pesticide container on a flat surface and open it carefully. Use a sharp knife or scissors to open paper and cardboard containers. Do not rip open pesticide containers. Be sure to label the knife or scissors *For Pesticide Use Only.*

3. What can you do to avoid splashes when pouring?

   Pour carefully. Keep your face and eyes well above the container. Get someone to help if the container is too big for you to lift easily by yourself.

4. What kinds of PPE should you wear when mixing and loading pesticides?

   In addition to your other PPE, wear a chemical-resistant apron and gloves and possibly protective eyewear.

5. Why do you need to follow the label directions when measuring?

   If you use too much or too little pesticide, there can be serious problems for the applicator, the crop, and the environment.

6. Why is it important to keep the hose above the level of the liquid in the tank?

   If there is no air gap between the hose and the liquid in the tank, the mix can run backward through the water hose and contaminate the water source. Equipment with a check valve will also prevent this problem.

7. Why should you avoid mixing, loading, or cleaning equipment near ponds, streams, wells, or ditches?

   Rinsewater with pesticide in it could run off into these water sources.

Cleaning Up Pesticide Spills

1. What are the basic safety principles to follow when dealing with a pesticide spill?

   First, protect yourself, other people, and the surrounding area. Clean up the spill only if you have appropriate PPE and cleanup materials. If in doubt, call for help and wait until it arrives. Send someone for help, if possible, but don't leave if no one else is there.

2. What are the three Cs of spill management?

   Control the spill; contain the spill; clean up the spill.

3. Name three actions to take to control a spill.

   Shut off the mixing or application equipment if it is leaking; turn the container upright if it has fallen; put a broken container inside another container.

4. How can you stop a spill from spreading?

   Use a mound of soil or other material to make a dike around the edge of the spill; rope off the area so that other people cannot walk through it.

5. How should you clean up a spill?

   Do not use water. Soak up liquid spills with special spill sponges or with soil, sawdust, clay, cat litter, or other absorbent materials.

6. What should you do if the spilled pesticide or the cleanup material is likely to blow around?

   Moisten it very slightly or cover it with a tarp.

7. What should you do with the spilled pesticides and contaminated cleanup materials?

   Sweep the spill and cleanup materials into plastic containers or special drums. Then ask your boss what to do with the waste.

Cleaning Pesticide Containers

1. How many times should you rinse empty containers?

   At least three times.

2. What are the steps for washing empty containers?

   Fill the empty container about 1/4 full of water, close it tightly, and shake or roll it so the water rinses the inside completely. Pour the rinsewater from the container into the mixing tank and rinse the container at least two more times. As an alternative to triple rinsing, use a pressure-rinse nozzle to wash the container, turning the nozzle in all directions to rinse the inside of the container thoroughly. Then drain the water into the mixing tank.

3. What should you do if a container cannot be rinsed?

   Empty it and then close it tightly.

4. What should you do with empty containers?

   Lock them away until they can be disposed of properly.

5. Name three things **not** to do with empty containers.

   Never leave empty containers lying around the worksite. Never use empty pesticide containers again for another purpose. Never take empty containers home with you.

6. If in doubt about what to do with empty containers, what should you do?

   Ask your boss.

Disposing of Pesticides and Pesticide Containers

1. Where can you look for directions about what to do with leftover pesticides?

   The pesticide label has directions, but requirements vary from state to state. You may have to check with your boss.

2. Who should know about state requirements for disposal?

   Your employer should check with the pesticide authorities in your state about what to do.

3. Is it safe to store leftover pesticides before getting rid of them?

   Yes, if the containers are closed and the storage area is safely locked.

Flagging

1. What are safe practices to follow when flagging for aerial application of pesticides?

   Wear all the PPE required on the pesticide label. Be sure all people and animals are out of both the treatment area and nearby areas where the pesticide could drift. Be sure you are out of the area before spraying begins. Keep upwind of the treatment area.

Applying Pesticides

1. What are safe practices to follow before applying pesticides to any area?

   Read the application instructions on the label. Wear all the PPE you need to protect yourself. Make sure the application equipment works properly. Turn it off if you need to fix it. Be sure that all people and animals are out of the treatment area and nearby areas before you begin. Check the weather conditions and don't apply pesticides if it is windy or likely to rain soon.

2. While applying pesticides, what should you be careful about?

   Keep pesticides out of water supplies. Don't apply pesticides when the wind is blowing. Read and follow the Environmental Hazard Statement on the label to avoid causing harm to wildlife. Apply pesticides evenly. Watch for clogged nozzles or hoppers; clean them with a nonmetal tool if necessary.

3. After applying pesticides, what should you do?

   Keep your PPE on and follow your boss' instructions for cleaning your equipment. Then put the equipment away; don't leave it in the treated area.

Cleaning Up

1. What is the first thing to do after you finish working with pesticides? Why is this so important?

   Take off your PPE. You and others do not want to risk exposure to pesticides that may still be on the PPE.

2. What are safe practices to follow when taking off your PPE?

   Be careful not to get pesticides on your skin or inner clothing. Wash the outside of your gloves while you are still wearing them; if possible, keep the gloves on while taking off the rest of your PPE. Peel down your coverall and take off other PPE. If you have already removed your gloves, touch the outsides of the PPE as little as possible.

3. Which parts of your body should you wash immediately after peeling off PPE?

   Your hands, face, and any other areas exposed to pesticides.

4. What is a safe way to wash PPE by hand?

   Wear gloves. Use mild soap or mild detergent and very warm water. Wash both inside and outside PPE like gloves, boots, and respirator facepieces.

5. Which PPE should be thrown away after use?

   Respirator filters, cartridges, canisters, and some types of coveralls, gloves, shoe coverings, and aprons. Your employer should tell you how long they can be worn before throwing them away. You should also throw out coveralls or work clothes that are soaked with pesticides.

6. At the end of the workday, what should you do to ensure that you have no pesticides anywhere on you?

   Take off your work clothes, shower, and put on clean clothes. Put used work clothes into a container until they can be washed. Do not wear work clothes while riding home.

7. How can you protect your family from pesticide contamination?

   Don't take PPE home unless it has been cleaned. Wash your work clothes separately from your family's clothes.

8. What is the procedure for machine washing work clothes or coveralls that have been exposed to pesticides?

   Wash only a few items of clothing at one time. Use heavy-duty detergent and lots of hot water. Use warm water to rinse. Rinse twice. Use two machine cycles for items of clothing that are moderately to heavily contaminated.

9. What is the recommended way of drying work clothes that have been exposed to pesticides?

   Hang them on a clothesline outside.

10. How should you clean your washing machine after doing your work clothes and before doing family laundry?

    Run the washer through one more cycle without laundry but with detergent and hot water.

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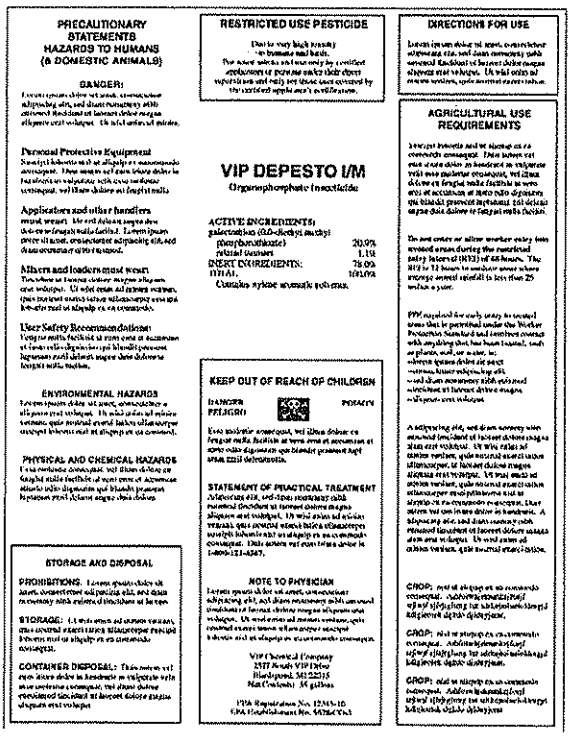

OVERVIEW

Pesticide Regulation

A Brief History

Few chemicals have had as much impact or been the subject of as much controversy in recent decades as pesticides. Introduced on a massive scale following the Second World War, pesticides have become an integral part of American agricultural production, making possible the most plentiful and the safest food supply in human history.

Over time, however, public concerns have mounted about the toxic effects of chemical pesticides. Pesticide residues in food, farmworker exposure to pesticides, and pesticide contamination of groundwater have all contributed to a growing unease over the widespread use of pesticides.

Some of these concerns have had beneficial results. Consumers are using more caution in handling pesticides and in limiting their exposures to pesticides in food. In the agricultural community, many growers are using fewer chemical pesticides and adopting a more integrated approach to managing pests. And new pesticides coming on the market tend to be less toxic than the chemicals they replace. While all of these are encouraging signs, pesticides nevertheless remain a fact of our daily lives. Managing pesticides to minimize their risks and maximize their benefits is the task we face.

The U.S. Environmental Protection Agency (EPA) has been charged by Congress with the job of regulating the use of pesticides and balancing the risks and benefits associated with pesticide use.

To carry out this task, EPA has developed a variety of regulatory and educational programs to protect human health and the environment from the harmful effects of pesticides. These programs include registering pesticides for specific uses, setting tolerances that limit the amount of pesticide residues allowed on food, setting standards to protect workers who are exposed to pesticides, certifying and training pesticide applicators, and educating consumers about pesticide use and exposure.

EPA's Role

EPA regulates the use of pesticides in the United States under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). No pesticide may legally be sold or used in the United States unless it bears an EPA registration number. It is a violation of the law for any person to use a pesticide in a manner inconsistent with its label.

FIFRA gives EPA the authority and responsibility for registering pesticides for specified uses, provided that such uses do not pose an unreasonable risk to human health or to the environment. FIFRA includes provisions for monitoring the distribution and use of pesticides and imposing civil as well as criminal penalties for violations.

State Enforcement

Since 1978, States and Tribes have been given primary enforcement responsibility for pesticide use violations, subject to oversight by EPA. Through cooperative enforcement agreements, all States (except Wyoming) and several Tribes have assumed primary enforcement responsibility. (EPA sets FIFRA enforcement policy and conducts compliance monitoring and enforcement programs in Wyoming.)

Cases of pesticide misuse or accidents should be reported to the State or Tribal agency with responsibility for pesticides—generally the State Department of Agriculture. Such cases also may be reported to an EPA Regional Office.

The Revised Worker Protection Standard

In August 1992, EPA issued revised regulations governing the protection of employees on farms, forests, nurseries, and greenhouses from occupational exposures to agricultural pesticides.

The new Worker Protection Standard (WPS) covers both workers in areas treated with pesticides and employees who handle (mix, load, apply, etc.) pesticides for use in these areas.

EPA determined that its previous regulations were inadequate to protect agricultural workers and pesticide handlers who are occupationally exposed to pesticides. The revised regulations are intended to reduce the risk of pesticide poisonings and injuries to agricultural workers and pesticide handlers through appropriate exposure reduction measures.

The regulations expand the requirements for warnings about pesticide applications, use of personal protective equipment, and restrictions on entry to treated areas. New requirements are added for decontamination, emergency assistance, maintaining contact with handlers of highly toxic pesticides, and pesticide safety training.

Pesticide registrants are required to add appropriate labeling statements referring to these regulations and specifying application restrictions and other requirements.

The provisions in the revised Worker Protection Standard apply to the working conditions of two types of employees:

- **Agricultural workers**—those who perform tasks related to the cultivation and harvesting of plants on farms or in greenhouses, nurseries, or forests, and
- **Pesticide handlers**—those who handle agricultural pesticides (mix, load, apply, clean or repair equipment, act as flaggers, etc.).

The Health Risks of Pesticides

The dangers of pesticide poisoning are real. Short-term exposures to pesticide residues or sprays can result in acute illnesses ranging from headaches, eye irritation, and upper respiratory complaints to depression and fatigue. Exposures to high levels of some pesticides over a long period of time can inhibit an enzyme called cholinesterase, causing symptoms such as nausea, weakness, dizziness, excessive sweating, salivation, vomiting, abdominal pain, diarrhea, blurred vision, slurred speech, and rapid heart rate.

The effects of chronic exposure to low levels of pesticides can be as serious or more serious. The medical literature links pesticides to a variety of chronic diseases including cancer (particularly leukemia), birth defects, blood disorders, sterility, abnormalities in liver and kidney function, genetic damage, and neurological, psychological, and behavioral effects.

How Many People Are Affected?

Millions of people are exposed to pesticide products or residues through their work. Farmers and agricultural workers and their families are potentially at risk from direct, indirect, or accidental exposure to pesticides. This includes breathing pesticide fumes, having skin contact with pesticide residues or pesticide spills, and swallowing or absorbing pesticides from contaminated water.

Some 10,000–20,000 acute pesticide poisoning incidents are diagnosed annually by physicians. However, this statistic is probably only a fraction of the true number of cases. All available evidence indicates that pesticide-related illnesses frequently go unrecognized and, even when recognized, often go unreported.

Benefits of the Revised WPS

The new standard offers the opportunity for growers, workers, and handlers to help protect themselves and one another from pesticides. **Compliance with the new rule is expected to avert 80 percent of the adverse health effects of pesticides.** Associated benefits to employers include reduction of lost work time, reduced medical expenses, and increased productivity.

WPS Pesticide Safety Training for Pesticide Handlers

Who Needs Pesticide Safety Training?

The revised WPS requires pesticide safety training for all agricultural workers and for pesticide handlers. Workers, in general, perform hand labor tasks such as weeding, planting, cultivating, and harvesting or other tasks involved in the production of agricultural plants. Pesticide handlers, in general, mix, load, or apply pesticides, or do other tasks that bring them into direct contact with pesticides. (See page 95ff for the complete definition of *pesticide handler* and for a description of each of the protections provided to pesticide handlers by the WPS.)

Separate WPS training programs are required for pesticide handlers and for agricultural workers. EPA has developed training materials for both programs.

Employers need not provide an agricultural worker or pesticide handler with WPS safety training if the worker or handler has received the appropriate WPS training within the last 5 years or if the worker or handler currently is trained as a certified applicator of restricted use pesticides.

When Must Pesticide Handlers Be Trained?

After April 15, 1994, pesticide handlers must be trained before they do any handling task.

How Often Must Pesticide Handlers Be Retrained?

The WPS requires that pesticide handlers be retrained at least once every 5 years, counting from the end of the month in which the previous training was completed.

What Is the Purpose of This Handbook?

This handbook was prepared to provide WPS basic pesticide safety training to pesticide handlers. It also provides valuable information that—

- Explains the WPS safety training requirements for pesticide handlers.
- Provides helpful advice for training delivery.
- Describes the EPA training verification program.
- Describes the WPS protections for pesticide handlers.

What Materials Must Be Used in the Training Program?

The WPS lists 13 concepts that must be covered in pesticide handler safety training (see details below). To conduct valid pesticide handler safety training, trainers must cover at least these 13 concepts. They must use written and/or audiovisual materials and they must present the training orally or audiovisually.

Protect Yourself from Pesticides is a safety program developed by EPA to cover these 13 concepts. Other organizations are also developing training materials that meet the WPS pesticide handler training requirements. EPA will be compiling and updating a listing of some of these materials. The list will be available from EPA Headquarters and the EPA Regional Office in your area.

Are There Training Requirements in Addition to the WPS Requirements?

Some States and Tribes have additional requirements for pesticide safety training for pesticide handlers. They also may require that retraining be provided more often than every 5 years. Contact the agency responsible for pesticide enforcement in your area to obtain information needed to comply with all State or Tribal requirements.

What Are the Criteria for Pesticide Handler Training?

Safety Training Topics

WPS training for pesticide handlers must include at least the following 13 concepts:

- Format and meaning of information on pesticide labels and in labeling, including safety information such as precautionary statements about human health hazards.
- Hazards of pesticides resulting from toxicity and exposure, including acute effects, chronic effects, delayed effects, and sensitization.
- Routes through which pesticides can enter the body.
- Signs and symptoms of common types of pesticide poisoning.
- Emergency first aid for pesticide injuries or poisonings.
- How to obtain emergency medical care.
- Routine and emergency decontamination procedures, including emergency eyeflushing techniques.
- Need for and appropriate use of personal protective equipment (PPE).
- Prevention, recognition, and first aid treatment of heat-related illness.
- Safety requirements for handling, transporting, storing, and disposing of pesticides, including general procedures for spill cleanup.
- Environmental concerns such as drift, runoff, and wildlife hazards.
- Warnings about taking pesticides or pesticide containers home.
- An explanation of WPS requirements that handler employers must follow for the protection of handlers and others, including the prohibition against applying pesticides in a manner that will cause contact with workers or other persons, provisions for training and decontamination, and the protection against retaliatory acts.

Requirements for Trainers

The person who conducts pesticide handler training must—

- Currently be a certified applicator of restricted use pesticides
  OR
- Currently be designated as a trainer of certified applicators or a trainer of pesticide handlers by a State, Federal, or Tribal agency having jurisdiction
  OR
- Have completed a pesticide safety train-the-trainer program approved by a State, Federal, or Tribal agency having jurisdiction.

Use of Training Materials

Anyone who conducts handler training must—

- Use written and/or audiovisual materials.
- Present the training orally or audiovisually.
- Present the information in a manner that the trainees can understand, using a translator, if necessary.
- Respond to trainees' questions.

Materials used for the training may be those developed or approved by EPA or can be materials that include at least the 13 concepts listed above under Safety Training Topics.

NOTES FOR TRAINERS

Trainers' Goals

- To help pesticide handlers stay safe and healthy when they work around pesticides.
- To familiarize pesticide handlers with pesticide safety information.
- To meet the training requirements of the Worker Protection Standard (WPS) and any local training requirements.

Trainees' Goals

As a result of this safety training program, handlers should be able to protect themselves from pesticides because they know—

- How to prevent exposure to pesticides.
- What to do if they are exposed to a pesticide.
- Where to get information about pesticides.
- What employers must do to help protect pesticide handlers from pesticides used at work.

Materials Needed

To ensure coverage of the 13 concepts required by WPS, trainers are encouraged to use this handbook developed by EPA or other pesticide handler training materials approved by EPA.

Training Time

Allow at least 90 minutes to present the required information. Trainers must allow time for questions and answers.

Recommended Preparation

Before the training session

- Identify where and when the training will take place.
- Find out about the trainees' backgrounds: Who are they? Where are they from? What kind of handler activities have they done in the past? What kind of work are they doing now? Have they ever been trained about pesticides or pesticide safety before? How much do they already know about pesticides? This information will help you make the training appropriate for each specific group of trainees.
- If you speak only English and the trainees do not, you must arrange for a translator.
- Remember, some handlers may not read, either in English or in their native language. If you plan to use materials or activities that require the trainees to read, be sure to consider those in the group who do not read. Try to make the activity meaningful in a way that will not embarrass anyone in the group. For example, combine reading (by those who can read) with demonstrating (by those who cannot read).
- Determine the size of your audience.
- Obtain the appropriate number of copies of the materials that you need.
- Obtain the necessary equipment. For example: a slide projector, a screen, a small table if you are using a flipchart, a VCR if you plan to use a videotape.

- Become familiar with the training materials that you will be using. Read the objectives for each section. Study the information and the review questions and answers for each section. Consider the optional opening questions and the additional training tips that are described here.
- Arrive at least 15 minutes before the training session is scheduled to start.

During the Training Session

- If you were unable to find out about the trainees' background in advance, spend a few minutes at the start of the training session getting to know them.
- Trainees remember what they **see and hear** better than what they only hear. Make sure everyone you are training can see the illustrations and hear you. If you are using only the handbook for training, make sure there are enough copies so that everyone can easily see the illustrations.
- You will present the safety information in this training program to the handlers mainly by reading the text to them.
- However, the trainees shouldn't remain silent or passive during the entire training session. At a minimum, you should ask review questions at the end of each section. WPS requires you to allow time for the handlers to ask questions about the information provided in the training course.
- When you ask questions, give the trainees enough time to think about their answers. Allow a few moments of silence. Try not to answer your own questions. Be a good listener.
- Adults bring a wide range of experience to a training session, and they learn from each other by sharing their experiences. Whenever possible, involve your audience. Ask questions to lead them, based on their own work experiences, to suggest ways to protect themselves. Ask them to give specific examples of how to practice the safety steps described in your training. Encourage them to talk about how the new regulations affect them at their worksites.
- Encourage everyone to say something. Rephrase the question(s) if they don't seem to understand.
- Whenever possible, demonstrate a point for the trainees. Better yet, ask the trainees themselves to demonstrate points from the training program. If they can see real examples that apply to where they work, they will remember the concepts better than if they just look at the illustration.

Additional Training Tips

- Time permitting, it is very useful to begin each section with an opening question. A carefully chosen, open-ended question stimulates the trainees to think about one or more of the issues that are going to come up in the section. Their answers or comments provide a perfect lead-in to your presentation of the information in the section. Optional opening questions can be found at the beginning of each training unit.
- Try using some of the illustrations as a starting point for a short discussion. For example, point to the illustrations on the cover and ask—
  - Does this resemble your worksite?
  - Do you work in these conditions?
  - Do you do this at work?

Using This Handbook

The Handbook consists of the Guide for WPS handler safety training and supplementary materials. The Guide is divided into an introduction, 17 short units, and a conclusion. Each training unit includes objectives, opening questions, and suggested discussion questions for review. Answers to the review questions can be found on pages 70–83. The supplementary material at the end of this handbook provides an overview of pesticide regulation and WPS training requirements, training notes, a summary of the training verification program, and details about the protections that WPS requires for pesticide handlers.

You may find it helpful to go over the objectives with the trainees at the start of a new section. As stated earlier, opening questions help focus the trainees' attention on the subject to be presented. Asking trainees the review questions at the end of the section helps reinforce the information you have just presented. This also lets you know if there are things the trainees don't understand. If they have trouble answering the questions at the end of a section, try going over the key points again. The review questions may also help start a group discussion if time permits.

TRAINING VERIFICATION

About the Training Verification Program

The Training Verification Program is a voluntary program to document that pesticide handlers (and agricultural workers) have completed pesticide safety training that satisifes WPS requirements. This program benefits employers, trainers, and employees alike. It minimizes the need for retraining and maximizes the effective use of training resources.

The Trainer's Role in the Training Verification Program

If your State or Tribe chooses to join this program, you may participate by taking these steps:

- Enter into an agreement either with the State or Tribal agency responsible for WPS training in your area or with a training organization that is approved to offer WPS training by the State or Tribal agency.
- Use only EPA-developed or EPA-approved materials to conduct training.
- Issue EPA training verification cards to pesticide handlers who have been properly trained.
- Obtain the information listed on the cards issued.
- Keep a roster of those trained, including the unique number of the card issued to each handler, until the training verification card expires.
- Promptly respond to any request from EPA, State, or Tribal agencies or agricultural employers for information concerning training verification cards you have issued.

Remember that participation in the Training Verification Program is voluntary. You are required to issue cards and maintain records only if you choose to participate.

You may choose not to participate in the Training Verification Program. In that case, handlers and workers trained by you could still meet the WPS requirements for training, but you would not be able to issue verification cards.

WPS PROTECTIONS FOR PESTICIDE HANDLERS

Employers of the persons defined as *pesticide handlers* in the WPS must comply with the WPS and assure that each of their pesticide handler employees receives the Federal WPS protections.

The WPS defines the term *pesticide handler* very specifically. The complete definition is given on the last page of this section. In general, pesticide handlers mix, load, or apply pesticides or do other tasks that bring them into direct contact with pesticides.

Complete Information about WPS Protections

Each of the Federal WPS requirements for pesticide handler protection is outlined in this section. In addition, EPA has published a manual that fully explains the requirements of the WPS. That manual is entitled *The Worker Protection Standard for Agricultural Pesticides: What Employers Need To Know—How To Comply*. It is referred to simply as the How To Comply Manual.

The How To Comply Manual is available from the U.S. Government Printing Office. To find out where you can obtain a copy, contact the EPA Regional Office nearest you or the State or Tribal agency with jurisdiction over pesticide enforcement in your area.

The How To Comply Manual describes the Federal WPS protections for both pesticide handlers and agricultural workers. States, Tribes, or local governments with jurisdiction over pesticide enforcement may have additional worker protection requirements beyond the Federal requirements. These requirements are not described in the How To Comply Manual. Check with these agencies to obtain information about any additional requirements.

Employer Responsibilities to Pesticide Handlers

If a pesticide handler is employed on a farm, forest, nursery, or greenhouse, the owner or operator of that agricultural establishment is responsible for ensuring that each pesticide handler receives the WPS protections.

If the pesticide handler is employed by a business that applies pesticides, the owner or operator of that business must assure that the WPS protections are provided to the pesticide handlers.

Crop advisors who work for commercial crop advisor employers are considered to be pesticide handlers by the WPS. The commercial crop advisor employers must assure that their crop advisor employees are provided with the WPS protections.

Employers and the supervisors they employ must not prevent or discourage any handler from complying or attempting to comply with the WPS. They may not fire or otherwise retaliate against any handler who attempts to comply.

The WPS requires that both pesticide handlers and their employers make sure that each pesticide is applied so that it does not contact, either directly or through drift, anyone except appropriately trained and equipped handlers.

Enforcing the WPS

In general, the State or Tribal agency with jurisdiction over pesticide enforcement will enforce the requirements of the 1992 Federal Worker Protection Standard. To find out how to contact the pesticide enforcement agency in your area, contact the EPA Regional Office nearest you.

Compliance with the WPS is required when agricultural employers use a pesticide product that refers to the Worker Protection Standard on the product label. It is illegal to use a pesticide product in a manner inconsistent with its labeling; therefore, employers who do not comply with WPS requirements are in violation of Federal law.

How Will the WPS Protect Pesticide Handlers?

The WPS will reduce pesticide handler exposure to pesticides through requirements for—

- Personal protective equipment (PPE).
- Equipment safety.
- Monitoring of pesticide handlers.

The WPS will mitigate exposures that do occur through requirements for—

- Decontamination sites.
- Emergency assistance.

The WPS will inform pesticide handlers about the hazards of pesticides through requirements for—

- Pesticide safety training.
- Providing handlers with access to label information.
- A pesticide safety poster.
- A listing of pesticide applications on the establishment.

Protections for Pesticide Handlers—Detailed Descriptions

Personal Protective Equipment (PPE)

PPE includes coveralls, respirators, protective eyewear, and chemical-resistant suits, gloves, footwear, aprons, and headgear. The PPE required for the use of each pesticide product is specified on the pesticide label in the Hazards to Humans section.

Basic Responsibilities: Handler employers must make sure that pesticide handlers—

- Are provided with the PPE required for the task on the pesticide label.
- Use the PPE correctly and according to the manufacturer's instructions.
- Wear the PPE for the entire handling task.

NOTE: Handler employers may allow handlers to omit some of the PPE listed on the pesticide label for a handling activity if the handlers are using a closed system or are working in a cockpit or in an enclosed cab.

Each pesticide handler is responsible for wearing the required PPE during the entire handling task.

Specific Duties: Under the WPS, employers must fulfill the following duties for providing, cleaning, and maintaining PPE. They must—

- Provide handlers with the appropriate PPE in clean and operating condition.
- Make sure the handlers wear the PPE correctly and use it according to the manufacturer's instructions. If a handler wears a respirator, make sure that it fits the wearer correctly.

- Inspect all PPE before each day of use for leaks, holes, tears, or worn places, and repair or discard any damaged equipment.
- Provide handlers with clean places away from pesticide storage and pesticide use areas to—
  - Store personal clothing not in use.
  - Put on PPE at the start of each exposure period.
  - Take off PPE at the end of each exposure period.
- Take any necessary steps to prevent heat illness (too much heat stress) while PPE is being worn.
- Not allow any handler to wear home or take home PPE contaminated with pesticides.

Equipment Safety

Handler employers must make sure that pesticide handling equipment—the equipment used for mixing, loading, transferring, or applying pesticides—is inspected and repaired. Pesticide handling equipment must be inspected before each day of use for leaks, clogging, and worn or damaged parts.

Handler employers must make sure that pesticide residues are removed from pesticide handling equipment before anyone other than an appropriately trained and equipped handler is allowed to repair, clean, or adjust it.

Monitoring of Pesticide Handlers

Pesticide handlers are monitored when they are handling certain types of pesticides.

Pesticides with a Skull and Crossbones on the Label: At least once every 2 hours, someone must check on—by sight or by voice communication—any handler who is handling a pesticide that has a skull and crossbones symbol on its label.

Fumigants Handled in Greenhouses: Someone must maintain constant visual or voice contact with any handler who is applying or otherwise handling a fumigant in a greenhouse. This includes handlers who enter the greenhouse during fumigation to operate ventilation systems, to adjust tarps or other coverings used in the fumigation, or to check on concentration levels.

The person monitoring the fumigant handlers must be trained as a pesticide handler and must have immediate access to the PPE that the fumigant labeling requires for applicators.

Decontamination Sites

Handlers must be provided with a decontamination site for washing off pesticides and pesticide residues while they are doing handling tasks.

Decontamination Supplies: The decontamination site for handlers must include—

- Water—enough for emergency eyeflushing and for washing the entire body in case of emergency.
- Soap and single-use towels—enough for handlers' needs.
- A clean change of clothes, such as one-size-fits-all coveralls, to put on if the handler's garments are contaminated and need to be removed right away.

When the pesticide label requires the handler to wear protective eyewear, each handler must carry at least 1 pint of emergency eyeflush water. The eyeflush water must be immediately accessible, within seconds.

Location of the Decontamination Site: The decontamination site must be accessible to handlers and not more than 1/4 mile from where they are working.

The site may be located in an area treated with pesticides only if—

- It is an area where the handler is doing handling tasks.
- The soap, towels, and change of clothing are stored in closed containers.
- The water is either stored in a closed container or is running tap water.

Handlers mixing pesticides must have a decontamination site at the mixing area.

For a pilot who is applying pesticides aerially, the decontamination site must be at the aircraft's loading site or in the aircraft.

For tasks performed more than 1/4 mile from the nearest point reachable by vehicles (cars, trucks, or tractors), the decontamination site may be at the access point. In this case, clean water from springs, streams, lakes, or other sources may be used for decontamination if it is more readily available than the water at the decontamination site.

Wherever handlers remove their personal protection equipment (PPE) after handling tasks, the decontamination site must include soap, clean towels, and enough water to allow handlers to wash thoroughly after removing PPE.

Emergency Assistance

Emergency Transportation: Employers must make emergency transportation available to take the handler to an emergency medical facility from the agricultural establishment or from another handling site, such as a commercial handling establishment or an airport hangar.

Emergency Information: Promptly upon request, the employer must make the following information available to the handler or to the medical personnel treating the handler:

- Product name, EPA registration number, and active ingredients of the product(s) to which the handler may have been exposed.
- Antidote, first aid, statement of practical treatment, and other medical or emergency information from the pesticide label.
- Description of the way the pesticide was being used.
- The circumstances of the handler's exposure to the pesticide.

General Pesticide Safety Training

Pesticide handlers must be trained about general pesticide safety and about correct ways to handle pesticides. Handlers must be trained before they do any handling task. They must be retrained every 5 years.

NOTE: Handlers who are currently certified as applicators of restricted use pesticides need not receive WPS training.

The list of criteria for handler training presented on pages 89 and 90 of this handbook show each of the required components for pesticide handler safety training. Each of these components is included in the training program presented on pages 1–69 of this handbook.

Some trainers may issue EPA-approved training verification cards to trainees. In most cases the training verification program will be administered by the State or Tribal agency having jurisdiction over pesticides in your area.

Specific Instructions for Handlers

In addition to the general safety training, handlers must be given information from the pesticide label and be given access to the pesticide label itself. Before they do any handling task, handlers must be informed about all label information related to the safe use of the pesticide including—

- The signal word.
- Human hazard statements and precautions.
- Personal protective equipment (PPE) requirements.
- First aid instructions.
- Environmental precautions.
- Any additional precautions about the handling task to be performed.

Handlers must be instructed in the safe operation of equipment they will use, including how to avoid pesticide drift and how to use chemigation equipment safely.

Commercial handler employers must make sure that whenever one of their handlers will be doing pesticide handling tasks on an agricultural establishment, he or she is aware of specific information about the pesticide-treated areas on the establishment.

Pesticide Safety Poster

EPA has prepared an English/Spanish pesticide safety poster. This poster, or its equivalent, must be displayed at a central location on every agricultural establishment where pesticides are used.

Specific Information about Pesticide Applications

Pesticide handlers employed by an agricultural establishment will find an application list maintained at a central location on the establishment. The list must provide the following information about pesticides if the application has been made or the Restricted Entry Interval (REI) has expired in the last 30 days:

- Location and description of the treated area.
- The pesticide product name, EPA registration number, and active ingredients.
- The date and time of application.
- The restricted-entry interval.

Also at the central location, the agricultural employer must display emergency information including the name, telephone number, and address of the nearest emergency medical facility.

NOTE: Commercial pesticide handler employers do NOT need to display this information on the commercial pesticide handling establishment.

The Complete WPS Definition of *Pesticide Handler*

A pesticide handler is anyone who (1) is employed (including self-employed) for any type of compensation by an agricultural establishment or a commercial pesticide handling establishment that uses pesticides in the production of agricultural plants on a farm, forest, nursery, or greenhouse and (2) is doing any of the following tasks:

- Mixing, loading, transferring, or applying pesticides.
- Handling opened containers of pesticides.
- Acting as a flagger.
- Cleaning, handling, adjusting, or repairing the parts of mixing, loading, or application equipment that may contain pesticide residues.
- Assisting with the application of pesticides, including incorporating the pesticide into the soil after the application has occurred.
- Entering a greenhouse or other enclosed area, after application and before the inhalation exposure level listed on the product labeling has been reached or one of the WPS ventilation criteria has been met to—
  - Operate ventilation equipment.
  - Adjust or remove coverings, such as tarps, used in fumigation.
  - Check air concentration levels.
- Entering a treated area outdoors after application of any soil fumigant to adjust or remove soil coverings, such as tarpaulins.
- Performing tasks as a crop advisor—
  - During any pesticide application.
  - During any restricted-entry interval (REI).
  - Before any inhalation exposure levels or ventilation criteria listed in the labeling have been reached or one of the WPS ventilation criteria has been met (in greenhouses or other enclosed areas).
- Disposing of pesticides or pesticide containers.

For More Information

If you need more information about the Worker Protection Standard or have questions or concerns about pesticides, contact the agency responsible for regulating pesticides in your area or the EPA Regional Office nearest you.

Region 1 (MA, CT, RI, NH, VT, ME)

U.S. Environmental Protection Agency, Region 1
Pesticides and Toxic Substances Branch (APT)
1 Congress St.
Boston, MA 02203
(617) 565-3273

Region 2 (NY, NJ, PR, VI)

U.S. Environmental Protection Agency, Region 2
Pesticides and Toxic Substances Branch (MS-105)
2890 Woodbridge Ave., Building #10
Edison, NJ 08837-3679
(908) 321-6765

Region 3 (PA, MD, VA, WV, DE)

U.S. Environmental Protection Agency, Region 3
Toxics and Pesticides Branch (3AT-30)
841 Chestnut Building
Philadelphia, PA 19107
(215) 597-8598

Region 4 (GA, NC, SC, AL, MS, KY, FL, TN)

U.S. Environmental Protection Agency, Region 4
Pesticides & Toxic Substances Branch
(4-APT-MD)
345 Courtland St., N.E.
Atlanta, GA 30365
(404) 347-5201

Region 5 (IL, MI, MN, IN, OH, WI)

U.S. Environmental Protection Agency, Region 5
Pesticides and Toxic Substances Branch (SP-14-J)
77 W. Jackson Blvd.
Chicago, IL 60604
(312) 886-6006

Region 6 (TX, OK, AR, LA, NM)

U.S. Environmental Protection Agency, Region 6
Pesticides and Toxics Branch (6T-P)
1445 Ross Ave.
Dallas, TX 75202-2733
(214) 655-7235

Region 7 (MO, KS, IA, NE)

U.S. Environmental Protection Agency, Region 7
Toxics and Pesticides Branch (TOPE)
726 Minnesota Ave.
Kansas City, KS 66101
(913) 551-7020

Region 8 (CO, MT, ND, SD, UT, WY)

U.S. Environmental Protection Agency, Region 8
Toxic Substances Branch (8ART-TS)
One Denver Place, Suite 500
999 18th St.
Denver, CO 80202-2405
(303) 293-1730

Region 9 (CA, NV, AZ, HI, GU)

U.S. Environmental Protection Agency, Region 9
Pesticides and Toxics Branch (A-4)
75 Hawthorne St.
San Francisco, CA 94105
(415) 744-1090

Region 10 (WA, OR, ID, AK)

U.S. Environmental Protection Agency, Region 10
Pesticides and Toxic Substances Branch (AT-083)
1200 Sixth Ave.
Seattle, WA 98191
(206) 553-1918

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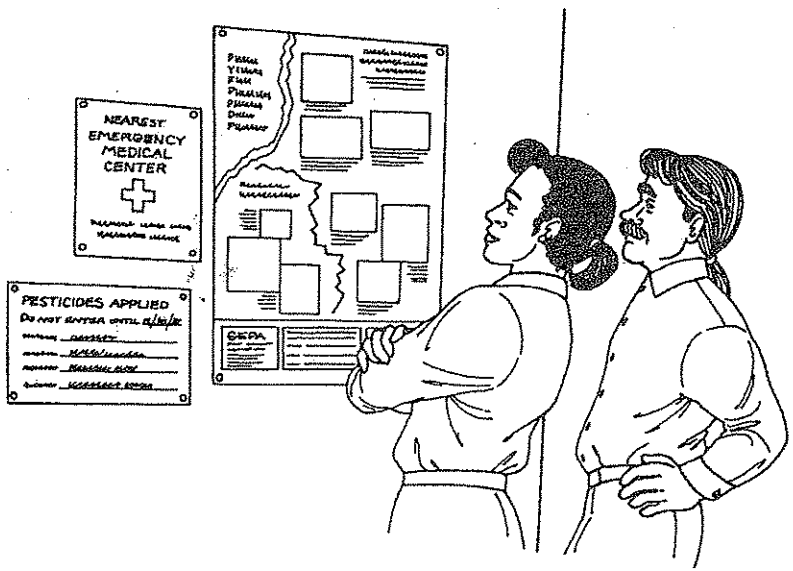
EPA

United States
Environmental Protection Agency
(7506C)
Washington, DC 20460

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