The National Association of State Departments of Agriculture (NASDA) Foundation would like to acknowledge the significant contributions of the University of California at Davis and the Association of Farmworker Opportunity Programs for the extensive use of their worker safety training materials which became the foundation and framework for this publication. The NASDA Foundation also thanks the members of the Train the Trainer Pilot Workgroup, part of the National Assessment of the Worker Protection Program, for their efforts in designing and implementing a pilot training project which led to the development of this trainer handbook.

Funding and support for this project was provided to the National Association of State Departments of Agriculture Foundation by the U.S. Environmental Protection Agency’s Office of Pesticide Programs

Cooperative Agreement X8-83235401
EDITORS AND REVIEWERS

Mario Saavedra  
*Senior Inspector*  
Pesticide Regulatory Programs  
Texas Department of Agriculture

Luis A. Urias  
*Agricultural Program Specialist*  
Division of Agricultural Resources  
Idaho State Department of Agriculture

Jennifer Weber  
*Pesticide Safety Field Consultant*  
Agricultural Consultation and Training Program  
Arizona Department of Agriculture

Richard Herrett  
*EPA Cooperative Agreement Project Manager*  
National Association of State Departments of Agriculture Foundation

Karen Lewis  
*Pesticide Safety Education & Training*  
Cooperative Extension Service  
Washington State University

Jerry Oglesby  
Region 6  
U.S. Environmental Protection Agency

Carolyn Schroeder  
Office of Pesticide Programs  
U.S. Environmental Protection Agency

Michael Walsh  
Office of Pesticide Programs  
U.S. Environmental Protection Agency
THE PURPOSE OF THE HANDBOOK

The purpose of this handbook is to provide guidance for training agricultural workers on farms, forests, nurseries, and greenhouses in order to meet the federal Worker Protection Standard (WPS) training requirements. It is designed to help trainers conduct effective training sessions. It does not provide guidance for training of early-entry workers or pesticide handlers.

This handbook begins with an introduction to pesticides and worker safety, including the federal regulations. It discusses each of the specific points that must be included in a WPS training session and contains valuable information to help trainers prepare for and conduct pesticide safety training.

This handbook focuses on effective ways to communicate WPS information. It describes a variety of training techniques that are adaptable to different training programs. It also addresses questions or problems that may arise during training and provides suggestions on how to resolve them.

Trainers are strongly encouraged to have familiarity with the WPS as well as state and local laws before conducting pesticide safety training.
# CONTENTS

## INTRODUCTION

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>xi</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## CHAPTER 1 BASIC PESTICIDE INFORMATION AND REGULATIONS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What Is a Pesticide?</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Reasons for Using Pesticides</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Pesticide Types and Formulations</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Pesticide Toxicity</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Danger or Danger-Poison</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Warning</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Caution</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Symptoms/Signs</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Types of Injuries</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Pesticide Labels</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Overview of Related Pesticide and Agricultural Regulations</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Federal Laws</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>State Laws</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Hazards Associated with Pesticide Use</td>
<td>10</td>
</tr>
</tbody>
</table>

## CHAPTER 2 THE WORKER PROTECTION STANDARD REGULATION

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The Worker Protection Standard</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>Who Is an Agricultural Employer?</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>Who Is an Agricultural Worker?</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>Goals of the Worker Protection Standard</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Goal 1 — Protect Agricultural Workers</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Notification of When Pesticide Applications Will Take Place</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restricted-Entry Intervals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A Note About Early-Entry Workers</td>
</tr>
<tr>
<td></td>
<td>Goal 2 — Provide Information</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pesticide Safety Information and Training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Posting of Pesticide Application Information</td>
</tr>
<tr>
<td></td>
<td>Goal 3 — Mitigation</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decontamination Supplies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emergency Assistance</td>
</tr>
</tbody>
</table>
CHAPTER 3  WORKER PROTECTION STANDARD WORKER TRAINING CONTENT

Worker Protection Standard Training for Workers:
11 Required Points .......................... 19

1. Where and in what form pesticides or pesticide residues may be encountered during work activities. ............ 20

2. Hazards of pesticides resulting from toxicity and exposure, including acute effects, chronic effects, and sensitization. .......... 20

   Immediate or Acute Health Effects
   Long-term or Chronic Health Effects
   Sensitization

3. Routes through which pesticides can enter the body .......... 21

   Skin Exposure
   Eye exposure
   Respiratory Exposure
   Oral Exposure

4. Signs and symptoms of common types of pesticide poisonings. ......... 22

5. Emergency first aid for pesticide injuries or poisonings ........... 23

   First Aid for Skin Exposure
   First Aid for Eye Exposure
   First Aid for Oral Exposure
   First Aid for Respiratory Exposure

6. How to obtain emergency medical care. ........................... 24

7. Routine decontamination procedures ............................. 25

8. Hazards from chemigation and drift. ............................... 25

   Chemigation
   Drift

9. Hazards from pesticide residue on clothing ........................ 26

10. Warnings about taking pesticides or pesticide containers home. .... 26

11. An explanation of the WPS requirements designed to protect agricultural workers, including application and entry restrictions, design of the warning sign, posting of warning signs, oral warnings, availability of specific information about applications, and protection against retaliatory acts ............. 27

   Central Posting of Pesticide Application Information
   Restrictions During Application
   Restricted-Entry Intervals (REIs)
   Notification of Pesticide Applications—When They Will Take Place
   Protection Against Retaliatory Acts

CHAPTER 4  PREPARING TO TRAIN

The Realities of Agricultural Work ................................. 29

Steps to Prepare for Training ................................. 30

   Identify Agricultural Workers to be Trained ........................ 30
   Obtain State and Local Information .............................. 30
   State Pesticide Regulations. .................................. 30
Crops and Cropping Cycles ........................................... 31
Profile of the Workforce ........................................... 31
Assess Your Audience .................................................. 31
Schedule the Training .................................................... 31
  When
  Where
Select and Review Training Materials .................................. 32
Obtain Training Equipment and Supplies .............................. 33
Consider Class Size and Training Methods .......................... 33
Consider Time Available .................................................. 33
Consider Your Personal Safety .......................................... 34

CHAPTER 5 TRAINING TECHNIQUES

Be Prepared—Know Your Material ........................................ 35
Create a Positive Environment for Learning ............................ 36
  Take Control .................................................................. 36
  Arrange the Room ......................................................... 36
  Show Your Face ............................................................ 36
  Help Agricultural Workers Feel Comfortable ......................... 36
Effective Public Speaking .................................................... 37
How Adults Learn ................................................................ 37
Design Your Training Sessions .............................................. 37
  Provide Interactive Training ........................................... 38
  Use Visuals .................................................................... 38
  Ask Questions .................................................................. 38
  Stay Focused ................................................................... 39
  Encourage Participation ................................................ 39
  Practical, Relevant, and Useful Training ............................... 40

CHAPTER 6 EXAMPLES OF INTERACTIVE TRAINING TECHNIQUES

Discussion ........................................................................... 42
  Tips for Using Discussion as a Training Technique .................. 43
  Training Activity Using Discussion ....................................... 43
Illustrations .......................................................................... 43
  Tips for Using Illustrations .............................................. 44
  Training Activity Using Illustrations ....................................... 44
Case Studies ......................................................................... 46
  Tips for Using Case Studies ............................................. 46
  Training Activity Using a Case Study .................................... 46
Worker Protection Standard Flip Chart .................................... 49
  Tips for Using the WPS Flip Chart ...................................... 49
  Training Activity Using the WPS Flip Chart .......................... 49
Role-Playing ......................................................................... 50
  Tips for Using Role-Play Activities ..................................... 50
  Training Activity Using a Role-Play ....................................... 51
Audiovisual Presentations ..................................................... 53
  Tips for Using Audiovisual Training Materials ......................... 53
  Interactive Training Using a Video ........................................ 54
CHAPTER 7  CONDUCTING THE TRAINING

Preparation Tips for Trainers .......................................................... 65
Getting Started ................................................................................. 66
Getting to Know the Participants .................................................... 66
Overcoming Communication Barriers ............................................. 66
Working with Interpreters ................................................................. 67
Your Attitude Is Important ................................................................. 67
Educate—Do Not Advocate ................................................................. 68
Respect Participants ......................................................................... 68
Challenges When Conducting Training .......................................... 68
  Regulation Versus Reality ............................................................... 68
  Physical Obstacles to Effective Training ....................................... 69
  Dealing with Difficult People ......................................................... 70
    The Overly Enthusiastic Person
    The Expert
    The Storyteller
    The Attacker
    The Inattentive Person
    The Uncontrollable Person
  Individuals with Special Issues ..................................................... 71
  Pesticide-Related and Community Resources ................................ 71
Ending the Training ........................................................................ 72
After the Training ............................................................................. 72

GLOSSARY ....................................................................................... 73

BIBLIOGRAPHY ............................................................................... 77
INTRODUCTION

In 1992, the federal Worker Protection Standard (WPS) was adopted into the Code of Federal Regulations. An important part of the WPS regulation requires agricultural employers to provide agricultural workers with information and training on how to avoid exposure to pesticides and pesticide residues.

WHY THE TRAINING IS IMPORTANT

Pesticides are substances used to target and manage pests, though they may also be toxic to non-target organisms. Agricultural workers, unlike pesticide handlers, do not apply or work directly with pesticides. However, individuals who work in or near recently treated areas and where handlers mix, load, or apply pesticides need information on how to avoid pesticide exposure and pesticide residues. Avoiding exposure to pesticides is very important because exposure may result in short-term (acute) and/or long-term (chronic) pesticide illnesses or injuries.

BENEFITS

Workers benefit from pesticide safety training by better understanding the potential risks of working in areas where pesticides are used and pesticide residues may be found. The training demonstrates what agricultural workers can do to keep themselves and their families from being exposed to pesticides and their residues.

Employers also benefit when workers learn how to protect themselves from pesticide exposures. A trained employee is much less likely to have a workplace accident that could result in lost work time, increased workers’ compensation insurance rates, and possible legal action.

Agricultural employers are required to provide WPS pesticide safety training to workers in a manner they can understand. Providing pesticide safety training to workers is not only a legal requirement, it is also a good business practice.
A pesticide is any substance used to prevent, destroy, repel, or mitigate insects, rodents, nematodes (certain types of worms), fungi (fungus), weeds, or any other organism considered a pest. Plant growth regulators, defoliants (EPA-registered pesticides that remove leaves from plants), desiccants (EPA-registered pesticides used for drying plant foliage), and insect repellents are also among the many substances regulated as pesticides. Fertilizers are chemicals that serve as nutrients to help plants grow but are not considered pesticides. Therefore, hazards associated with the use of fertilizers will not be addressed in this trainer handbook.

Consumer pesticides for use in and around homes for things such as lawn weed control, flea treatment for pets, and cockroach control, often contain the same ingredients used in commercial pesticides but generally at lower concentrations or in different formulations than those used on agricultural establishments.
CHAPTER 1: BASIC PESTICIDE INFORMATION AND REGULATIONS

There are several types of pesticides and reasons for their use. Pesticides have varying effects on humans depending on their chemical composition, formulation, and other factors. Some of the most commonly-used types of pesticides are:

- Insecticides—to control pest insects
- Herbicides—to control weeds
- Fungicides—to control fungi (fungus) and disease organisms
- Miticides—to control mites
- Nematicides—to control nematodes
- Rodenticides—to control rats, mice, and other rodents
- Algicides—to control algae

People apply pesticides to agricultural crops and to cropland in a variety of different forms. These include:

- dusts or powders
- granules or pellets
- liquid sprays
- gases

After a pesticide is applied, residues of the material may be present in the treated area for a period of time, ranging from a few days to several weeks or longer.

REASONS FOR USING PESTICIDES

Pesticides are important tools that help to manage weeds, insects, and crop diseases. Modern pesticides, combined with systematic pest monitoring and an array of non-chemical pest management methods, allow agricultural establishments to produce more food and fiber on less land. Use of pesticides may present risks to agricultural workers which are referenced later in this handbook. This enables growers to provide consumers with nutritious, abundant, and affordable supplies of food and fiber.

PESTICIDE TYPES AND FORMULATIONS

Toxicity is the potential of any pesticide to cause harm. Pesticides, by their nature, must be toxic to control the target pests for which they are intended. Some pesticides are more toxic to humans than other pesticides. Additionally, people differ in their susceptibility to injury from pesticides.

The signal words of Danger, Danger-Poison, Warning, and Caution on the pesticide label reflects the relative degree of toxicity and hazard to people and the environment:
Danger or Danger-Poison

The most potentially toxic or toxic pesticides have the signal word “Danger” and, if they are highly toxic to people, will also have the word “Poison” along with a skull and crossbones symbol on the label.

Warning

Pesticides that are moderately hazardous have the signal word “Warning” on their labels.

Caution

Pesticides having lower risk and presenting less hazard have the signal word “Caution” on their labels. Pesticides having the least risk may have no signal word.

The type and severity of injury or poisoning depends on the toxicity and type of action of the specific pesticide, the amount absorbed into the body, how fast it is absorbed, and how fast the body is able to break it down and excrete it.

The severity of pesticide-related injury can be reduced through prompt first aid (usually decontamination) and medical treatment.

Depending on the toxicity of the pesticide, exposure to a sufficient amount of the product or its residue may cause (mild to severe) illness and, in some cases, death. Effects of exposure may be confined to one part of the body—such as irritation of the eyes, skin, or throat, or more general—when pesticides are absorbed through the skin, membranes, or intestines and carried to internal organs. Some pesticides may affect several different organ systems at the same time.

Symptoms/Signs

Symptoms are any abnormal condition or change in health function that a person sees or senses, or that can be detected by medical examination or laboratory tests. These symptoms indicate the presence of an injury, disease, or disorder.

When someone has been exposed to a single dose of pesticide large enough to produce injury or poisoning, they may experience an immediate or delayed appearance of symptoms. Symptoms that are observed soon after exposure are known as “acute onset.”

Persistent symptoms are considered to be “chronic effects”, typically resulting from multiple or one single exposures to the pesticide. Sometimes symptoms from repeated pesticide exposure may not show up for weeks, months, or even years. These delayed symptoms may be difficult to associate with their cause because of the lapse of time between exposure and observable effect.

Poisoning symptoms vary among classes of pesticides and pesticides within a class. For example, pesticides that control weeds (herbicides) can be less toxic than some pesticides used to control insects (insecticides). The severity of symptoms is usually proportional to the amount of pesticide (dosage) entering the person’s body.

Symptoms and signs of pesticide exposure may include, but are not limited to skin rash, headache, nausea, vomiting, diarrhea, irritation of the eyes, nose, throat, blurred vision, dizziness, heavy sweating, weakness, extreme thirst, and blistered skin. Pesticide poisoning may also result in restlessness, anxiety, unusual behavior, shaking, convulsions, or loss of consciousness. Although any of these symptoms can indicate pesticide poi-
soning, they also may be signs of other physical disorders or diseases. Some symptoms like nausea and vomiting, or headache can be difficult to distinguish from heat stress, flu, food poisoning, allergies, or a cold. Diagnosis usually requires careful medical examination, laboratory tests, and observation.

**Types of Injuries**

An injury can result from either a single large dose being absorbed during one pesticide exposure incident, or from smaller doses absorbed during repeated exposures over an extended period of time. The illness may be acute—having a sudden onset and lasting for a short duration, or it may become chronic—persisting for a long time. Injuries caused by pesticides usually are reversible; that is, they can either be repaired by the natural processes of the body or through some form of medical treatment. Significant exposure to some pesticides, however, may cause irreversible or permanent damage that can result in a chronic illness, disability, or, in rare instances, death.

The equation above shows that the total risk to a worker if exposed to a pesticide is a function of the toxicity of the pesticide multiplied by the duration and magnitude of the exposure. Without someone actually being exposed, toxic chemicals pose no risk.

**PESTICIDE LABELS**

The label is the most important part of pesticide packaging. The label contains information on how to protect someone from pesticide poisoning and information on how to apply the pesticide properly.

As mentioned before, the label’s signal word indicates the toxicity of a pesticide product. The label lists all personal protective equipment (PPE) required to handle the pesticide, lists the crops and areas to which it can be legally applied, describes the amounts and methods that should be used in its application, and provides first aid and safety information.

Labels contain important information that can be used during pesticide safety training for agricultural workers. The pesticide label for the fictitious miticide Acaramort is shown as an example on the next three pages.

**Hazard (Risk) = Toxicity x Exposure**

Signal words indicate the relative acute toxicity of the product to humans and animals.
ACARAMORT
AGRICULTURAL MITICIDE
RECOMMENDED FOR AGRICULTURAL USE ONLY

AGRICOCUEH INTERNATIONAL

COMPOSITION

Active ingredients: (% by weight)
Propargite [2-(p-tert-butylphenoxy) cyclohexyl 2-propynyl sulfite]* ............... 73.0%
Inert ingredients .......................................................... 27.0%
Total .................................................................. 100.0%

*Contains 6.55 lb. technical PROPARGITE per gallon

AGRICOCUEH INTERNATIONAL, INC. PETROVILLE, PA 19099
EPA REG. No. 999-909
EPA EST. No. 999-PA-1
ACARAMORT is a registered product of Agricoqueh International, Inc.
©Copyright 1995, Agricoqueh International, Inc.

KEEP OUT OF REACH OF CHILDREN

TO THE USER: Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

STATEMENT OF PRACTICAL TREATMENT

If in eyes: Immediately flush eyes with plenty of water. See a physician.
If inhaled: Remove person to fresh air. Apply artificial respiration if symptoms indicate. Call a physician.
If on skin: Wash thoroughly with soap and water. Get medical attention.
If swallowed: Do not induce vomiting. Drink promptly a large quantity of milk, egg whites, or gelatin solution. If these are not available, drink large quantities of water. Avoid alcohol. Call a physician or Poison Control Center immediately.

PRECAUTIONARY STATEMENTS
HAZARDOUS TO HUMAN AND DOMESTIC ANIMALS

DANGER
Corrosive, causes eye damage. May be fatal if inhaled. Harmful if swallowed or absorbed through skin. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Wash hands and face thoroughly with soap and water after use and before eating, drinking, or smoking.

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

Applicators and Other Handlers Must Wear: A long-sleeved shirt and long pants; chemical-resistant gloves such as Nitrile, Butyl, barrier laminate, neoprene rubber, polyvinyl chloride, or viton; shoes plus socks; protective eye wear; chemical-resistant headgear for overhead exposure; chemical-resistant apron when cleaning equipment, mixing, or loading; dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C) or a NIOSH approved respirator with any R, P, or HE filter. Applicators, if applying more than 2 pints of ACARAMORT per acre in air blast equipment to citrus, must be in an enclosed cab. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product’s concentrate. Do not reuse them. Follow manufacturer’s instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.
CHAPTER 1: BASIC PESTICIDE INFORMATION AND REGULATIONS

USER SAFETY RECOMMENDATIONS

Users should:
- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not apply directly to water or wetlands (swamps, bogs, marshes, and potholes.)
Drift or runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters.

PHYSICAL OR CHEMICAL HAZARDS

Flammable. Keep away from heat and open flame.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

ACARAMORT is a liquid emulsifiable concentrate for preparing sprays to control banks grass, Pacific spider, strawberry spider and two-spotted spider mites. ACARAMORT is not systemic in action; therefore complete coverage of both upper and lower leaf surfaces and of fruit is necessary for effective control. After three-quarters full of water, add recommended dosage (from table) of ACARAMORT to the spray tank. Fill tank, agitate and spray thoroughly to cover foliage and fruit for best results.

AGRICULTURAL USE REQUIREMENTS

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

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 7 days.

Exception: After the first 48 hours of the REI, workers may enter the treated area to perform hand labor or other tasks involving contact with anything that has been treated, such as plants, soil, or water, without time limit, if they wear the early-entry worker PPE listed below.

PPE required for early-entry to treated areas that are permitted under the Worker Protection Standard and that involves contact anything that has been treated, such as plants, soil, or water, appears below:
- coveralls
- chemical-resistant headgear
- chemical-resistant gloves, such as nitrile, butyl, barrier laminate, neoprene rubber, polyvinyl chloride, or viton
- shoes plus socks
- protective eyewear

Notify workers of the application by warning them orally and by posting warning signs at the entrances to treated areas.
USE RESTRICTIONS

Do not apply this product through any type of irrigation system. Do not mix ACARAMORT with alkaline materials, (such as lime, Bordeaux mixture, or lime sulfur) or with materials containing a large amount of petroleum type solvents. Do not use in spray solution above pH 10. Do not plant any food or feed crop in rotation within 6 months after last application of propargite unless the crop is a registered use for propargite. Cotton — apply only before bolls open. Do not feed treated foliage or cotton trash to livestock.

DOSAGE INSTRUCTIONS

<table>
<thead>
<tr>
<th>Crop</th>
<th>Mites Controlled</th>
<th>Timing of Application</th>
<th>Amount of Acaramort per Acre</th>
<th>Gallons of Spray Solution per Acre per Year</th>
<th>Total No. of Sprays</th>
<th>Earliest Harvest Days After Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ground Application</td>
<td>Aerial Application</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td>Strawberry spider</td>
<td>Early</td>
<td>1 pint</td>
<td>15 to 30</td>
<td>Not recommended</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Pacific spider</td>
<td>Mid-season to Layby</td>
<td>1.5 – 2 pints</td>
<td>25 to 40</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Two-spotted mites</td>
<td></td>
<td>2 pints</td>
<td>-----</td>
<td>5 to 15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Layby</td>
<td>2 pints</td>
<td>25 to 50</td>
<td>5 to 15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Layby to boll opening</td>
<td>2 pints</td>
<td>-----</td>
<td>5 to 15</td>
<td></td>
</tr>
</tbody>
</table>

STORAGE AND DISPOSAL

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

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

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.
The pesticide label example has a number of major sections that you should know.

<table>
<thead>
<tr>
<th>1</th>
<th>Product Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Ingredient Statement</td>
</tr>
</tbody>
</table>

This section identifies the active ingredient(s) by chemical or common name, the percentage by weight of each active ingredient, and the percentage by weight of inert ingredients.

**Active Ingredient:** The active ingredient will prevent, destroy, repel, or mitigate the pest, or that functions as a plant regulator, desiccant, defoliant, synergist, or nitrogen stabilizer. In Acaramort, the active ingredient is the chemical in the formulation that kills the mites.

**Inert Ingredient:** Any substance other than an active ingredient that is intentionally added to a pesticide product, such as solvents, stabilizers, spreaders or stickers, preservatives, surfactants, defoamers, etc. The inert ingredients are chemicals that do not have pesticidal action against the pests. They may or may not be toxic to people.

<table>
<thead>
<tr>
<th>3</th>
<th>Registrant Name and Address</th>
</tr>
</thead>
</table>

This section has the name and address of the company that has been registered to distribute the product.

| 4 | EPA Registration Number and Establishment Number |

This section identifies the company and product number assigned to the pesticide product and the establishment number that identifies where the pesticide product was produced. This section also covers Distributor Registration Numbers, Special Local Need Registration Numbers, and Experimental Use Permit Registration Numbers.

| 5 | Precautionary Labeling |

This section provides information regarding the potential toxicity, irritation, and sensitization hazards to humans associated with the use of a pesticide. This section also identifies the precautions necessary to avoid exposure, any personal protective equipment (PPE) that should be used when handling a pesticide, and first aid (Statement of Practical Treatment) in case of accidental exposure.

| 6 | Spanish Language Statement |

This section is found on pesticide labels with the signal word Danger, Danger-Poison, or Warning and is written in Spanish. It says, “If you do not understand the label, find someone to explain it to you in detail.”

| 7 | Environmental Hazards |

This section provides the precautionary language advising of the potential hazards resulting from transport, use, storage, or spill of the product. The hazards may be to water, soil, air, beneficial insects, plants, and/or wildlife.

| 8 | Physical or Chemical Hazards |

This section identifies hazards
such as flammability, combustibility/explosibility, and precautions necessary when handling liquid products used around electrical equipment. In addition, there are special hazard statements for certain fumigants.

9 Directions for Use

This section provides instructions for use of the product, pests treated, application sites (i.e., crops, areas to be treated), application times, and any application equipment to be used. It also includes agricultural use requirements and restricted-entry intervals.

10 Agricultural Use Requirements

This section is specific to the Worker Protection Standard. It states that the pesticide can only be used in accordance with its labeling and with the Worker Protection Standard. It includes the restricted-entry statement, requirements for worker notification, and the personal protective equipment (PPE) required for early-entry activities.

11 Restricted-entry Statement

This is part of the Agricultural Use Requirements section. It identifies the time period that must pass before workers may reenter the field following pesticide application.

12 Storage and Disposal

This section identifies the precautions necessary for storing the pesticide product and disposing of both any unused pesticide and the pesticide container.

AGRICULTURAL USE REQUIREMENTS

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

Do not enter or allow worker entry into treated areas during the REI of 7 days.

Exception: After the first 48 hours of the REI, workers may enter the treated area to perform hand labor or other tasks involving contact with anything that has been treated, such as plants, soil, or water, without time limit, if they wear the early-entry worker PPE listed below.

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

- coveralls
- chemical-resistant headgear
- chemical-resistant gloves, such as nitrile, butyl, barrier laminate, neoprene rubber, polyvinyl chloride, or viton
- shoes plus socks
- protective eyewear

Notify workers of the application by warning them orally and by posting warning signs at the entrances to treated areas.

Example of an Agricultural Use Requirements box with a Restricted-entry Statement
Chapter 1: Basic Pesticide Information and Regulations

Overview of Related Pesticide and Agricultural Regulations

Federal Laws

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) governs the registration, sale, and use of pesticide products in the United States. The federal agency that regulates the use of pesticides is the U.S. Environmental Protection Agency (EPA).

Pesticides cannot be marketed in the United States until the EPA reviews an application for registration and determines whether it meets the safety standards and assigns a registration number to the acceptable product. FIFRA requires the EPA to balance the risks of using a pesticide with its benefits to society.

FIFRA's main provisions include:

- Requiring the EPA to make registration decisions on pesticides and their uses and to review and approve product labeling.
- Requiring the users of restricted-use pesticides to be certified as, or work under the direct supervision of, private or commercial applicators.
- Establishing tolerances for residues that may remain on raw agricultural products.
- Making it illegal to store or dispose of pesticides or their containers other than as directed by label requirements.
- Assessing civil and criminal penalties for misuse of pesticides.

FIFRA also gives the EPA the authority to write regulations. An important regulation is the Worker Protection Standard (WPS). More details are provided on the WPS later in this manual.

State Laws

The pesticide laws developed at the federal level are the minimum national guidelines that a state must follow for pesticide use and protection of people and the environment. A state may enact rules or laws governing parts of pesticide use that are stricter than the federal regulations.

Hazards Associated with Pesticide Use

Due to the nature of their jobs, agricultural employees frequently work in, around, or near areas that have been treated with pesticides and that may contain pesticide residues. Pesticide residues can be found on plants, in soils, in irrigation water, on equipment, in storage areas, in mixing and loading areas, and on work clothing and other areas. These residues can be transferred and people can become exposed to them through contact with any contaminated surface.

Residues are not usually visible so it is often difficult for agricultural workers to avoid contact. Therefore, they should take steps to protect themselves from exposure to these residues. These steps are discussed later in this manual and form the basis of the WPS worker training requirements.

Children, pregnant women, the elderly, and people who are already ill can face greater health risks if exposed to pesticides and their residues. Pregnant women are vulnerable because pesticide exposure may present a danger to them and their unborn child. The elderly, sick, and those with compromised immune systems may not have sufficient resistance to some types of pesticide effects.

Even if they do not enter pesticide...
treated areas, children may be at high risk for exposure to pesticide residues. Children increase their risks of exposure if they play in or near treated areas or irrigation ditches, live in labor camps, or play with empty pesticide containers.

Exposure may also occur if children near treated areas play outside barefoot or come in contact with pets that have been exposed to pesticides or their residues.

After working in a treated area, agricultural workers should shower and change into clean clothes to prevent exposing their children to pesticide residues. Workers should not mix their work clothes with the rest of the family’s laundry. Work clothes should be washed separately.

Although agriculture is one of the most hazardous occupations in the U.S., pesticide-related injuries and illnesses make up only a small percentage of agricultural workplace accidents that are reported. Experts recognize that under-reporting poses a significant challenge to determining the true number of pesticide-related injuries and illnesses.

Recognizing that even one injury or illness related to pesticides is unacceptable, trainers should encourage the agricultural workers to take all aspects of workplace safety seriously and follow the guidelines presented here to protect their health. All injuries and illnesses should be reported to the agricultural employer.
CHAPTER 2

THE WORKER PROTECTION STANDARD REGULATION

IN THIS CHAPTER...

The Worker Protection Standard .................................. 13
Who Is an Agricultural Worker Employer? ........................ 13
Who Is an Agricultural Worker? .................................... 14
Goals of the Worker Protection Standard .......................... 14
Additional Requirements of the Worker Protection Standard .... 17
Central Posting — Key Points ......................................... 18

THE WORKER PROTECTION STANDARD

The Worker Protection Standard (WPS) is a regulation developed by the United States Environmental Protection Agency (EPA) to protect agricultural workers from the harmful effects of pesticides and their residues. The WPS covers agricultural workers who are employed in the production of agricultural plants on farms, in forests, and in commercial nurseries and greenhouses.

The regulation requires employers to take steps to protect agricultural workers from pesticides and pesticide residues.

WHO IS AN AGRICULTURAL EMPLOYER?

An agricultural worker employer is anyone who:

• employs or contracts for the services of agricultural workers (including themselves and members of their families) for any type of compensation to perform tasks related to the production of agricultural plants, or
• owns or operates an agricultural establishment that relies on agricultural workers.
WHO IS AN AGRICULTURAL WORKER?

An agricultural worker is anyone who:
- is employed (including self-employed) for any type of compensation, and
- is doing work (such as harvesting, weeding, pruning, or irrigating) for the production of agricultural plants on farms, forests, nurseries, or greenhouses. (Note: This also includes mushroom houses where pesticides with WPS requirements are used.)

GOALS OF THE WORKER PROTECTION STANDARD

The WPS has three major goals:

1. To protect agricultural workers against possible pesticide exposure while they are working.

2. To provide information to agricultural workers that can help them avoid exposure to pesticide residues.

3. To mitigate or lessen the effects of any pesticide exposure that still occurs.

Goal 1—Protect Agricultural Workers

The WPS requires agricultural employers to provide three types of protection for agricultural workers to limit exposure to pesticides while working. These include notifying agricultural workers when pesticide applications will take place, establishing restricted-entry intervals (REIs) for pesticide-treated areas, and providing personal protective equipment (PPE) for early-entry workers.

Restricted-Entry Intervals

- The REI is the amount of time that must pass after a pesticide application before agricultural workers are allowed back into the treated area. There are some exceptions. (Please see chart on page 15.)
- The length of the REI can be found on the pesticide label, under Agricultural Use Requirements.
- REIs vary in length depending on several factors, such as the amount of time required for the risk to be reduced to a safe level, the type of crop, type of task, environmental factors, state and local regulations, environmental factors, and other conditions.
- Some labels may have different REIs for different crops or have multiple REIs for the same crop. For example, an insecticide could have an REI of 7 days for citrus fruits and an REI of 48 hours for many other crops.
- Any agricultural worker who enters the treated area before the expiration of the REI, must first receive training. Early-entry workers and pesticide handlers who have been trained and who wear the required PPE may enter the treated area during an REI to perform allowed tasks.

Notification of When Pesticide Applications Will Take Place

- Agricultural workers must be notified orally in a manner they can understand and/or through the posting of treated areas.
- Information about what kind of notification is required can be found on the pesticide label, under Agricultural Use Requirements.

Under the federal Worker Protection Standard (WPS), workers must be notified about areas treated with pesticides so they may avoid exposure to pesticide residues.
A Note About Early-Entry Workers

Agricultural workers who are required to go into treated areas before the REI expires are classified as early-entry workers. They can only enter these areas during specific situations, they must wear PPE, and they must be given additional training. Training of early-entry workers is not part of the agricultural worker training and is not included in this manual. This information is provided to help you answer questions about early-entry workers.

Early-Entry Exceptions—There are several types of exceptions to the early-entry regulations. The chart below compares the various types of early-entry exceptions. This is not part of the required training — it is included here as supplemental information for you.

Personal Protective Equipment (PPE) for Early-Entry Workers

- PPE is a term for devices and garments that protect handlers/early-entry workers from exposure to pesticides and must be provided by the employer if it is necessary for them to enter a treated area before the REI expires.
- The type of PPE varies depending on the toxicity and method of application of the pesticide being used. It is specified on the label.
- Early-entry workers are not allowed to enter a treated area in the first four hours after pesticides are applied, even if they use PPE.
- The type of PPE required for early-entry workers is found on the pesticide label, under Agricultural Use Requirements.

Exceptions to the early-entry regulations may vary state-to-state. The following chart compares the various types to each other. This is not part of the required WPS training—it is included here as supplemental information for trainers.

---

### Early-Entry Exception Chart

<table>
<thead>
<tr>
<th>Conditions or Limitations for Exception</th>
<th>Early Entry with Non-contact</th>
<th>Short-term Exception</th>
<th>Limited Contact Exception</th>
<th>Irrigation Exception</th>
<th>Agricultural Emergency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact with treated surfaces</td>
<td>Prohibited</td>
<td>Allowed</td>
<td>Allowed for hands, forearms, feet, and ankles</td>
<td>Allowed for hands, forearms, feet, and ankles</td>
<td>Allowed</td>
</tr>
<tr>
<td>Hand labor</td>
<td>Prohibited</td>
<td>Prohibited</td>
<td>Prohibited</td>
<td>Irrigation tasks only</td>
<td>Allowed</td>
</tr>
<tr>
<td>Time limit (in 24 hour period)</td>
<td>No time limit</td>
<td>1 hour limit per worker</td>
<td>8 hour limit per worker</td>
<td>8 hour limit per worker</td>
<td>No time limit</td>
</tr>
<tr>
<td>Need must be unforeseen with potential for significant loss</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Personal protective equipment</td>
<td>Not required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>Time of earliest entry after end of application</td>
<td>After respiratory/ventilation criteria are met</td>
<td>4 hours and after respiratory/ventilation criteria are met</td>
<td>4 hours and after respiratory/ventilation criteria are met</td>
<td>4 hours and after respiratory/ventilation criteria are met</td>
<td>4 hours and after respiratory/ventilation criteria are met</td>
</tr>
<tr>
<td>Double notification products prohibited</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Notify workers that the exception is being used</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
The label may also specify the work clothing to be worn for early-entry. Regular work clothing is generally provided and maintained by the agricultural worker.

**Goal 2—Provide Information**

There are two categories of information that employers must provide to their agricultural workers to help them avoid pesticide exposure—pesticide safety information and training and central posting of pesticide application information.

**Pesticide Safety Information and Training**

Agricultural workers must receive basic pesticide information before entering areas where pesticides have been applied within the past 30 days or an REI has been in effect. Basic pesticide information includes the following:

- Pesticides may be on or in plants, the soil, some irrigation water, or they may drift from nearby applications.
- Following instructions and/or signs about keeping out of treated or restricted areas.
- Washing hands before using the toilet, chewing gum, or using tobacco.
- Wearing work clothing that protects your body from pesticide residues.
- Washing/showering with soap and water, shampooing hair, and putting on clean clothes after work.
- Washing work clothes separately from other clothes before wearing them again.
- Washing immediately with soap and clean water if pesticides are spilled or sprayed onto your body.

When agricultural workers are required to enter a field or area where a pesticide has been applied or a restricted-entry interval (REI) has been in effect within the last 30 days, employers must assure WPS training is provided. This WPS training must take place before the agricultural worker accumulates more than 5 separate days of entry into treated areas.

The WPS does not require employers to conduct the actual training. Any trainer who has met state requirements to instruct agricultural workers can provide this training. Furthermore, if an agricultural worker received training while working for a previous employer within the past five years and the training can be verified, a new employer does not need to retrain this worker until the five years have passed.

**Posting of Pesticide Application Information**

Pesticide application information covered under the WPS should be posted at the central posting site and must include the following:

- location and description of the pesticide treated area
- pesticide product name, EPA registration number, and active ingredients
- time and date the pesticide is applied
- restricted-entry interval (REI)

This information must remain posted for 30 days following the end of the REI.

**Goal 3—Mitigation**

The WPS reduces the effect of pesticide exposure in two ways—by requiring decontamination supplies at the worksite and by requiring emergency assistance in the event someone gets sick or injured by pesticides while working.

**Decontamination Supplies**

The WPS requires employers to provide decontamination supplies for agricultural workers and these must be located within 1/4 mile of their current work location. Supplies include
soap, single-use towels, and clean water. These must be provided in the area where a pesticide was applied or a restricted-entry interval (REI) was in effect within the last 30 days, and the work involves contact with anything that has been treated with the pesticide. A product without an REI on the label is also subject to the 30-day decontamination requirement.

Exception—The 30-day time period for decontamination supplies shall not apply if the only pesticides used in the treated area are products with an REI of 4 hours or less on the label. When agricultural workers are in such treated areas, the agricultural employer shall provide decontamination supplies for not less than 7 days following the expiration of any applicable REI.

Emergency Assistance

The employer must:
- provide emergency assistance to the agricultural worker if he or she is injured or made ill by pesticides while working
- display a safety poster in a central location that contains basic pesticide safety concepts and the name, address, and telephone number of the nearest medical facility
- provide transportation for the injured agricultural worker to the nearest emergency medical facility and provide the agricultural worker or doctor with information about the pesticide(s) to which the agricultural worker may have been exposed

ADDITIONAL REQUIREMENTS OF THE WORKER PROTECTION STANDARD

The WPS also restricts entry into areas during a pesticide application and provides protection to agricultural workers against retaliation if they are attempting to comply with provisions of the WPS.

Restrictions During Applications

The WPS restricts agricultural workers from entry into areas that are being treated with a pesticide. Under no circumstances should pesticides be applied in a way that would contact agricultural workers or other persons, either directly or through drift.

Protection Against Retaliation

Employers must not prevent or discourage any agricultural worker from complying or attempting to comply with the WPS, and must not fire or otherwise retaliate against any agricul-
Central posting requirements are in effect when workers are on an agricultural establishment covered by the WPS (i.e., a farm, forest, nursery, or greenhouse), and within the last 30 days a WPS pesticide has been applied or a restricted-entry interval has been in effect, the agricultural employer shall display pesticide safety information at a central posting site.

The central posting location must be in an area where it can be readily accessible and seen and read by workers. Workers shall be informed of the information and must be allowed access to it. If the workplace is a forest, agricultural employers may display the central posting information near the forest, and it must be in a location where workers can easily see and read it and where they are likely to gather or pass by.

Central posting information must include:

- **Pesticide-specific application information**—the location and description of the area to be treated, product name, EPA registration number, and active ingredient(s) of the pesticide, time and date the pesticide is scheduled to be applied, and the restricted-entry interval for the pesticide

- **Emergency information**—the name, telephone number, and address of the nearest medical facility

- **Pesticide safety poster**—which must be either the WPS safety poster developed by EPA or an equivalent poster that contains the concepts listed in the next section

### Criteria for Pesticide Safety Poster

Each WPS safety poster must convey to workers 1) that there are federal rules to protect them, including a requirement for safety training and 2) how to help keep pesticides from getting on or into their bodies.

The poster itself must include the following instructions:

- Avoid getting on your skin or into your body any pesticide that may be on plants and soil, in irrigation water, or drifting from the nearby applications.
- Wash before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Wear work clothing to protect your body from pesticide residues, such as long-sleeved shirts, long pants, shoes, socks, and hats or scarves.
- Wash or shower with soap and water, shampoo your hair, and put on clean clothes after work.
- Wash work clothes separately from other clothes before wearing them again.
- Wash immediately in the nearest clean water if pesticides are spilled or sprayed on your body. As soon as possible, shower, shampoo, and change into clean clothes.
- Follow directions about keeping out of treated or restricted areas.
Your training for agricultural workers must include the following points:

1. Where and in what form pesticides or pesticide residues may be encountered during work activities and at the worksite.
2. Hazards of pesticides resulting from toxicity and exposure, including acute effects, chronic effects, delayed effects, and sensitization.
3. Routes through which pesticides can enter the body.
4. Signs and symptoms of common types of pesticide poisonings.
5. Emergency first aid for pesticide injuries or poisonings.
6. How to obtain emergency medical care.
7. Routine and emergency decontamination procedures, including emergency eye flushing techniques.
8. Hazards from chemigation and drift.
9. Hazards from pesticide residue on clothing.
10. Warnings about taking pesticides or pesticide containers home.
11. An explanation of the WPS requirements designed to protect agricultural workers from risks of illness or injury resulting from occupational exposure to pesticides, including application and entry restrictions, design of the warning sign, posting of warning signs, verbal/oral warnings, the availability of specific information about applications, and protection against retaliatory acts.
It is not enough to briefly list these points during training. You must present each required point in detail so agricultural workers will know how to protect themselves from pesticide exposure.

To be an effective trainer, you need to have a good understanding of the information you are presenting. The following discussion of the 11 points will help familiarize you with the WPS, and help to assure that you present thorough and complete pesticide safety training to agricultural workers.

1. Where and in what form pesticides or pesticide residues may be encountered during work activities.

Agricultural workers must understand where they may encounter pesticide residues. Even people who do not mix, load, or apply pesticides can come into contact with these residues in a number of ways.

Pesticides and pesticide residues can often be found:

- on the leaves, stems, fruit, and vegetables of treated plants
- in the soil where pesticides have been applied
- in irrigation water and on irrigation equipment if some pesticides are applied through the irrigation system
- in the air in the form of drift during a nearby pesticide application (as dust, spray, or vapor)
- on application equipment
- in or on empty pesticide containers
- in areas used for storing, mixing, and handling pesticides
- on work clothes

2. Hazards of pesticides resulting from toxicity and exposure, including acute effects, chronic effects, delayed effects, and sensitization.

Explain the possible immediate (acute) and long-term (chronic) health effects agricultural workers might experience if they are exposed to certain pesticides.

**Immediate or Acute Health Effects**

The onset of acute illness or injury occurs shortly after exposure. These acute illnesses or injuries can be serious, and could result in lost work time and/or require medical treatment, or in the most serious cases, death.

**Long-term or Chronic Health Effects**

Long-term or chronic illnesses may appear shortly after a pesticide exposure or may not show up until long after exposure has occurred. Long-term illnesses may result from repeated exposures at a level that is too low to produce noticeable immediate illness or injury. They may also be caused by
a single exposure incident and become apparent after recovery from any acute effects of the exposure.

Long-term health effects associated with exposure to certain pesticides may include:

- cancer
- inability to become pregnant
- miscarriage
- birth defects
- nervous system disorders
- damage to organs, such as the lungs or liver
- damage to the immune system

**Sensitization**

Sensitization, the gradual development of an allergic reaction to pesticides, is an additional chronic health issue that trainers must cover. Sensitization may be better understood by examining the example of a person's reaction of exposure to certain plants such as poison ivy, poison oak, or poison sumac.

Many people have no skin reaction the first few times they encounter poison ivy, poison oak, or poison sumac. However, after repeated exposure some individuals may eventually become sensitized and develop a reaction that becomes worse with each additional exposure. In the same way, certain pesticides affect some people only after several exposures. Once these people become sensitized, their bodies will react every time they are exposed to the material. On the other hand, as with poisonous plants, some people never develop sensitivities or allergies to these pesticides no matter how many times they are exposed.

### 3. Routes through which pesticides can enter the body.

Explain to agricultural workers that pesticides can get into their bodies by various routes. Pesticides can get into the body through the:

- skin (dermal exposure)
- eyes (ocular exposure)
- nose (respiratory exposure)
- mouth (oral exposure)

#### Skin Exposure

The majority of agricultural pesticide poisoning and injury incidents happen through skin exposure. Symptoms may include redness, rash, blisters, and other skin irritations. Some types of pesticides readily penetrate the skin and get into the body.

Skin can be exposed to pesticides and pesticide residues through contact with treated plants or soil. Even contact with irrigation water may result in pesticide exposure if pesticides are applied through an irrigation system or residues from the soil or plants get into irrigation water. Skin exposure can also occur when a careless application results in pesticide drifting onto people who are working nearby or if agricultural workers are directly sprayed. Pesticide residues can be transferred from dirty hands to other parts of the body if agricultural workers do not wash their hands thoroughly before eating, drinking, smoking, or using the bathroom.

Agricultural workers can minimize skin exposure by wearing clothing that covers their skin and bandaging cuts or broken skin that can facilitate entry of pesticides into the body. Long-sleeved shirts, long pants, shoes, socks and hats reduce skin exposure and should be washed regularly with soap and water.
**Eye Exposure**

Drift from a pesticide application can result in nearby agricultural workers getting pesticides into their eyes. Agricultural workers can also transfer pesticide residues to their eyes from contact with their hands and with contaminated dust or plant material.

**Respiratory Exposure**

Drift from a pesticide application can endanger nearby agricultural workers who might breathe in pesticide vapor or dust. Agricultural workers may be at risk of inhaling small amounts of pesticide vapor or residues when working on farms, forests, nurseries, or greenhouses where pesticides are used.

One of the possible ways agricultural workers may be exposed to pesticide vapor or particles is by entering treated areas while the restricted-entry interval (REI) is still in effect. This may happen if the employer fails to notify agricultural workers or to post the restricted areas, or if the employer tells the agricultural worker to enter treated areas. It can also occur if agricultural workers disregard posted signs or oral warnings.

After the REI has ended, there should not be hazardous residues in the treated area.

**Oral Exposure**

While working in the field, agricultural workers can transfer pesticide residues to their mouths if they eat, drink, smoke, or chew gum without first washing their hands. Pesticide residues that remain on treated plants can contaminate food, drinks, or cigarettes brought into the field.

There are also potential dangers associated with eating produce taken from the fields. Due to the possible presence of pesticide residues, agricultural workers should not pick fruits or vegetables to eat or bring home.

Pesticide poisoning can also happen when someone accidentally eats or drinks a pesticide that has been placed into a food or beverage container, or drinks from a container that has been used to measure a pesticide. Storing or mixing pesticides in food or beverage containers is illegal! Drinking irrigation water is another way agricultural workers might swallow pesticide residues.

4. **Signs and symptoms of common types of pesticide poisonings.**

When training agricultural workers, include a description of the symptoms of acute pesticide poisoning and the common signs and symptoms of pesticide-related injury.

Exposure to some pesticides can result in:

- skin and eye irritation
- nose and throat pain
- skin rashes

Common poisoning symptoms related to certain types of pesticides include:

- dizziness
- headache
- muscle aches or cramps
- tiredness
- nausea
- diarrhea
More serious poisoning can also result in:

- chest pain
- breathing difficulties
- excessive salivation or drooling
- very small pupils
- lack of muscle control
- convulsions
- unconsciousness
- death

People exposed to certain fumigant gases may:

- behave irrationally
- have elevated body temperatures

Not all pesticides cause the same symptoms. In addition, a person who has experienced pesticide poisoning will not necessarily have all of the symptoms associated with that pesticide.

Some common pesticide poisoning symptoms may be similar to symptoms of a cold, the flu, heat stress, morning sickness, food poisoning, or a hangover. If agricultural workers think pesticides may be making them ill, they should notify their employer or direct supervisor and seek immediate medical attention.

5. Emergency first aid for pesticide injuries or poisonings.

When helping someone who has been exposed to pesticides, there are some things that can be done immediately to reduce the effects of the exposure before the person is taken to the medical facility.

**First Aid for Skin Exposure**

If a pesticide happens to get on the person’s clothing or skin, the pesticide-contaminated clothing should be removed right away and the skin washed with lots of clean water and soap. This is known as emergency decontamination.

It is important to wash the skin immediately and thoroughly to keep the pesticide from being absorbed through the skin and into the body. The people who are involved in the decontamination process should protect themselves from exposure.

**First Aid for Eye Exposure**

If a pesticide gets into someone’s eye, the eye should be rinsed with an eye flush kit. If emergency eye rinsing water is not available, any clean water source can be used.

The agricultural employer shall provide agricultural workers with enough water for routine washing and emergency eyeflushing. The employer shall assure that the water is of a quality and temperature that it will not cause illness or injury. As a matter of safety, the person providing first aid should also make sure the water is clean and that the temperature of the water is not too hot or too cold. The water flow must be gentle. The person’s head should be turned so that the affected eye is lower than the unaffected one. This will keep contaminated water from getting into the other eye. Never add any kind of medicine or other substance to the eye rinsing water, because it may damage the eye by interacting with remaining chemical residues.

**First Aid for Oral Exposure**

Swallowing pesticide residues that are transferred to food from unwashed hands or from produce taken from recently sprayed areas may contribute to pesticide illnesses. However, if someone accidentally drinks a pesticide, immediate and severe poisoning could result. In this case, it is very important to get the affected person to a medical facility as quickly as possible. The illness or injury can often be reduced by administering first aid immediately.

First aid instructions on the pesticide label may recommend that the
person be made to vomit. However, the labels of certain pesticides may contain specific warnings against inducing vomiting. Even if the product label recommends inducing vomiting, agricultural workers must understand that they should never induce vomiting if the person is unconscious, having convulsions, or lying face up. The most important step in cases of swallowing pesticides is for the employer to get the person to a medical facility as quickly as possible.

First Aid for Respiratory Exposure

It is important that those providing assistance to someone overcome by mist or vapors do not themselves become sick. Before entering an enclosed and pesticide-contaminated area to remove the victim, responders should protect themselves by wearing proper respiratory protection, such as a cartridge respirator. First aid for a person who has inhaled pesticide mists or vapors includes taking the person to fresh air and loosening any clothing that might make breathing difficult.

If the person has stopped breathing, mouth-to-mouth resuscitation should be performed by a trained person. The person providing mouth-to-mouth resuscitation should use a protective barrier which allows for the transfer of air to the non-breathing person but prevents the exchange of bodily fluids or other contaminants. If the rescuers do not know how to give mouth-to-mouth resuscitation they should find someone who does.

6. How to obtain emergency medical care.

In exposure incidents where an agricultural worker has been poisoned or injured by exposure to pesticides, the agricultural employer must provide prompt transportation to an appropriate emergency medical facility. However, if the incident involves skin contamination, it is often possible to avoid illness or injury by quickly washing the exposed area (emergency decontamination). Pesticide labels may not recommend seeking medical attention unless irritation persists or other symptoms of poisoning appear.

All agricultural workers should know the location of the nearest medical facility and where to find the posted information. The name, address, and telephone number of the nearest emergency medical care facility shall be displayed on or near the pesticide safety poster.

The employer must also provide the employee or treating medical personnel with the following information about the pesticide to which the employee was exposed:

- product name, EPA registration number, and active ingredients
- antidote, first aid, and other medical information from the product labeling
- circumstances of application or use of the pesticide
- circumstances of exposure

If possible, bring along a clean, uncontaminated pesticide label to the medical facility. This will allow medical personnel to quickly determine the correct treatment. Proper treatment varies with the pesticide and the type of exposure. Pesticide containers should not be taken into the medical facility because they may have pesticide residues on them and could contaminate other people or the medical facility.
7. **Routine decontamination procedures.**

There are several things that agricultural workers can do as part of their daily routine to minimize their exposure to pesticides and pesticide residues to protect their health. These include:

- washing their hands before touching their eyes or mouth while they are working
- washing their hands before eating, drinking, smoking, chewing gum or tobacco, or using the toilet while at work
- showering or bathing immediately after work and changing into clean clothes

8. **Hazards from chemigation and drift.**

**Chemigation**

Sometimes growers apply pesticides or fertilizers to crops through the irrigation water. This type of application is called chemigation. Agricultural workers should never use irrigation water for drinking or washing because it may contain pesticides, fertilizers, or pesticide residues.

**Drift**

Drift is the movement of pesticide dust, spray, or vapor away from the application site.

Agricultural workers working adjacent to a pesticide application where drift may occur should be aware of potential hazard associated with drift.

Agricultural workers can come in contact with pesticide drift in several ways, including working in fields adjacent to where pesticides are being applied.

It is unlawful to apply a pesticide in a manner in which it will contact, either directly or through drift, any agricultural worker or other person not appropriately trained and equipped as pesticide handlers. Agricultural workers should leave an area immediately if they are working in a field where someone is applying a pesticide, or if a pesticide from a nearby application is drifting into their work area.

State laws may be more restrictive than federal laws. Therefore, it is advisable to check with state agencies for relevant regulations.

Agricultural workers can also come in contact with pesticides and their residues at their residences, which may be located near areas that are being treated with pesticides. If the drift reaches their housing areas, agricultural workers will be at risk of exposure to the pesticide, even if they were kept out of the treated areas at the time of the spraying.
9. **Hazards from pesticide residue on clothing.**

Pesticide residues that remain on work clothing can be another source of hazard to agricultural workers. There are ways they can avoid these hazards such as:

- avoid wearing the same work clothes more than once before washing them
- have at least two sets of work clothes to avoid wearing potentially contaminated clothes before they are washed
- put work clothes that may contain residues into a plastic bag to prevent others from coming in contact with them
- inform whoever washes agricultural work clothing that the clothes may have pesticide residues on them, and that these residues can be hazardous
- wash work clothes separately from other clothing
- decontaminate the washing machine by running another full wash cycle with hot water and detergent to remove any remaining pesticide residues from the machine

Agricultural workers can avoid bringing pesticide residue into their homes through their work clothes by following decontamination procedures.

10. **Warnings about taking pesticides or pesticide containers home.**

Agricultural workers should never take any pesticides or pesticide containers home, even if empty and rinsed.

A pesticide container is never completely free of pesticide residues and can never be safely used for any other purpose.

Pouring pesticides from their original containers into any container
that does not have the original label, including food or beverage containers is dangerous and illegal. Some unsuspecting person could mistake it for something edible.

11. An explanation of the WPS requirements designed to protect agricultural workers, including application and entry restrictions, design of the warning sign, posting of warning signs, oral warnings, availability of specific information about applications, and protection against retaliatory acts.

Central Posting of Pesticide Application Information

Employers are required to post the following information at a central location for 30 days following the end of the REI for each pesticide:

- location and description of the treated area
- product name, EPA registration number, and active ingredients
- time and date of the pesticide application
- length of the REI

Restrictions During Application

During pesticide applications, the WPS restricts entry into treated areas. Only appropriately trained and equipped handlers can enter these areas. Agricultural workers should understand that they are being trained as agricultural workers, not as pesticide handlers and should not enter treated areas without the proper training.

A pesticide must not be applied if it will come in contact with agricultural workers, either directly or through drift.

Restricted-Entry Intervals (REIs)

The REI is the amount of time that must pass after a pesticide application before agricultural workers are allowed back into the area to continue working. REIs vary in length depending on the amount of time required for risk to be reduced to a safer level. Only early-entry workers who have been trained and wear the required personal protective equipment (PPE) may enter the treated area during an REI.

Notification of Pesticide Applications—When They Will Take Place

It is important for agricultural workers to understand that they are being trained as agricultural workers, not as pesticide handlers, and should not enter treated areas without the proper training.

Employers must either post warning signs around the treated area or provide verbal warnings to agricultural workers who might enter the treated area. An employer must make sure that a treated area is marked with warning signs when required by the pesticide label. If posting warning signs is not required by the pesticide label, the employer must either post warning signs around the treated area or provide verbal warnings.
to an agricultural worker who might enter the treated area. All greenhouse applications must be posted.

Agricultural workers should understand the significance of posted signs and the importance of obeying verbal and posted warnings. As long as a sign remains posted, they must not go into the area, even if the date on the sign indicates that the REI has ended. There are a few exceptions that are on page 15.

**Protection Against Retaliatory Acts**

An agricultural employer must not punish or retaliate against an agricultural worker for attempting to comply with the protections that are provided by the WPS.
**CHAPTER 4**

**PREPARING TO TRAIN**

**IN THIS CHAPTER...**

The Realities of Agricultural Work ......................... 29
Steps to Prepare for Training .................................. 30

As you prepare to conduct Worker Protection Standard (WPS) pesticide safety training, it is important for you to understand some aspects of agricultural work in preparation for your training activities. It is important to note that agricultural practices vary from place to place and crop to crop and the items below are only generalizations.

**THE REALITIES OF AGRICULTURAL WORK**

- Over 85% of the fruits and vegetables produced in the U.S. in the last ten years were hand harvested and/or cultivated. Without the seasonal influx of migrant farm labor during peak periods, the production of many fruit and vegetable products would not be possible. Agricultural labor is crucial in the production of a wide variety of crops in almost every state in the U.S.
- Agricultural labor is often seasonal and intensive. Planting, thinning, and harvesting are not always year-round activities; however, they are critical to crop production. The season and the weather determine the timing for crop growing activities. Failure to perform any of these production tasks at the correct time can result in crop loss. Agricultural employees’ work duties accommodate the crops, not the other way around.
- Agricultural employees work in all seasons and all weather conditions, including extreme heat, cold, rain, bright sun, and humidity. Their work often requires bending and stooping, repetitive hand labor activities, working with the soil, climbing ladders, carrying heavy loads, and direct contact with plants.
Agricultural labor requirements in a given area may vary greatly among the different phases of planting, cultivating, harvesting, and processing.

Many agricultural workers are paid on a piece rate rather than an hourly rate.

Agricultural work can be physically demanding and can involve long workdays and long work weeks.

Many agricultural workers are non-English speakers and may have limited literacy in Spanish or other languages.

Many agricultural workers live below the poverty line earning less than $7,500 per year.

Economic necessity may require that all family members of an agricultural family work. In some states, people under the age of 16 are allowed to work in agriculture.

Some worker housing, day care facilities, and schools are located near agricultural establishments. This may elevate the chances of workers, their families, and the public being exposed to pesticides and their residues.

The U.S. Department of Labor has found that many agricultural workers are seasonal (working only part of the year) and are married and/or have children. However, many agricultural workers are migrants who travel from work site to work site and must live away from their families.

Knowing the realities of farm work gives trainers a better understanding of agricultural workers’ lives and some of the challenges that trainers may encounter in training. For example, the training may have to be rescheduled because of weather changes or because the agricultural workers need to complete certain crop tasks. During the training sessions, the agricultural workers may be tired or have trouble paying attention. Agricultural workers who are paid on a piece-rate may be concerned about being paid at a different rate or not at all while being trained.

**Steps to Prepare for Training**

Once trainers are familiar with the topics and know what information to present, they should start preparing to train. Training preparation includes many steps and takes time, but proper preparation leads to more effective and successful training sessions.

The remainder of this section identifies important steps to follow when preparing training sessions.

**Identify Agricultural Workers to be Trained**

The agricultural employer is responsible for assuring that agricultural workers are trained. Trainers can help identify which employees fall under the definition of agricultural worker, as defined by the Worker Protection Standard, and when they need training. Trainers should let agricultural employers know about the training service provided and what is covered in the training.

**Obtain State and Local Information**

During training, it will be helpful for you to know about state and local crops and cropping cycles, pesticide regulations, and demographics of the agricultural workforce.

**State Pesticide Regulations**

Federal pesticide laws represent minimum national guidelines that states must follow. A state may have stricter rules, regulations, guidelines, or laws governing pesticide use and safety.

It is very important for trainers to
contact the state agencies that regulate pesticide use to become familiar with state or tribal and local requirements. In some states, more than one agency regulates pesticide use and pesticide safety training. State Departments of Agriculture, Occupational Safety and Health, and/or Labor are good sources for area requirements on training, hazard notification, field sanitation, decontamination supplies, and other worker safety issues. These agencies will be able to provide copies of the actual state laws and regulations. These rules are sometimes difficult to understand as written. Trainers should seek out a willing, knowledgeable person to explain and clarify points or rules that are not fully understood.

**Crops and Cropping Cycles**

It is helpful for trainers to be familiar with crops and cropping cycles, seasonal labor requirements, and typical tasks of agricultural workers in the area where training will be conducted. This information is available from state Departments of Agriculture, Departments of Labor, University Extension offices, local organizations that provide outreach to agricultural workers, and agricultural associations. Knowing the cycles of the various crops and peak harvest times will help in identifying when the greatest number of agricultural workers are employed and may require WPS pesticide safety training. Additional information on crop profiles can be found on the United States Department of Agriculture internet site at www.ipmcenters.org/cropprofiles/index.cfm.

**Profile of the Workforce**

Understanding the profile of the agricultural worker helps to understand the audience and their training needs. Training groups can vary greatly and may consist of agricultural workers from different ethnic, cultural, and language backgrounds as well as different educational levels. Local service agencies that assist agricultural workers, such as migrant health clinics, migrant education programs, job training programs, government agencies related to employment, farmworker organizations, and agricultural associations, can provide information regarding characteristics of the agricultural workforce.

**Assess Your Audience**

Appropriate audience assessment questions include:

- Where are they from?
- What languages do they speak?
- What kind of agricultural work have they done in the past?
- What kind of work are they doing now?
- Have they ever received pesticide or pesticide safety training?
- How much do they already know about pesticides?

It is also helpful for trainers to know if the agricultural workers are migrant, seasonal, or year-round workers. Migrant workers may move from state to state to find agricultural work. Seasonal workers may live in the area in which they do farm work but are employed as agricultural workers only during the growing season. Year-round workers live and work in the area in which they do farm work.

Background information helps to make the training appropriate for each specific group of agricultural workers. If you are unable to find out about the agricultural workers’ backgrounds in advance, trainers can spend a few minutes at the start of the training session getting to know them.

**Schedule the Training**

Once trainers identify the agricultural workers to be trained, they should consider when and where to conduct the training.
When

A schedule for conducting training may vary depending on the season, type of agricultural establishment (farm, forest, nursery, or greenhouse), and the needs of the workers themselves. The employer or supervisor can help to determine the best time of the day for training. Agricultural workers must be alert in order for training sessions to be effective.

Scheduling training sessions may be challenging. Training may need to be scheduled at a time convenient for the employer and the agricultural worker, although it may not be at the time that is best for learning. Agricultural workers usually work at least 10 hours per day, 6 days a week, so trainers may be asked to conduct the training in the evening or on a weekend. Providing training after work or on weekends may be more challenging since agricultural workers will be tired and less alert.

During morning training, workers may still be sleepy which could limit the success of the training. However, morning training may cause the least interruption during the workday because agricultural workers may go to the training site first and then to the worksite, if the locations are in different areas. On the other hand, training at the end of the workday can reduce problems associated with the interruption of work, but the agricultural workers are often tired and may just want to go home.

Where

Select a suitable training location that works for your training methods and is comfortable for the agricultural workers. If needed and as possible, the location should have seating, shade, and electricity. If you have a choice of sites, select a location that is quiet and where there will be less chance for interruptions during the session. If the training is held in a repair shop, warehouse, or in the field, try to make sure that there are no other activities taking place that could distract from the training session.

When you train at a new location, find out ahead of time everything you can about the site. If you know the problems in advance, you may be able to change sites or arrange to have distracting activities suspended during the training.

Keep in mind that the type of training location will influence the training methods you use.

Make sure each agricultural worker knows where the training will be and what time to be there.

Select and Review Training Materials

Good training requires appropriate use of materials and effective presentation. There are many pesticide safety training materials available including flip charts, videos, slides, audio cassettes, booklets and pamphlets, and safety games.

When selecting training materials, make sure they cover all the required WPS information and are correct and up-to-date. Written and audiovisual materials need to be in a language the agricultural workers understand and should be presented at an appropriate educational level.

Make sure the content of the training materials corresponds to the type of work performed by the agricultural workers. Present the training in an interactive manner to promote worker participation in the session. For example, be sure to include questions and class discussions when using a video.

Always review materials before you use them. Even if the EPA has approved a booklet or video, the laws may have changed since the materials were developed. Additionally, the materials may not be appropriate for your particular situation, or state regulations may need to be addressed.

If you use non-English-language
training materials, pay close attention to the translation to make sure that the information is correct and the translation is accurate. You should ask an interpreter to help you with this review if you cannot read the material yourself.

**Obtain Training Equipment and Supplies**

Prepare for your training session by obtaining the equipment and supplies you will need. For example, you may need a(n):

- TV, DVD, and/or VCR
- laptop computer
- projector
- screen
- EPA flip chart and/or safety poster
- small table
- props for interactive demonstrations

If using a TV, make sure the screen is large enough for all of the participants to see it.

Be sure to make enough copies of the materials you intend to pass out to the agricultural workers.

Bring all needed supplies — paper, pens, pencils, marking pens, extension cords, props, illustrations, slides, videos, transparencies, and handouts — you plan to use during your training.

If you speak English and the agricultural workers do not, you must also arrange for an interpreter. You may need to rely on other employees who are bilingual, professional interpreters, or bilingual community members who may volunteer to interpret the training material. Other possible sources for interpreters are community-based organizations, medical personnel, other employers, the Farm Bureau, the University Extension office, farm-worker associations, or other local associations. Ask them for a referral to an interpreter.

It is important that the interpreter have a clear understanding of pesticide terminology beforehand. You should provide the interpreter with a copy of the training materials you plan to use and discussing these with him or her.

**Consider Class Size and Training Methods**

For best results you should limit attendance in order to keep the group as small as possible. The optimal class size is 20. A class of more than 40 is not advisable. Smaller groups are better able to hear trainers and have more opportunities to participate and ask questions. Additionally, you will find it easier to keep smaller groups focused on the topics and activities.

Although training many people at one time is not advisable, it does sometimes happen. If this is the case, consider dividing the class into smaller groups for activities such as problem-solving exercises. Then have them present their information to the larger group.

**Consider Time Available**

Before planning a training session, know how much time you will have. Think about your time limitations so that you can include all the necessary information during the time available to you. If you have enough time, take advantage of it and use activities that give all of the agricultural workers a chance to participate.

If you use an interpreter, consider that it may take twice as long for you to conduct the training.

The next section discusses a variety of interactive training techniques that can result in better learning by the participants. Some of these techniques take time. If you only have thirty minutes to complete a training session, a time-consuming role-play or hands-on activity, although preferable for adult learning, may not always be practical.

When time is limited, your first
concern must be to cover all the required WPS information as thoroughly as possible.

You may be able to find or design handouts that agricultural workers can use on their own after the training to help them remember the information you have covered. Such handouts could include pictures with a number of related questions. You could also use or create an educational game that, when played later, repeats some of the messages included in your training.

If the agricultural workers are coming from various locations, it may take longer for everyone to arrive, and your session might not start on time. When appropriate, allow additional time for these situations. Be sure to include time at the beginning of the training session for the participants to sign in.

If you are issuing EPA or State training verification cards to the agricultural workers, include time at the end of the session to prepare these cards and issue them.

**Consider Your Personal Safety**

Always make sure that the training location does not present any hazards to you or the people being trained. Dress appropriately for the conditions and site. Consider using a hat, sun visor, or sunscreen when you will be training outside. Be sure to wear warm clothes and a jacket if you will be training in a cold area. Be aware of possible hazards presented when using extension cords for your training equipment.

If you are training alone and/or when it is dark (at night or in the early morning), take additional personal safety precautions. Make sure you have enough light to see where you are going and to see any potential hazards. If you do not feel safe on your own, ask someone to accompany you.
The Worker Protection Standard (WPS) regulation requires that pesticide safety training be given in a manner understood by agricultural workers. This means that training should be presented in a language workers understand. In order for the training to be effective, and to fulfill the regulatory requirement that training be understood, you must use non-technical terms and respond to any questions or requests for clarification.

It is not enough for you to present the information. You must present it in a manner that assures that everyone understands how to protect themselves from pesticides and their residues. You should give a great deal of thought to the training techniques that you will use in order to provide the best possible training and help assure worker safety.

**BE PREPARED—KNOW YOUR MATERIAL**

Knowing your material is the most important thing you can do to help make your training successful. You will feel more confident and your training will have more impact on the agricultural workers if you are comfortable and familiar with the information you need to present. Be sure to rehearse your presentation before conducting an actual training session.

Never attempt to give training in English if the agricultural workers do
not speak English, unless you use an interpreter. Not only is this an ineffective method of teaching; it is not allowed under the WPS.

If you are learning Spanish or another language frequently spoken by agricultural workers, practice your training in front of a native speaker and ask them to evaluate your language skills, terminology, and presentation. At the very least, you should get a native speaker to help you with pronunciation.

CREATE A POSITIVE ENVIRONMENT FOR LEARNING

A positive learning environment will contribute to the success of your training. To do this, you need to consider how to best manage and control the training environment.

**Take Control**

As the instructor, and in order to keep things running smoothly, you should maintain control of the training session. This may take some practice and may require you to sometimes be assertive with the group. Combining assertiveness with courtesy and respect will help keep the session focused and allow you to relay the 11 important pesticide safety points required during WPS training. Most workers will appreciate your efforts to maintain order, because it is based in your respect for their time.

**Show Your Face**

Place equipment stands, flip charts, and any other training tools off to one side of the area where you will be conducting your training. Do not put equipment or other physical barriers between you and the workers. Avoid facing the chalkboard or flip chart while you are writing information. Make a concentrated effort to speak to and look at the workers you are training. When you face the audience, they can hear you and be more engaged in learning the important points of pesticide safety.

**Help Agricultural Workers Feel Comfortable**

Meet a few of the participants as they arrive for the training and talk to them about their agricultural experiences. Agricultural workers should be seated in a quiet, comfortable place during your training. If your training is taking place outside, the training area should be shaded from the sun, protected from the wind, and not too warm or too cool. Asking workers to stand in hot or noisy places may negatively impact the success of your training. Arrange in advance to provide seating—even upside-down buckets will do. Consider turning off noisy fans or equipment in the area before starting.
**EFFECTIVE PUBLIC SPEAKING**

Part of your ability to be a good trainer depends on your public speaking techniques. Here are some points to consider:

- Speak loudly and clearly. It is important to be heard.
- Stand or sit close to your audience. Do not position yourself too far away or it will seem like you are afraid of the agricultural workers.
- Project a positive attitude and friendly demeanor. To set a relaxed tone, smile and talk to the workers before training.
- Use stories and visual aids to supplement your material.
- Try to anticipate questions and concerns and be prepared to address them.

**HOW ADULTS LEARN**

Understanding how adults learn is especially important when preparing training programs for adults. Most agricultural workers are adults, though many are not familiar with formal education settings.

Adult learning is most effective when realistic problems and problem solving are used as training techniques. When preparing your training, consider the following points.

Adults:

- need to know why they should learn about protecting themselves from pesticides
- need the content of the pesticide safety training to be meaningful
- learn by doing—by engaging in role playing, discussion, and/or reviewing case studies
- need opportunities to practice and review the pesticide safety points they have learned
- need feedback on their concerns, thoughts, or involvement in the pesticide safety training session
- learn through observation, experience, and interacting with others
- need the training program to be properly coordinated and arranged
- should be able to apply what they have learned immediately

Learning is best achieved in an informal and comfortable environment which allows the trainer and agricultural workers to be actively engaged in the training program.

**DESIGN YOUR TRAINING SESSIONS**

You can only teach effectively if your training sessions hold the attention of the agricultural workers. Designing interesting sessions can be a challenge. One way to make your training sessions effective and interesting is to involve the agricultural workers in interactive activities and to avoid using passive
training methods such as lecturing. Be sure to promote worker involvement in the training session.

**Provide Interactive Training**

Would you rather conduct a training session where everyone quietly stares at you and looks scared or bored, or would you rather people ask questions, participate in your discussions, and are engaged and interested? Training can be more enjoyable for everyone when participants are involved; it is also more effective.

Passive training requires little or no interaction between the trainer and the agricultural workers. Lectures, reading assignments, and audiovisual presentations are passive unless these techniques are combined with interactive exercises. Used alone, passive training may not hold the participants’ attention. If you provide training that does not allow for interaction, you will not get the feedback you need to determine if you have achieved your training objectives.

Examples of interactive training include discussions, hands-on activities, role-playing, and games. Types of interactive training techniques are included in the next section.

**Use Visuals**

People remember better if they use their senses of sight, smell, and touch rather than just hearing. For this reason, make sure everyone you are training can see the visuals and can hear you. Try to incorporate activities that also involve other senses. This is especially important to remember with agricultural workers, who may have little formal education and are unaccustomed to the lecture format.

Other benefits of using visuals include:
- helping agricultural workers relate to the information
- making the information more realistic
- helping the agricultural workers to stay focused

Help the information be more relevant to workers by using quick and simple demonstrations during your training. Different types of household products like bleach, Lysol®, and PineSol® are EPA-registered pesticides. By having these products on hand during the training, you can demonstrate the wide range of pesticide products and highlight the significant differences in the potency of a household pesticide like bleach compared to that of a pesticide used in agriculture.

Other visual aid ideas that may enhance your training are:
- sprinkling powder on a piece of fruit to show pesticide residues
- using a water-filled spray bottle and fan to show the effects of drift
- passing around drawings or pictures of pesticide-related hazards
- displaying sample decontamination supplies
- using glow powder and an ultraviolet light (black light) to reveal the glow powder
- supplementing flip chart pictures that may be too small for all to see

**Ask Questions**

The WPS pesticide safety training requires that you allow time for the workers to ask questions about the content of the training. To assure that you are conducting effective training, you should ask questions about each topic at the end of each section. When you ask questions, give the agricultural workers enough time to think about the answers. Try not to answer your own questions. Be a good listener.

A great way to start your training is to ask, “What are pesticides?” This will get people talking from the beginning.

In addition, consider asking questions before showing the correct information. Benefits of this method include:
- making agricultural workers curious about the best answer
- making workers think about the subject
helping to start class discussions and promoting participation
making the session more like a conversation than a formal lecture
making the session more engaging and challenging
making the session more fun and lively
showing you have confidence that they know some of the information
giving the agricultural workers an idea about the next topic to be discussed
keeping people alert in case they are called upon to answer questions
allowing individuals to share their knowledge and experiences

Stay Focused

Being prepared and using visual materials will help you stay focused on your topic. When someone asks a question before the topic is covered in the training, let them know that the topic will be discussed soon and that they should ask their question at that time. Remember the question or write it down and make sure you answer it later in the training session.

When someone asks a question that is not related to pesticide safety, avoid losing focus on your topic. Refer people to the proper sources where they can get information that exceeds your level of knowledge, authority, or expertise on the subject. For example, you could refer people to state or federal regulatory agencies, University Extension offices, or other helpful resources.

Encourage Participation

To generate participation and provide feedback, consider rewarding agricultural workers with verbal praise and, if appropriate, small prizes. In addition, be sure to reward all people who participate and give answers, not just those who give the “right” answer. This will build confidence, promote interaction, and reassure workers that the learning environment is friendly, courteous, and helpful.

Be sure to call on everyone; never let one or two people dominate the group. Some people will not talk unless asked to do so.
Practical, Relevant, and Useful Training

If the situation allows, adapt or customize your training to the specific work location. For example, when you talk about emergency medical help, tell agricultural workers the specific name and location of the nearest emergency medical facility designated by their employer. Show or tell them where this information is posted in their work area. Make sure they know who has the immediate responsibility to obtain medical help and provide transportation to the designated medical facility if someone is injured by pesticides.

Use examples and describe situations that relate specifically to the agricultural establishment where the worker is employed. For example, if the people you are training are harvesting fruit or pruning plants, emphasize that plants may have pesticide residues and that long-sleeved shirts will reduce skin contact with the plants. If they are planting fields or hoeing in recently planted fields, emphasize the possibility of exposure from contaminated soil or irrigation water.
CHAPTER 6

EXAMPLES OF INTERACTIVE TRAINING TECHNIQUES

IN THIS CHAPTER...

- Discussion .................................................. 42
- Illustrations ................................................ 43
- Case Studies ................................................ 46
- Worker Protection Standard Flip Chart ................. 49
- Role-Playing ................................................ 50
- Audiovisual Presentations .................................. 53
- Relating Personal Experiences ............................. 55
- Educational Games .......................................... 56

This section describes a variety of presentation methods and activities that can help you to provide effective Worker Protection Standard (WPS) pesticide safety training sessions for agricultural workers.

Consider presenting your training using discussion in conjunction with several other presentation methods like the use of illustrations, case studies, a flip chart, videos and slides, small group discussion, and games to keep the training session interesting and engaging. To keep the attention of the workers and for more effective training, these techniques should not be used independently, but rather should be combined for promoting maximum interaction.

After each of the training techniques described in this section of the handbook, you will find a list of the advantages and disadvantages to each method. One advantage common to all of these training techniques is that they are effective in keeping the agricultural workers interested because they are interactive. You will notice that all of these techniques include discussion as part of the technique.

Although almost all of the techniques included here are more time-consuming than traditional teaching techniques, such as lectures,
audiovisual presentations, or reading, they are more effective teaching tools for adults.

The sample activities included in this section explain how to apply each of the training methods. Each sample activity focuses on a specific topic that must be covered in pesticide safety training for agricultural workers, but this does not mean it is the only activity that can be used to effectively address that particular point. For example, the use of pictures is not the only way to discuss the routes of exposure, and the WPS flip chart is only one of the many different tools available that can be used to teach people how to protect themselves from pesticide exposure.

DISCUSSION

Some of the people who attend your training may have already received WPS pesticide safety training. If these individuals already know something about protecting themselves from pesticide exposure, take advantage of their knowledge. Ask them questions and encourage them to provide the correct answers. Then ask other people in the group if they would like to add to or clarify the information. This will allow experienced individuals to contribute to the teaching process and will encourage the rest of the group to do the same.

Keep the discussion positive and factual. Use the discussion to emphasize the importance of following safety practices that prevent exposure to any pesticide. For example, make sure that employers and the agricultural workers recognize that good hygiene in the field is not only important to how they feel at the end of each workday, but may also contribute to their future good health.

As possible, emphasize the benefit to the employer of providing proper hygiene facilities for agricultural workers. Explain that not everything is known about the long-term impact of pesticide exposure on human health, and that it makes sense for the employer and agricultural workers to take prevention of pesticide exposure seriously.

Advantages of Discussions

- WPS pesticide safety trainers can assess what workers are saying, and determine how well they understand the topic.
- The agricultural workers are directly involved in the learning process.
- The agricultural workers maintain interest and stay alert.
- The agricultural workers have an opportunity to share previous experiences and knowledge that may bring new ideas and information to the group.
- All members of the group are encouraged to participate.

Disadvantages of Discussions

- Discussion takes time.
- Individuals may be hesitant about participating.
- A few people may dominate the discussion.
- Trainers may have to spend time keeping the group on topic.
**Tips for Using Discussion as a Training Technique**

When using discussion or having a question-and-answer session, make sure that your questions are phrased in such a way as to guide agricultural workers to the correct conclusions. Never let a discussion end until everyone has the correct information.

Make sure you ask open-ended questions that promote discussion rather than questions that are answered with short “yes” or “no” answers. Using words like “what,” “when,” “where,” “how,” and “why” in your questions will lead to discussion. For example, if you ask, “Can people become exposed to pesticides by touching plants in a treated field?” The answer can only be “yes” or “no.” To encourage discussion, change this question to “What are some of the ways that people can come into contact with pesticides or pesticide residues?”

Encourage everyone in the group to participate, thank them for participating, and praise them for their ideas. Keep the discussion on track and make sure that all of the information is accurate. When you ask a question, give the agricultural workers time to think about the question and respond before providing the correct answer. At the end of the discussion, summarize the information.

**Training Activity Using Discussion**

This discussion will help the agricultural workers understand where and how they can come into contact with pesticides or pesticide residues at work. Hazards from chemigation and drift are included in the discussion.

To start this activity, ask the group to list some places at work where they might find pesticides or pesticide residues. Some of these places should include treated areas, on the plant leaves and soil, and near pesticide storage, mixing, or loading sites.

Ask the agricultural workers to list some ways they could be exposed to pesticides and pesticide residues.

Some of the ways exposures to workers can occur are:

- By not washing their hands before they eat, drink, smoke, or use the toilet after working in treated areas.
- Through direct exposure to pesticide spray or drift.
- By failing to wear a long-sleeved shirt, long pants, socks, shoes, and a hat to protect them from exposure to residues on treated crops.
- By drinking or washing in irrigation water that contains pesticides. Note: Chemigation is the application of pesticides or fertilizers through the irrigation system and should be explained by the trainer during the session.
- By eating produce from a treated field before the residues have broken down.
- By working in an area before the restricted-entry interval (REI) has expired.

**ILLUSTRATIONS**

Using illustrations is a good way to help people review a situation and discuss possible solutions. Some drawings that relate to pesticides are included in this manual. The EPA publication entitled *Protect Yourself from Pesticides—Guide for Agricultural Workers* is another resource of useful illustrations and is available in English and Spanish.
Tips for Using Illustrations

When you use illustrations during a training session, consider selecting images that mimic occupational settings similar to those of the agricultural workers you are training. For example, if you are training people who harvest tomatoes, choose pictures of people working in row crops rather than in orchards. Make sure that the pictures are big enough for everyone to see. If you will be training a large group, consider converting the pictures into something you can project onto a screen. Adding color to pictures will make them more interesting and visible. Maintain eye contact with the group instead of focusing on the illustrations. After you show each illustration to the group, give everyone enough time to think about the picture before beginning the discussion.

Advantages of Illustrations

- They encourage people to think about what they see.
- They stimulate discussion.
- They allow you to communicate a great deal of information with a single image.

Disadvantages of Illustrations

- Individuals may misinterpret illustrations and come to the wrong conclusions.
- Poor picture choices showing people involved in foolish behavior may be insulting or misleading.
- In a large group, it may be difficult for agricultural workers to see the illustrations unless each person is provided a copy or the pictures are projected onto a screen.

Training Activity Using Illustrations

The following illustrations demonstrate the four ways that pesticides can enter the body.

Pesticides can get into the body:

- through the skin (dermal exposure)
- through the eyes (ocular exposure)
- by swallowing pesticide or pesticide residues (oral exposure)
- by breathing in pesticide vapors or mist (respiratory exposure)

Ask the agricultural workers to look at each picture, analyze what they see, and discuss their observations and conclusions.

Picture #1: Agricultural workers eating lunch in the field

**QUESTION**

What are these agricultural workers doing in this picture?

**ANSWER**

They are eating their lunches in the field.

**QUESTION**

What are the potential hazards to these workers eating in the field?

**POSSIBLE ANSWERS**

- Since the people in the picture are eating in the field where they are working, it is possible that they did not wash their hands before eating.
- The people may have stored their lunches in the field among treated plants and pesticide-contaminated soil.
- By sitting in a treated field, they may be increasing their exposure to pesticide residues.
QUESTION
Where should the agricultural workers eat their lunches?

ANSWER
They should eat their lunches away from pesticide treated areas.

QUESTION
What else can agricultural workers do to prevent ingesting pesticide residues?

ANSWER
They should wash their hands with soap and clean water before eating.

QUESTION
Who is responsible for providing decontamination supplies, such as clean water, soap and single use towels, to agricultural workers?

ANSWER
The agricultural employer is legally responsible for assuring that decontamination supplies are available to workers for 30 days after the expiration of the REIs. If there is no REI, the decontamination supplies must be provided for 30 days. The only exception to this requirement is pesticides with REIs of 4 hours or less. In the case where a pesticide has a 4 hour REI or less, decontamination supplies must be made available to workers for not less than 7 days. The decontamination supplies must be located within a quarter mile of the worksite.

QUESTION
How could these agricultural workers be exposed to pesticides in this situation?

ANSWER
The workers could be exposed to spray drift. The pesticide could be inhaled, absorbed through his skin, or get into his eyes.

QUESTION
What should the workers do?

ANSWER
The workers should leave the area immediately.

QUESTION
What is the pesticide applicator doing wrong?

POSSIBLE ANSWERS
- The pesticide applicator must make sure that the area is clear of all people and animals before starting a pesticide application.
- It is illegal for an applicator to spray if there are people in the area who could come in contact with the spray or drift from the application.

Picture #2: Agricultural workers working near an area where pesticides are being applied

QUESTION
What is wrong with this picture?

ANSWER
These people are working in an area near a pesticide application.
CHAPTER 6: EXAMPLES OF INTERACTIVE TRAINING TECHNIQUES

QUESTION
What is happening in this picture?

ANSWER
One person is drinking water from an irrigation ditch. The other person is filling a bottle with irrigation water.

QUESTION
Why would this be dangerous?

POSSIBLE ANSWERS
- Pesticides are sometimes applied through the irrigation system. This process is called chemigation. Therefore, the people in this picture may be drinking and touching water that has pesticides in it.
- Pesticide residues may flow into irrigation ditches during a rainfall or crop irrigation.
- Even if chemigation is not taking place, irrigation water is never fit for drinking or washing as it can have other pollutants in it that may also cause sickness, disease, or injury.

QUESTION
What type of exposure could result from drinking and washing with irrigation water?

POSSIBLE ANSWERS
- He could get the pesticides on his skin when he touches the water.
- He could swallow pesticides when he takes a drink.
- He may get pesticides into his eyes if he rubs them after putting his hands in the irrigation water or by washing his face with irrigation water.

CASE STUDIES

The case study is another interactive training tool. A case study involves a story and a series of questions designed to identify or solve the problem presented in the story. You can use fictional stories or real experiences. The questions that follow the story should encourage agricultural workers to think about the situation and lead them to the correct conclusions.

Tips for Using Case Studies

When you use case studies to provide pesticide information, make sure you choose a story that illustrates the points you wish to make. Choose or develop a story with situations that are realistic and could occur at the workplace. Ask questions that encourage discussion rather than ones that can be answered with a simple “yes” or “no.” Make sure the questions you ask are likely to lead people toward the right conclusions.

Training Activity Using a Case Study

The following story addresses some of the common symptoms of pesticide poisoning and how these symptoms can be confused with other illnesses. It
covers the responsibilities of supervisors and employers to protect agricultural workers from pesticide exposure.

Start this exercise by telling the following story. When you have finished telling the story, ask the questions that are listed at the end.

THE CASE OF THE SICK CREW

José is part of a field crew that works for a farm labor contractor. One day José and his crew enter a field to work. After he has been working for a while, José begins to feel sick. His head hurts and he feels dizzy and nauseous. José attributes his symptoms to the onset of the flu. He continues working because he thinks he will probably feel better in an hour or two. However, as time goes on he feels even worse. After a while he comments to his friend, Jorge, that he feels sick. Jorge says that he does not feel well either, although they continue to work. At the morning break, José and Jorge are talking with other workers, and it soon becomes apparent that they are all feeling ill. Jorge suggests that maybe it is something in the field, and they should talk to the crew leader or employer. Even though the other workers feel sick, some are hesitant to complain or “make trouble.”

QUESTION
What do you think is making the workers ill?

ANSWER
Pesticide residues in the field could be causing the illness.

QUESTION
What else might cause these symptoms?

ANSWER
The flu, a cold, heat stress, or some other illness could cause the symptoms the workers are experiencing.

QUESTION
Why do you think that a cold or the flu is not causing the workers to feel sick?

ANSWER
It is very unlikely that everyone would have a cold or the flu on the same day.

QUESTION
What reasons might the workers have for not telling the crew leader or employer that they all feel sick?

Answer on next page.

Advantages of Case Studies

- They stimulate discussion.
- They help agricultural workers identify problems and look for solutions.
- They interest workers by presenting situations similar to ones that might occur at their workplace.
- They motivate workers to bring up personal workplace experiences that illustrate the points you are trying to make.

Disadvantages of Case Studies

- It can be difficult to find stories that address the points you want to make.
- It can be difficult to develop questions that lead agricultural workers to the right conclusions.
- There is the possibility that the workers may misinterpret the point of the story and come to the wrong conclusions.
- The discussion may lead to topics not related to the training material as a result of participants who may want to talk about their personal experiences.
ANSWER
They may be afraid to talk to the crew leader or employer because they do not want to cause problems and/or they are afraid of losing their jobs.

QUESTION
Why should they tell the crew leader or employer?

ANSWER
They should tell the crew leader or employer because they need to leave the area before they become more seriously ill.

QUESTION
What would you do if you and your co-workers started feeling sick?

POSSIBLE ANSWERS
- Tell my crew boss.
- Keep working as best I could and keep quiet.

QUESTION
What are the responsibilities of a crew leader or employer to protect agricultural workers in a situation like the one described here?

ANSWER
Employers have the responsibility to protect agricultural workers from workplace hazards. Employers have the immediate responsibility to make sure prompt transportation to an appropriate emergency medical facility is provided for agricultural workers if they are poisoned or injured by exposure to a pesticide that is covered by the WPS. They must also provide employees or medical personnel with specific information on the pesticide label so the poisoned or injured person can be treated effectively.

QUESTION
Does a labor contractor have a responsibility to agricultural workers?

ANSWER
Yes.

QUESTION
What is the employer’s responsibility?

ANSWER
To keep people out of treated areas if the residues in the area present a risk and to provide medical help to sick or injured agricultural workers.

QUESTION
Where can agricultural workers obtain pesticide information if they are unable to contact the grower?

ANSWER
They can go to the central posting location and collect the information related to the pesticide(s) used in the area where the alleged incident happened.

This story and the accompanying questions can help agricultural workers understand the following points:

- Some pesticides can cause headache, dizziness, and nausea.
- Various illnesses can cause symptoms similar to those of pesticide poisoning.
- Agricultural workers should tell their supervisor if they think something in the work area is harming them.
- Agricultural workers must leave areas that make them feel sick.
- Labor contractors and agricultural employers have a shared responsibility for protecting agricultural workers from possible exposure to pesticides.
EPA developed a bilingual English and Spanish flip chart that covers the information required for WPS pesticide safety training. The flip chart allows agricultural workers to see the drawings on the front of each page while the trainer uses the descriptive safety training text on the back of each piece of flip chart paper. The text includes training objectives, a script with all the required information, and review questions for you to ask the agricultural workers after each section.

**Tips for Using the WPS Flip Chart**

Study the information included in the script so you can speak to the group instead of reading the text directly from the flip chart. Also, maintain eye contact with the agricultural workers so you do not give the impression that you are just reading to them. Use the questions included in the text and encourage agricultural workers to ask additional questions and to make comments during the presentation. Only use the flip chart if you are working with groups that are small enough to allow everyone to see the drawings. You can adapt the flip chart for larger groups by projecting images onto a screen or printing the drawings for individual use.

**Training Activity Using the WPS Flip Chart**

The following activity demonstrates how you can use a section of the WPS flip chart to lead a discussion with agricultural workers. This section of the flip chart deals with how workers can protect themselves from exposure through the use of appropriate clothes, personal hygiene, and common sense. Use this activity to keep the agricultural workers actively involved during a flip chart presentation.

Begin this activity on page 7 of the flip chart, where there is a picture that shows an agricultural worker with the proper clothing that will help minimize his skin (dermal) exposure to pesticide residues from treated areas.

**Advantages of the WPS Flip Chart**

- It is portable and can be placed on a table, on the back of a pickup truck, or over your arm.
- It allows you to remove pages or rearrange them in the order you prefer.
- It contains all of the required information needed to train agricultural workers.
- It contains all of the necessary elements to facilitate an interactive training session.
- You can add color to the illustrations to make them more visually appealing.

**Disadvantages of the WPS Flip Chart**

- Because of its size, it is only useful with a small group in which everyone is able to sit or stand close enough to see the drawing.
- Due to its design, some trainers may simply read the text on the back of each page, rather than making eye contact with agricultural workers and engaging them in the training.

Starting on page 7 of the flip chart and continuing through page 27, use the pictures while presenting the information in your own words. Show the workers each picture, and after you have finished the section, ask the questions listed on page 26 of the flip chart.

**QUESTION**

What are some ways to keep pesticides out of your body and off your skin?

**ANSWER**

Wear work clothes that cover the skin. Wash your hands before eating, drinking, smoking, chewing gum or tobacco at work. Wash your hands before using the toilet. Stay out of areas where pesticides are drifting, or where the warning sign is posted. Do not take pesticides or pesticide containers home. Wash your whole body after work each day and put on clean clothes. Keep dirty work clothes separate from family laundry.
A role-play is an imaginary scenario in which agricultural workers act out the parts of fictional characters. The scenario you select should describe a situation similar to one that could possibly occur at the work site of the people you are training. The scenario should provide agricultural workers with an opportunity to reach appropriate conclusions about protecting themselves from workplace exposure to pesticides and pesticide residues.

**Tips for Using Role-Play Activities**

When you use role-play activities during a training session, develop simple scenarios with a small number of characters and one main message. Start to plan the role-play by deciding exactly what you want the agricultural workers to learn. Select a picture or develop a description that can guide the individuals who will be presenting the scenario. Ask the agricultural workers to act out the scenarios as realistically as they can, including things that could actually occur at their workplace.

At the end of each role-play lead a discussion on what happened during the role-play. Make sure you clarify or correct any possible misunderstandings.
Advantages of Role-Play Activities

- Role-play activities can be enjoyable and interesting as well as informative.
- Role-play activities are especially valuable because participants are likely to remember more by acting out a scenario than by listening to a lecture or studying written materials.
- They involve agricultural workers in the learning process by acting out roles.
- Agricultural workers can become more aware of their own attitudes and concerns.

Disadvantages of Role-Play Activities

- Role-play activities take more time than many other training techniques.
- Some individuals will not feel comfortable playing a role.
- Most role-play activities require the use of props that you will have to bring to the training session.
- Role-play activities may be open to interpretation, so you may need to clarify the points you hoped to demonstrate through the activity and correct any possible misunderstandings.

Training Activity Using a Role-Play

The following activity shows how you can use a role-play to teach agricultural workers how to obtain medical help in the event of a workplace injury involving pesticides. In this scenario, an agricultural worker walks by a greenhouse and sees a radio lying on the floor inside. No warning sign is posted on the greenhouse door which would prohibit entry due to a recent pesticide application. The agricultural worker enters the greenhouse and starts to pick up the radio. However, the agricultural worker is overcome by pesticide vapors, drops the radio, stumbles out of the greenhouse, and collapses. Two people working nearby see what has happened and rush over to help. While one stays with the injured person, the other one gets the supervisor. The supervisor arranges for medical help.

Ask for four volunteers to act out the scenario. One will play the role of the injured worker, two will play the people working nearby, and the fourth will play the part of the supervisor. Explain the situation to the actors, and tell them to create their own script based on the story. They must decide on the attitudes of the characters they are playing and make their own decisions.
on how to respond correctly to the situation. Give them five or ten minutes to create their script and plan their role-play, or have a script already prepared for them to read.

The rest of the participants will be the audience. While the actors are preparing the role-play, explain to the audience that their job is to watch the role-play and to determine if the rescuers and the supervisor respond correctly. Tell the audience members to take note of the attitude of each of the role-play characters and to think how these attitudes contribute to the situation.

After the role-play is finished, you can ask the following questions.

**QUESTION**
How did the person become exposed to pesticides?

**ANSWER**
The pesticide applicator or supervisor did not post the required warning sign and the agricultural worker entered an enclosed area that had been recently treated with pesticides.

**QUESTION**
Who is responsible for posting required warning signs to notify agricultural workers about pesticide applications in greenhouses?

**ANSWER**
The employer is responsible for making sure that posting is done.

**QUESTION**
How should the rescuer protect oneself from also being exposed to the pesticide?

**ANSWER**
Prior to entering the area where the injury occurred, the rescuer should check the central posting to see which pesticide was applied, if any, and what proper personal protective equipment is needed to be worn by the person who retrieves the victim. If necessary, call 911 for assistance with the situation.

**QUESTION**
Did the supervisor know what to do?

**ANSWER**
The agricultural worker’s answer will depend on how the actors decided to play the roles.

**QUESTION**
Did the rescuer know where to look for medical help information?

**ANSWER**
The agricultural worker’s answer will depend on how the actors decided to play the roles.

**QUESTION**
Where is medical information posted at your workplace?

**ANSWER**
The information must be displayed at a central location. However, the answer will vary from person to person within the group, depending on where that central location resides.

**QUESTION**
Who should provide pesticide information to medical personnel?

**ANSWER**
The employer has this responsibility.

**QUESTION**
Who has the responsibility of making sure that an injured worker gets immediate medical attention?

**POSSIBLE ANSWERS**
- The employer, the supervisor, or both have this responsibility.
- Agricultural workers should know what to do in an emergency situation. If a supervisor can be reached, workers at the scene of the accident should communicate with them immediately. If someone with the authority of a supervisor cannot be reached immediately, the workers should take the nec-
necessary steps to get an injured person to a medical facility as quickly as possible.

**QUESTION**
What conclusions can you draw from this scenario?

**POSSIBLE ANSWERS**
- It is important that agricultural employers make sure that all greenhouse pesticide applications are posted with warning signs.
- Employers are responsible for posting emergency medical information and informing agricultural workers where it is posted. You should know where the emergency medical information is located at your workplace.
- Agricultural workers, supervisors, and employers should work together to foster workplace safety.

**AUDIOVISUAL PRESENTATIONS**

Many instructors like to train using videos or computer-generated presentations. A video presentation is easy to do, since the information is provided without much preparation on the part of the trainer. However, if you use videos or computer-generated presentations without stopping, participants will not have the opportunity to take an active part in the training process. They are not likely to retain all of the information from the presentation.

Unless special efforts are made, these types of presentations do not give agricultural workers the opportunity to ask questions as they think of them or a chance to request clarification on the information presented. By the time the presentation has ended and the instructor invites comment and questions, the agricultural workers may have forgotten any questions they had or be anxious to leave.

With minimal effort, you can make audiovisual presentations interactive and use them more effectively. A well-designed presentation is divided into sections. Each section covers a separate set of points.

To use audiovisual presentations interactively, show one section and then stop and lead a discussion on the information that has just been covered. Once the agricultural workers have had an opportunity to discuss and demonstrate that they understood the material, continue with the next section.

Using a video as your only training tool is not considered an effective training technique for WPS training. Do not expect the video to train agricultural workers on its own. Using a video interactively is more work, but it is much more effective than simply turning on the equipment and turning off the lights.

**Tips for Using Audiovisual Training Materials**

Always review audiovisual presentations to see whether they contain correct and complete information and reflect workplace situations similar to those of the people you will be training. While reviewing the presentation, select the places where you plan to interrupt the video to allow discussion and clarification. Make sure you make notes to yourself that will remind you when to stop the presentation and lead discussions during the training session.

Ask agricultural workers to comment on images that are shown and to share experiences they have had that relate to what was presented. Have them repeat the main points covered in each section and mention additional points they consider important.
Interactive Training Using a Video

The following activity shows how you can use a portion of a video to demonstrate to agricultural workers how work clothes that may have pesticide residues on them should be handled. Federally-approved pesticide safety videos always include a section on how to care for work clothes after agricultural workers arrive home.

For this activity you will need to find the section of an EPA-approved pesticide safety video that discusses the handling of work clothes after work.

Tell agricultural workers that pesticide residues may get onto their clothes at work and that these residues are a risk to them and to family members. Explain that the video section they are about to see demonstrates how they should store their work clothes if they will not be washed immediately and how to remove pesticide residues when the work clothes are washed. Tell them that after they see this segment of the video, there will be a discussion of the content.

Start the activity by showing the short, selected portion of the video and then lead a discussion of the material covered in it. Ask the following questions to stimulate discussion and make sure that the agricultural workers have understood the information.

QUESTION
How often should you wash your work clothes?

POSSIBLE ANSWERS
- Daily, or before reusing them.
- As often as possible.

QUESTION
What are some of the things you must do before washing contaminated work clothes?

POSSIBLE ANSWERS
- Separate from the rest of the family clothing.
- Set the wash water to the hottest setting and use a strong detergent.
- Store dirty work clothes in a plastic container that can be closed tightly until you are ready to wash them.

Advantages of Combining Discussion with Audiovisual Presentations

- If audiovisual presentations are done well, they cover the required information in an organized manner.
- Agricultural workers get to observe scenes depicting actual situations while they are hearing the information. By seeing the action and hearing the discussion, they may retain more of the information.
- By interrupting the presentation, you give agricultural workers a chance to ask questions and clarify information while it is still fresh in their minds.
- When you interrupt the presentation and lead discussions of each section, you get comments as you go along and can determine whether or not the agricultural workers understood the information.

Disadvantages of Audiovisual Presentations

- Trainers may be tempted to let the audiovisual presentation do the training without attempting to add clarification or make the presentation interactive.
- Since most pesticide safety videos cover a lot of information in a relatively short time, viewers may not be able to retain all the information.
- Turning the lights off to view projected presentations may cause sleepiness.
- Even videos and computer-generated presentations that have been reviewed and approved may have errors that the trainer has the responsibility to recognize and correct.
- Since regulations can change, the trainer must make sure the information in the audiovisual materials is up-to-date.
- Interrupting the presentation and leading a discussion on each section is time consuming.
- It is not always convenient to set up audiovisual equipment in areas where agricultural workers are gathered, such as in fields or farm sheds.
- It may be difficult for everyone in a large group to see or hear the video.
QUESTION
What other things should you remember about washing work clothes?

POSSIBLE ANSWERS
- Line drying outdoors works better than using the clothes dryer because the sun helps break down pesticide residues.
- After removing the clothes from the washing machine, run the machine through another full wash cycle (without any clothes in it) using hot water and detergent. This will help remove pesticide residues from the washing machine.

RELATING PERSONAL EXPERIENCES

Sometimes relating a personal experience makes a point better than just explaining the consequences of an action. You can take advantage of experiences that the agricultural workers in your training may have had at work by telling them what topic you want to cover, and then asking if anyone in the group knows about an event that relates to this topic. If someone responds, ask him or her to tell the group about the experience and its outcome.

Tips for Using Personal Experiences to Discuss Safety Issues

If you plan to ask agricultural workers to share their personal experiences about specific pesticide exposure situations, have your own stories about workplace situations ready in case no one volunteers to speak. If someone starts to wander from the topic during a discussion, assure them that the story is very interesting but that it is important to keep the discussion focused on the topic. Let only one person relate an experience at a time. Have the group listen to one story and then lead a discussion related to that story before going on to the next story. At the end of this activity, highlight the important safety messages and thank people for sharing their experiences with the group.

Training Activity Using Personal Experiences

This activity focuses on the dangers of taking home pesticides or pesticide containers. Start by asking agricultural workers why they should never take agricultural pesticides or pesticide containers home from work. Make sure they reach the conclusion that pesticide containers are hazardous because the residues they contain can never be completely removed.

Also, mention that pesticides from work are sometimes more toxic or concentrated than the ones people would purchase to use at home. In addition, you should point out that taking home pesticides from work that have been poured into empty food or beverage
containers for storage is especially hazardous and illegal. Someone at home might accidentally drink the pesticide. Ask the agricultural workers if they know who would be the most likely to accidentally drink a pesticide stored in a food or drink container. You want them to reply that children are especially at risk for this type of poisoning.

After you have finished your initial discussion of the dangers of workplace pesticides and empty pesticide containers, ask if anyone has an incident to relate about an accidental poisoning resulting from someone bringing home pesticides or empty pesticide containers. If no one in the group has an incident to share, be prepared to tell your own story demonstrating the dangers of taking home pesticides and pesticide containers.

One possible theme for such a story would be storing a pesticide in a soft drink container or storing poisoned bait in a peanut can within reach of a young child.

Once the story has been told, ask questions about the story or incident that will help the agricultural workers draw the correct conclusions about the dangers of bringing home pesticides or pesticide containers.

When individuals have already attended pesticide safety training classes, they may feel that they already know enough about pesticide hazards, so you may have trouble keeping their attention. Using educational games can turn a potentially boring training session into an interesting and enjoyable learning experience. For example, using quiz games at the end of a training session can help you determine if the agricultural workers have understood and retained the information that you presented.

**Tips for Using Games in a Pesticide Hazard Training Session**

Make sure you know what information you are trying to communicate when you develop or choose the games. Games should be designed or chosen to help you reach your training objectives. Set sufficient time aside during training to play the game. Games designed to determine how well people have learned the information you presented can be played at the end of the training session.

Consider giving small prizes, such as candy, baseball caps, water-resistant gloves, or plastic water bottles to winners. If you have enough prizes, make everyone a “winner,” so everyone goes away with a small prize.

When you play question and answer games, you might start to notice that certain questions are especially difficult. This tells you that you did not effectively communicate the information the agricultural workers needed to correctly answer the question or

---

**Advantages of Educational Games**

- They are fun and interesting.
- They encourage participation.
- They give people an opportunity to demonstrate their knowledge.
- They provide you with feedback to check whether or not you have succeeded in providing important safety information.

**Disadvantages of Educational Games**

- Setting up and playing educational games can be time-consuming.
- If you offer prizes, participants may focus more on winning than on learning the information being presented.
they did not understand the question. If you find that people in the group almost always answer certain questions incorrectly, you should revise your presentation so you can convey this information more clearly in the future.

**Training Activities Using Educational Games**

Using a game can be an effective way to present information or to check the level of learning at the end of a training session. The following games are quiz games designed to review the information presented in an agricultural worker pesticide training session. These games should be played at the end of the training session to help agricultural workers better retain what they have learned. Also, by playing these games and observing how well the agricultural workers are able to answer the questions, you can determine whether or not your presentation was effective in teaching what people need to know about pesticide hazards.

**The Wheel Game**

Construct a game board patterned after a roulette wheel. You can use a bicycle wheel or cut a wheel out of cardboard. Design the wheel with a hole in its center so that it can spin freely when attached to a post or on a wall. Attach a circular flat writing surface to the front of the wheel. Divide this surface into several pie-shaped sections and write one of the pesticide topics from your training session onto each section.

For example, one section could be labeled “After-Work Care of Work Clothes” and another could be labeled “Symptoms of Acute Pesticide Poisoning and Injury.” Develop at least five questions for each of the topics listed on this wheel. Print the questions on individual cards or slips of paper, grouped by topic, and put them into envelopes or other containers that are labeled by topic. Attach an arrow centered above the wheel so that the arrow will point to one of the pie-shaped sections when the wheel stops spinning. See the Wheel Game illustration.

The game can be played by allowing each of the workers to take a turn spinning the wheel and being the “contestant.” When the wheel stops, the arrow will be pointing to one of the topics. Select a question from the corresponding envelope and read it aloud. Give the contestant about ten seconds to answer the question. If a contestant is unable to answer correctly, invite others in the group to raise their hands if they think they have the correct answer. Select the first person that responds. If that person does not give the correct answer, try again. If no one has been able to answer the question correctly after three or four tries, give the group the correct answer and continue with the game.

On the following page are questions you might want to include when playing this game:


**Topic: Field Entry Restrictions**

**QUESTION**
What is a restricted-entry interval (REI)?

**ANSWER**
An REI is the time that must pass before it is safe to enter a treated area without special protective equipment and additional training. The interval varies by pesticide, and it is found on the pesticide label.

**QUESTION**
Can you describe the characteristics of the WPS warning sign used to post a treated area?

**ANSWER**
The sign has a stern face and an upheld hand. The sign states “Danger Pesticides,” and “Keep out” in red and black lettering and is translated into a second language.

**Topic: Employee Rights**

**QUESTION**
What are some things your employer must do to help protect you from exposure to pesticides?

**ANSWER**
Employers must do multiple things to protect the agricultural worker from exposure to pesticides. The employer must warn agricultural workers, either orally or through posting, against going into areas where pesticides have been applied and where it is not yet permissible to enter. The employer must make sure that agricultural workers have received the required pesticide safety information and training. The employer must make information available regarding pesticide hazards and recent pesticide applications in the areas where employees may be working. The employer must provide transportation to the nearest appropriate medical facility in case of poisoning or injury related to a pesticide that is covered by the WPS.

**QUESTION**
As an agricultural worker, if you are poisoned or injured by exposure to a pesticide that is covered by the WPS, who has the responsibility of making sure you are taken immediately to a medical facility?

**ANSWER**
Your employer must make available prompt transportation from the agricultural establishment to an appropriate medical facility.

**QUESTION**
Where can you get information about a pesticide that may have made you sick?

**ANSWER**
Your employer must provide you, your designated representative, and the medical personnel treating you with information about pesticides to which you may have been exposed at work. Pesticide information should be available to agricultural workers at a central location as long as there are agricultural workers on the establishment.

**QUESTION**
What can workers do if they are not being provided these things?

**ANSWER**
Talk to their supervisor or employer as a group, contact a local farmworker organization, and/or contact the state agency in charge of enforcing pesticide regulations like the WPS. *Note: This is usually the state Department of Agriculture.*

**The Television Quiz Show Game**

Another game that can be used at the end of a pesticide training session follows the format of a television quiz show. This question-and-answer game allows you to test the agricultural workers on the information you have presented. By listening to their answers and noticing where their knowledge is incomplete, you can decide what topics you need to cover more thoroughly or clearly.
Make a game board like the one pictured below. You can draw the game board on a piece of flip chart paper or a chalkboard, make it as a PowerPoint® presentation, or you can make a permanent game board out of cardboard or wood. Choose five categories relating to pesticide hazards and how they can be avoided. Place the category titles in the five squares along the top row. In the table below, the five categories are Routes of Exposure and Effects of Exposure, Preventing Exposure, First Aid Procedures, Employer Responsibilities, and Miscellaneous.

Write five questions for each topic with increasing degrees of difficulty. Put one question on each card. On the back of each card, write the correct answer. The easiest question will be worth 100 points, and the most difficult question will be worth 500 points. Write the point value of each question in the upper right-hand corner on the front of each card.

Each square on the game board corresponds to a card with a question from the category under which it appears. You will be the game show “host.” Ask for a volunteer to keep score. When a contestant selects a square by choosing a category and a game point value, ask the corresponding question. If the player answers correctly, that person’s team gets points. If the answer is incorrect, the second respondent can try to answer the question and earn the same amount of points.

If no one from any of the teams can answer correctly, tell the group the correct answer before continuing the game. Keep playing until you have gone through all of the categories and questions. Remember that if you play the game at the end of a training session and the participants are able to answer the questions correctly, you can be confident that your presentation was effective.

If the agricultural workers do poorly and are unable to answer many of the questions, this is an indication that you need to revise your presentation so that the information is presented more clearly. It is also possible that some questions need to be rewritten.

**Game Rules.** Divide the group into equal teams. Depending on the size of group you may have 2 to 4 teams. The teams will take turns competing, and every member of each team will have a chance to play. Each contestant must select a category and a level of difficulty. Once the contestant has made a choice, direct the corresponding question to the whole group.

The first player to raise their hand gets to answer the question. If...
Quiz Game Questions. The following questions are arranged by category. The game point value of each question is given in parenthesis following the question. Where more than one question has been included for a particular category and point value, you can choose the question you prefer when playing the game with agricultural workers.

These questions can also be used for the Wheel Game described earlier. When using the questions for the Wheel Game, you may prefer not to assign point values to the questions.

Routes of Exposure and Effects of Exposure

QUESTION
What are the four routes by which pesticides can get into the body? (100 points)

ANSWER
Pesticides can enter the body through the skin, eyes, nose (inhalation), and mouth (swallowing).

QUESTION
How could a worker inhale pesticide dusts or vapors? (200 points)

ANSWER
A worker could inhale pesticides by being too close to an area where a pesticide application is taking place or by going into an enclosed area that is either under treatment or has been recently treated. Inhalation of harmful levels of pesticides could also occur by entering a treated field where there are still toxic levels of pesticide vapors present.

QUESTION
Name five common symptoms of pesticide poisoning? (300 points)

ANSWER
Possible symptoms include irritated skin or rash, irritated eyes, nausea, dizziness, headache, vomiting, diarrhea, fatigue, trembling, lack of coordination, excessive perspiration, drooling, watery eyes, and blurred vision.

QUESTION
Name at least three suspected long-term, or chronic, health effects of excessive pesticide exposure? (400 points)

ANSWER
Cancer, birth defects, miscarriage, sterility, nervous system effects, organ damage (kidney, lung, liver, or other), and immune system disorders are possible long-term, or chronic, effects of excessive pesticide exposure.

QUESTION
What is meant by sensitization? (500 points)

ANSWER
Sensitization is the gradual development of an allergic reaction to a certain pesticide. Sensitization develops after several exposures to the pesticide.

Preventing Exposure

QUESTION
Who is responsible for providing soap, water, and disposable single-use towels for hand washing? (150 points)

ANSWER
Your employer is responsible.

QUESTION
How can failing to wash your hands at work lead to swallowing pesticide residues? (150 points)

ANSWER
If you put something into your mouth without washing your hands first, residues can be transferred from your hands directly to your mouth or onto the food before you put it in your mouth.
QUESTION
How can failing to wash your hands at work lead to pesticide poisoning because of skin exposure? (100 points)

ANSWER
If you touch pesticide-treated surfaces and do not wash your hands frequently, the pesticide residues on your hands may eventually penetrate your skin and get into your body.

QUESTION
How can failing to wash your hands at work lead to eye exposure? (100 points)

ANSWER
If you have pesticide residues from treated surfaces on your hands and rub your eyes, these residues can get into your eyes and cause eye irritation. Pesticides that get into your body through your eyes can also cause pesticide poisoning.

QUESTION
Name three things you should never do at work until you have washed your hands. (200 points)

ANSWER
You should never eat, smoke, rub your eyes, touch your face or other parts of your body, drink, or use the bathroom until you have washed your hands.

QUESTION
Why is it important for you to wash your hands before eating and using the bathroom when you work in pesticide treated areas? (200 points)

ANSWER
Your hands may have pesticide residues from touching treated surfaces, and if you eat or use the bathroom with pesticide-contaminated hands, these residues can get on or into your body.

QUESTION
Why should you never wash your hands in irrigation water? (200 points)

ANSWER
Pesticides are sometimes applied through irrigation water and irrigation water might contain traces of pesticide, fertilizers, or other harmful substances.

QUESTION
Name two things you should do as soon as you get home from work. (300 points)

ANSWER
Take a shower or bath and put on clean clothes.

QUESTION
Why should you never take home pesticides or pesticide containers? (400 points)

ANSWER
Pesticides from work may not be suitable for use in the home because the concentration or toxicity may be greater than home use products. Pesticide containers should never be taken home because pesticide residues remain in the container even after the container has been rinsed.

QUESTION
How should you wash and dry your work clothes? (400 points)

ANSWER
Always wash work clothes separately from the family wash, using a strong detergent and hot water. If possible, line-dry the clothing rather than using the dryer. After washing work clothes, run the emptied washing machine through a wash cycle using soap and hot water.

QUESTION
Name five things you can do at work to avoid excessive pesticide exposure. (500 points)

POSSIBLE ANSWERS
- Always wash your hands before eating, drinking, smoking, touching your eyes, and using the bathroom.
- Change out of work clothes as soon as you get home from work.
First Aid Procedures

QUESTION
What is the first aid response for skin exposure to pesticides? (100 points)

ANSWER
Remove any contaminated clothing and wash the skin with clean water and soap. If symptoms of pesticide exposure develop, take the exposed person to the doctor.

QUESTION
What are the first aid steps if someone gets pesticides into their eyes? (200 points)

ANSWER
Rinse the eye with a gentle stream of clean, cool water. Hold the lid open of the affected eye. Turn the head so that water running out of the affected eye does not run into the other eye. After rinsing the eye, take the person to a medical facility immediately.

QUESTION
What is the appropriate first aid procedure for someone who has inhaled a pesticide? (300 points)

ANSWER
Take the person to fresh air immediately. Loosen any clothing that may restrict breathing. If the person has stopped breathing or is having difficulty breathing, provide mouth-to-mouth resuscitation, but only if you are trained to do so. Get the person to a doctor immediately.

QUESTION
Under what circumstances is it dangerous to induce vomiting? (400 points)

ANSWER
Vomiting should never be induced if the pesticide label specifically recommends against it. Even if the first aid instructions on the label recommend vomiting, vomiting should not be induced if the person is unconscious or is having convulsions because vomiting could make the person choke. Vomiting should not be induced unless the person is conscious and in a position that assures they can not swallow or choke on their own vomit.

QUESTION
Why do medical personnel need to know the name of the pesticide involved in a poisoning or injury incident? (500 points)

ANSWER
There are many different types of pesticides, and they can affect people in very different ways. The doctor needs to know what pesticide is responsible for an injury or poisoning incident in order to provide the appropriate medical treatment.

Employer Responsibilities

QUESTION
In the event that an agricultural worker is poisoned or injured as a result of exposure to a pesticide that is covered by the WPS, who has the responsibility for providing prompt transportation?
to the nearest appropriate emergency medical facility? (100 points)

**ANSWER**
The employer is responsible for providing transportation to an emergency medical facility.

**QUESTION**
Who pays for the emergency transportation to a medical facility when there is a reason to believe that an agricultural worker has been poisoned or injured by a pesticide covered under the WPS? (200 points)

**ANSWER**
The employer (or their insurer) is responsible for the cost of emergency transportation in cases where pesticide illness or injury is suspected.

**QUESTION**
Why is it in the best interest of employers to protect workers from workplace hazards? (300 points)

**ANSWER**
Workplace injuries are expensive because of increased insurance rates, loss of productivity, and potential litigation. A trained employee is much less likely to have a workplace accident that could result in lost work time, increased workers’ compensation insurance rates, and possible legal action.

**QUESTION**
Where can agricultural workers obtain information related to recent applications of pesticides in areas where they will be working? Who should provide this information? (400 points)

**ANSWER**
Pesticide application information can be found at the central posting location. Employers must make this information readily available at a place where agricultural workers can find it without having to request permission to see the information.

**QUESTION**
If posting warning signs is not required by the pesticide label, when must an employer verbally notify agricultural workers about pesticide applications? (500 points)

**ANSWER**
The employer must notify agricultural workers about pesticide applications prior to the applications. If an agricultural worker is not present at the time of the application, the employer must notify the agricultural worker immediately upon return to the agricultural establishment.

---

**Miscellaneous**

**QUESTION**
Do supervisors and crew leaders have a responsibility to protect workers from exposure to pesticides? (100 points)

**ANSWER**
Yes. Even though the final responsibility rests on the employer, supervisors and crew leaders share the day-to-day responsibility for protecting agricultural workers from workplace injury.

**QUESTION**
Where should emergency numbers be posted? (200 points)

**ANSWER**
At a central location where they can easily be seen.
**QUESTION**
Why must you never put pesticides in food or drink containers? (200 points)

**ANSWER**
Someone, especially a young child, could mistake the pesticide for something to eat or drink.

**QUESTION**
What is chemigation? (300 points)

**ANSWER**
Chemigation is the application of pesticides or fertilizers through irrigation water.

**QUESTION**
If the date for the restricted-entry interval has expired, when is it acceptable for an agricultural worker to enter a posted area? (400 points)

**ANSWER**
As long as an area remains posted, agricultural workers should not enter the area.

**QUESTION**
Name three people who have the responsibility to protect you from hazards at work. (500 points)

**ANSWER**
Your employer, your supervisor, and you all share the responsibility for protecting you from occupational hazards.
CONDUCTING THE TRAINING

While being an effective trainer is a challenge, the following tips should prove helpful:

- Have correct information and adequate knowledge of the subject.
- Use practical techniques for communicating with the people you are training.
- Be aware of state and local laws, or have someone present who can assist in these areas.
- Have correct contact information for the state regulatory agency available.
- Arrive at the training site well in advance of the training to 1) set up the training room, any

IN THIS CHAPTER...

Preparation Tips for Trainers ........................................ 65
Getting Started ......................................................... 66
Getting to Know the Participants ................................. 66
Overcoming Communication Barriers ............................ 66
Your Attitude Is Important ........................................... 67
Educate—Do Not Advocate .......................................... 68
Respect Participants .................................................. 68
Challenges When Conducting Training .......................... 68
Ending the Training .................................................. 72
After the Training ..................................................... 72

PREPARATION TIPS FOR TRAINERS
equipment, props, or training materials being used, 2) familiarize yourself with the participants and the types of occupational activities they perform, and 3) get to know the advantages and limitations of the facilities in which you will be training.

**GETTING STARTED**

- Training must be presented in a manner the worker can understand.
- Start by introducing yourself and the topic—Worker Protection Standard (WPS) pesticide safety training.
- Establish rapport and credibility by explaining why you are qualified to teach this topic.
- As possible, share your agricultural or related experiences.
- Explain why this topic is important.
- Explain how long the training session will last.
- Discuss your expectations of the participants during the training.
- Ask participants to turn off pagers, cellular phones, radios, and remove headsets and earphones.

**GETTING TO KNOW THE PARTICIPANTS**

While trainers should take the time to meet some of the training participants before the class begins, it can also be helpful for the agricultural workers to introduce themselves to one another. If time and class size allow, have the participants introduce themselves. Find out what kind of work they do and how long they have been doing it. Pay attention to their needs. Are they alert or tired? Do they appear to be nervous or do they seem relaxed?

Cultural perspectives can influence the way individuals relate to others and the way they might participate in a training course. As you get to know the agricultural workers in your training sessions, be aware that people from cultures other than your own may not share the same values or perspectives that you do. Having an awareness of and respect for cultural differences will help you to develop more effective training methods.

Trainers will be better accepted by agricultural workers from other cultures if you know your material well and are confident, friendly, and you show respect for them.

**OVERCOMING COMMUNICATION BARRIERS**

It is possible that some individuals will be able to speak English but not read it. Others may understand English but may not be comfortable speaking it, so your training may need to be conducted in the native language of the participants. A WPS requirement is that worker safety training must be presented in a
manner the worker can understand.

If you plan to use written materials or activities that require participants to read, be sure to consider that there may be some in the group who will be unable to read. Try to make the activity meaningful in a way that will not cause anyone in the group to feel uncomfortable.

For example, combine reading activities (by those who can read) with demonstrations (by those who cannot read).

The following guidelines may be helpful to you when you are communicating with participants or you are conducting training through an interpreter:

- Use everyday language that is simple, clear, and concise.
- Use simple terms but be specific.
- Avoid words that trigger emotional responses.
- Consider the communication styles of the participants.
- Focus on one major point or message at a time.
- Use graphics to simplify and clarify ideas.
- Remember that numbers and dates may be expressed differently. For example, January 29, 2007 or 1/29/07 may be 29 January 2007, 29/1/07, or 29.1.07 to others.
- Use humor and jokes cautiously.
- Seek feedback to make sure you are being understood.
- Speak to the agricultural workers, not the interpreter.
- Be aware that non-verbal communication also varies by culture.
- Avoid slang, acronyms, figurative expressions, and sports analogies that may cause confusion. For example:

  **Slang:** a buck (meaning a dollar)
  **Acronym:** ASAP (meaning as soon as possible)
  **Figurative expression:** right on the money (meaning accurate)
  **Sports analogy:** touch base (meaning to contact)

### Working with Interpreters

Some people choose to use an interpreter to present information in another language. Unfortunately, the cost of hiring a professional interpreter may be too high, so you may need to rely on a bilingual volunteer from the community. You can also contact local agricultural associations or community-based organizations to help you find a culturally competent interpreter. In any case, it is important that the person is knowledgeable about the topic to assure that the translation is accurate.

To assure accuracy, interpreters must be knowledgeable about the topic presented.

**YOUR ATTITUDE IS IMPORTANT**

Your positive attitude and enthusiasm towards training are critical. If you are not particularly interested in conducting the training, the participants will notice, and it may influence their attitudes toward the training. During the session, move around to keep yourself and the agricultural workers alert. Use interactive training methods and involve everyone—this makes the training more stimulating for them and for you too. Reward all answers and politely correct misinformation.
**EDUCATE—DO NOT ADVOCATE**

If agricultural workers have concerns about their workplace conditions or their employers’ compliance with the provisions of the WPS, be supportive by listening to their concerns. As appropriate, encourage them to discuss their concerns with their employers, appropriate regulatory agencies, or farmworker-oriented social service agencies. Keep in mind that agricultural workers may have concerns about possible employer retaliation.

During the training, remain neutral and avoid expressing personal opinions you may have about a particular situation. Explain that the purpose of your training is to provide the agricultural workers with information on how to protect themselves from exposure to pesticide residues in the workplace, but that there are also other organizations or individuals that can assist them further with their concerns as discussed later in this chapter.

**RESPECT PARTICIPANTS**

If someone asks a question, answer it seriously, even if you covered that information earlier. Never make the person feel foolish for asking a question or embarrass them because the question seems senseless. If you do this, others will be hesitant to ask questions or participate in the training. Never become defensive about questions or statements from participants. Be honest if you do not know the answer, but offer to find out the information and get back to the person asking the question.

If someone answers a question incorrectly, praise him or her for trying and then provide the correct information. Never interrupt a speaker unless it is clear they are speaking for too long and getting off the topic. Do not allow one participant to demean another. People will appreciate you for being polite and will feel more comfortable participating in the training.

**CHALLENGES WHEN CONDUCTING TRAINING**

Sometimes, even the best trainers encounter obstacles that make training a challenge. You need to be able to anticipate these challenges and be prepared to deal with them effectively.

Your training sites may be less-than-perfect. The background noise level may make it hard to hear, and unavoidable interruptions may disrupt the flow of your presentation and distract the participants.

Finally, some of the participants in the group may be disruptive. Trainers quickly discover that they must learn how to work with many different kinds of personalities.

In the following section, various types of training problems are addressed and suggestions are provided to help you overcome these difficulties. As you conduct more pesticide safety training sessions, your experience as a trainer will grow and you can develop your own strategies for dealing with them.

**Regulation Versus Reality**

It is difficult to write regulations that anticipate the variety of situations that exist in different types of agricultural settings. Regulations do not always take into account all the problems faced by the people they impact, nor are they always being followed or enforced.

When you provide agricultural worker training, participants may find it difficult to follow certain suggestions
that you are required to give them about personal hygiene. For example, WPS training requires that workers be told how to prevent pesticides from entering their bodies by, among other things, changing into clean work clothes. Sometimes individuals own only two or three shirts and pairs of pants, so wearing clean clothes daily may not be possible. Some migrant workers may live in barrack-type housing or labor camps without adequate laundering facilities. This type of housing is often far from town and commercial laundry facilities, further limiting the availability of clean work clothes.

Even though you realize that the people you are training face these kinds of problems, you should nevertheless explain the reasons why it is important to launder work clothes as frequently as possible. Recommend that even though it may not be possible for them to start each day with a clean set of clothes, they should make an effort to wash their work clothes as often as possible. Suggest that they consider getting additional sets of inexpensive clothing from thrift shops or other sources. You might come prepared with a list of helpful local resources, such as where they could get additional work clothes at little or no cost.

Another recommendation that some people may not be able to follow is to wash their hands before eating, drinking, smoking, using the toilet, or doing anything that requires contact between their hands and the rest of their bodies. Certainly, this is good advice, but the work schedule at many agricultural establishments may make it difficult to wash during breaks. Some people eat their first meal of the day during a brief morning break. Depending on their work situation, there may be ways trainers can help workers resolve workplace challenges. Use this as an opportunity to lead a discussion by asking them to suggest possible solutions. By having participants discuss the problem among themselves, you can help them find practical ways to avoid exposure to pesticide residues from their hands.

It is important to keep in mind that you may be less credible and your training less effective if you ignore worker concerns.

**Physical Obstacles to Effective Training**

There may be physical or time-related problems that make effective training difficult or limit the types of training techniques you can use.

If electricity is not available for a video presentation, consider training tools and techniques that do not need electricity, such as visuals, case studies, role-plays, the relaying of personal experiences, discussions, and/or the WPS flip chart.

If you are training a large group, although not advisable, you could divide participants into smaller groups to work on case studies, role-plays, or the relaying of personal experiences.

If you only have a limited amount of time for the training, you could use the WPS flip chart with discussion questions.

If background noise or activity is distracting to the agricultural workers, consider moving the training to another location. While canceling/rescheduling training may be an option at times, most trainers choose not to cancel/reschedule training because it can be difficult to reassemble workers.
Dealing with Difficult People

Sometimes, even though you have carefully prepared for a training session, certain participants may complicate your presentation. Knowing how to deal with potentially disruptive people is an important part of being a good trainer.

The Overly Enthusiastic Person

As a trainer, you want to encourage everyone in the group to participate. However, occasionally you may have one or more agricultural workers who are so eager to participate that other people do not have a chance to share in the discussion. When this happens, you need to learn methods that will give others an opportunity to speak. You should do this without offending the person or making other participants think you are discouraging active participation.

One solution is to compliment the individual for bringing up excellent points and mention that it would be interesting to hear what others in the group have to say about these comments. By inviting the other agricultural workers into the discussion, you open the discussion to the whole group while responding to the talkative individual.

You may even try to give the enthusiastic participant the job of engaging the other agricultural workers by asking something like, “That is a very good point. Why don’t you ask some of the other people here if they have had similar experiences?”

If you cannot focus the enthusiasm of talkative participants to better stimulate the participation of other trainees, consider using other means to reduce the number of interruptions. One effective technique is to avoid eye contact with the overly talkative participant and focus your attention on quieter members of the group when inviting discussion.

The Expert

The group you are training may have an agricultural worker who has a great deal to say about a particular subject. The information may or may not be correct, and the constant interruptions from this person may be motivated by a need to impress everyone or by a genuine desire to share knowledge. In any case, it is important to limit this person’s participation in the training so that you can keep the whole group involved and cover all the important pesticide safety information.

Remember, avoid giving the message that participation is unwelcome, and always begin with a compliment about how much thought the person has obviously given to the topic. Then mention that it is time to move on to other topics in order to cover all the necessary information. As with the overly enthusiastic person, it might work to give this person the task of involving others in the discussion. You might suggest that the person stop sharing information in order to see if anyone else also wants to share his or her knowledge.

The Storyteller

There may be some people in your training sessions who want to use class time to discuss personal experiences, whether or not these relate to pesticide hazards. Use polite restraint to keep these participants under control. Avoiding eye contact and calling on others to answer questions or give their opinions are good tools for dealing with individuals who demand too much time and attention. You may also try making a friendly comment like, “That’s very interesting, but we had better get back to our topic so that I can let you all leave at the time I promised.”

The Attacker

Eventually you are likely to come across a person who, because of boredom, misplaced anger, or a need for attention, tries to disrupt the class by verbally attacking or criticizing you. It may take the form of an attack on the accuracy of your information, or the person may constantly interrupt you with inappropriate and unrelated comments.

The first thing to remember in this situation is to keep your temper under control and be polite, no matter
how unpleasant or rude a trainee’s behavior. Remind him or her that if you are unable to complete the training, the rest of the class will not get the information that could protect their health or even save their lives. When you do this, other class members may provide the peer pressure needed to restrain the “attacker” from continuing.

**The Inattentive Person**

You may have people in the group who do not pay attention to your presentation. Some participants may be dozing, reading something, talking to another person, using a cell telephone, or doing other things during the class. Clearly state your ground rules for the agricultural workers attending the training sessions. It is your responsibility to make clear your expectations of participant conduct. Ground rules will help you to provide a training environment with minimal distractions for the group and remind everyone about the importance of remaining attentive. Be sure to ask everyone to turn off their cell phones and personal audio devices, refrain from having private conversations during the training session, and work with the instructor to eliminate other distractions. Address questions to the non-attentive people and bring them into the discussions. Standing close and directing questions to distracted or sleepy individuals are effective ways of making them listen and participate. If everyone in the group seems distracted or sleepy, you should examine your teaching techniques and the environment and try to find ways of increasing group involvement in your training sessions. You may also need to reschedule the training if the participants are very tired.

**The Uncontrollable Person**

There may be times when you cannot control the behavior of a particularly difficult individual no matter what you do. When this happens, you have no other option than to tell the person you will not tolerate additional interruptions. Offer to discuss the individual’s particular concerns after class, if appropriate. Usually, if someone is disrupting the class, you will have the support of the others in the group for your attempts to regain control.

**Individuals with Special Issues**

During a training session, you may have individuals who want to discuss special problems regarding pesticide hazards at work or debate the issues. It is impossible to anticipate the variety of problems or questions that might come up during a training session. There may be situations either at the workplace or at home that make it difficult for people to follow all the recommended safety practices. Individuals may want to discuss an employer or crew leader that they feel is not providing them with all the required protections.

At the beginning of the training session or after you have presented all of the information, encourage the agricultural workers to raise questions or discuss obstacles at their workplaces that they think may stand in the way of following the information you presented. Within the time limitations of the session, allow participants to bring up these issues and to discuss them among the group.

As each issue is presented, you may want to write it down on a flip chart or chalkboard for everyone to see. After all the issues have been raised, go through them one by one and facilitate the participants’ discussion to develop ideas for resolving them. You may not be able to help the agricultural workers find adequate solutions, but some helpful tips are very likely to come from this problem-solving exercise. It will be an excellent way to encourage group participation.

Trainers should stay a few minutes after the training in case someone hesitated to speak up in front of the whole class, and he or she wants to ask you a question.

**Pesticide-Related and Community Resources**

If a level of trust has been established during your training, agricultural workers might come to you for assistance with legal, medical, housing,
employment, or other issues. To assist them, have contact information with you for the following resources:

- Local hospitals and clinics
- Legal services
- State lead agencies (will vary by state)
- Farmworker organizations
- University Extension offices
- State and federal Departments of Labor
- National Pesticide Information Center (1-800-858-7378)
- Migrant coalitions

### ENDING THE TRAINING

Make sure the agricultural workers have understood the information you provided. A good way to do this is with a quiz. An oral quiz may be more appropriate than a written quiz because it further promotes participation in the training and is often preferred by trainees. A written quiz may cause embarrassment for trainees with limited literacy skills. Using the interactive training techniques included in this manual will help you.

Thank the agricultural workers for their time and attention and congratulate them on completing the training.

### AFTER THE TRAINING

After the training session, evaluate your effectiveness as a trainer, and consider what you might want to do differently during your next training session. Keep in mind that training styles may change over time.

Each time you train, you are practicing and improving your skills. Learn from your experiences, both positive and negative. Move forward to the next training opportunity with more confidence in yourself.
GLOSSARY

ACARICIDE  A pesticide used to control mites.

ACTIVE INGREDIENT  Any substance that will prevent, destroy, repel, or mitigate any pest, or that functions as a plant regulator, desiccant, defoliant, synergist, or nitrogen stabilizer.

ACUTE ILLNESS  An illness that becomes apparent soon after an exposure to a pesticide occurs.

ACUTE ONSET  The commencement of symptoms of pesticide-related injury that appear soon after the exposure incident.

AGRICULTURAL EMPLOYER  Any person who hires or contracts for the services of workers, for any type of compensation, to perform activities related to the production of agricultural plants, or any person who is an owner of or is responsible for the management or condition of an agricultural establishment that uses such workers.

AGRICULTURAL ESTABLISHMENT  Any farm, forest, nursery, or greenhouse.

AGRICULTURAL WORKER  Any person, including a self-employed person, who is employed for any type of compensation and who is performing activities relating to the production of agricultural plants on an agricultural establishment. See definition for HANDLER.

AGRICULTURAL WORKER TRAINING  Specific training mandated by the U.S. Environmental Protection Agency to assist agricultural workers in protecting themselves from pesticide and pesticide residues when they work in areas that have received pesticide applications.

ATTRACTANT  A substance that attracts a specific species of pest. Attractants are considered to be pesticides when they are manufactured to attract pests for trapping or are used in poisoned bait.

BRAND NAME  The registered or trade name given to a pesticide by its manufacturer or formulator. A specific pesticide may be sold under several brand names.

CARDIOPULMONARY RESUSCITATION (CPR)  A procedure designed to restore normal breathing after breathing and heartbeat has stopped.

CAUTION  The signal word used on labels of pesticides having the least capacity for hazards.

CERTIFIED APPLICATOR  A person who is certified to use or supervise the use of any restricted-use pesticide covered by his certification.

CHEMICAL NAME  The official name given to a chemical compound to distinguish it from other chemical compounds.

CHEMIGATION  The process of applying pesticides or fertilizers through irrigation systems.

CHEMTREC  A chemical industry-supported organization that provides assistance and advice on pesticide emergencies. The telephone number of CHEMTREC is 1-800-424-9300.

CHRONIC ILLNESS  An illness that will last for long periods of time. Cancer, respiratory disorders, and neurological disorders are examples of chronic illnesses that have been associated with exposures to some types of pesticides.
CHRONIC ONSET  The commencement of symptoms of pesticide poisoning that occur days, weeks, months, or years after the actual exposure.

COMMON NAME  The recognized name of a pesticide, separate from the brand name and chemical name.

CONFINED AREA  An area, such as a building or greenhouse, that may have restricted air circulation and, therefore, promotes the buildup of toxic fumes or vapors from a pesticide application.

CORROSIVE MATERIAL  A chemical that reacts with metals or other materials. Some pesticides are corrosive and special handling requirements are needed when using these.

DANGER  The signal word used on labels of pesticides having serious health and environmental hazards. This signal word is used on pesticides having an oral LD$_{50}$ less than 50 or a dermal LD$_{50}$ less than 200.

DEFOAMER  An additive that eliminates foaming of a pesticide mixture in a spray tank.

DEFOLIANT  A pesticide used to remove leaves from target plants, often as an aid in harvesting the plant.

DERMAL  Pertaining to the skin. One of the major ways pesticides can enter the body to possibly cause poisoning.

DESICCANT  A pesticide that destroys target pests by causing them to lose body moisture.

DIRECTIONS FOR USE  The instructions found on pesticide labels indicating the proper use of the pesticide product.

DOSE  The measured quantity of pesticide. Often the size of the dose determines the degree of effectiveness, or, in the case of poisoning of nontarget organisms, the degree of injury.

DRIFT  The movement of pesticide dust, spray, or vapor away from the application site.

EARLY-ENTRY WORKER  An employee who enters a pesticide treated area on an agricultural establishment after a pesticide application is complete, but before any restricted-entry interval for the pesticide has expired.

EMERGENCY EXEMPTION FROM REGISTRATION  A federal exemption from regular pesticide registration sometimes issued when an emergency pest situation arises for which no pesticide is registered that has a tolerance on the crop in question.

EMPLOYER  See definition for AGRICULTURAL EMPLOYER.

ESTABLISHMENT NUMBER  A number assigned to registered pesticides by the U.S. Environmental Protection Agency which indicates the location of the manufacturing or formulation facilities of that product.

EXPOSURE  Contact with pesticides or pesticide residues by people, other organisms, or the environment.

FIELD WORKER  An employee of a farming operation who engages in agricultural production tasks. See definition for AGRICULTURAL WORKER.

FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA)  The Federal Act that governs the registration, sale, and use of pesticide products in the U.S.

FIRST AID  The immediate assistance provided to someone who has been exposed to a pesticide. First aid for pesticide exposure usually involves removal of contaminated clothing and washing the affected area of the body to remove as much of the pesticide material as possible. First aid is not a substitute for qualified medical treatment.

FOLIAGE  The leaves of plants.

FORMULATION  A mixture of active ingredient combined with inert materials during the pesticide manufacturing process. Inert materials are added to improve the mixing and handling qualities of a pesticide.

FUMIGANT  Vapor or gaseous form of a pesticide used to penetrate porous surfaces for control of soil dwelling pests or pests in enclosed areas or storage.

FUNGICIDE  A pesticide used for control of fungi.

FUNGI (FUNGUS)  A multicellular lower plant lacking chlorophyll, such as a mold, mildew, or plant rust.

HANDLER  Any person who mixes, loads, transfers, or applies pesticides, or who cleans or repairs contaminated equipment, works as a flagger, or handles unsealed pesticide containers.

HERBICIDE  A pesticide used to control weeds.
HYGIENE  As it applies to pesticide exposure, hygiene involves washing exposed body areas promptly to remove pesticide residues.

INERT INGREDIENT  Any substance other than an active ingredient that is intentionally added to a pesticide product, such as solvents, stabilizers, spreaders or stickers, preservatives, surfactants, defoamers, etc.

INSECT GROWTH REGULATOR (IGR)  A type of pesticide used for control of certain insects. Insect growth regulators disrupt the normal process of development from immature to mature life stages.

INSECTICIDE  A pesticide used for the control of insects. Some insecticides are also labeled for control of ticks, mites, spiders, or similar pests.

LABELING  The pesticide label and all associated materials, including supplemental labels, and manufacturer’s information.

LC$_{50}$  The lethal concentration of a pesticide that will kill half of a test animal population. LC$_{50}$ values are given in micrograms per milliliter of air or water (mg/ml).

LD$_{50}$  The lethal dose of a pesticide, applied to the skin or taken internally, that will kill half of a test animal population. LD$_{50}$ values are given in milligrams per kilogram of test animal body weight (mg/kg).

LONG-TERM HEALTH PROBLEM  A pesticide-related illness or disease which may extend over months, years, or a lifetime.

MATERIAL SAFETY DATA SHEET (MSDS)  A document that reflects the hazards of working with a material (pesticide) in an occupational fashion.

MEDICAL FACILITY  A clinic, hospital, or physician’s office where immediate medical care for pesticide-related illness or injury can be obtained.

MITICIDE  A pesticide used to control mites.

MITIGATE  The process of making a problem less severe.

MOUTH-TO-MOUTH RESUSCITATION  Rescue breathing, given mouth-to-mouth, to assist or restore breathing to a person who is not breathing or is experiencing breathing difficulty.

NEMATICIDE  A pesticide used to control nematodes.

NEMATODE  Elongated, cylindrical, nonsegmented worms. Nematodes are commonly microscopic; some are parasites of plants or animals.

NO OBSERVABLE EFFECT LEVEL (NOEL)  The NOEL is the maximum dose or exposure level of a pesticide that produces no noticeable toxic effect on test animals.

OCULAR  Pertaining to the eye. This is one of the routes of entry of pesticides into the body.

ORAL  Pertaining to the mouth. This is one of the routes of entry of pesticides into the body.

OFFSITE MOVEMENT  Any movement of a pesticide from the location where it was applied. Offsite movement occurs through drift, water runoff, crop harvest, blowing dust, and by being carried away on people, animals, or equipment.

PERSONAL PROTECTIVE EQUIPMENT (PPE)  Devices and garments that protect handlers from exposure to pesticides. These include coveralls, eye protection, gloves and boots, respirators, aprons, and hats.

PESTICIDE  Any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, nematodes, fungi, bacteria, or weeds, or any other forms of life declared to be pests; and any other substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.

PESTICIDE USE HAZARD  The potential for a pesticide to cause injury or damage during handling or application.

PLANT GROWTH REGULATOR (PGR)  A pesticide used to regulate or alter the normal growth of plants or development of plant parts.

POSTING  The placement of warning signs around a pesticide treated area, if required by the pesticide label. This serves to provide information about pesticide applications.

PRECAUTIONARY STATEMENT  The section on pesticide labels where human and environmental hazards are listed. Personal protective equipment requirements are listed here, as well as first aid instructions and information for physicians.

PROTECTIVE CLOTHING  Garments that cover the body, including arms and legs.

REGISTRATION NUMBER  Identification numbers assigned by the U.S. Environmental Protection Agency and found on pesticide labels.
REPELLENT A pesticide used to keep target pests away from a treated area by saturating the area with an odor that is disagreeable to the pest.

RESIDUE Traces of pesticide that remain on treated surfaces after a period of time.

RESPIRATORY EQUIPMENT A device that filters out pesticide dusts, mists, and vapors to protect the wearer from respiratory exposure during mixing and loading, application, or while entering treated areas before the restricted-entry interval expires.

RESTRICTED-ENTRY INTERVAL (REI) A period of time that must lapse between application of an agricultural pesticide and when it is safe to allow agricultural workers into the treated area without requiring they wear personal protective equipment and receive early-entry worker training.

RESTRICTED-USE PESTICIDE (RUP) A highly hazardous pesticide that can only be purchased, possessed or used by a person who is a certified applicator or under the supervision of a certified applicator.

RESTRICTED-USE STATEMENT A statement on a pesticide label that restricts the use of that pesticide to specific areas or by designated individuals.

RODENTICIDE A pesticide used for control of rats, mice, gophers, squirrels, and other rodents.

ROUTE OF EXPOSURE The way a pesticide gets onto or into the body. The four routes of exposure are dermal (on or through the skin), ocular (on or in the eyes), respiratory (into the lungs), and oral (through swallowing).

RUNOFF The liquid spray material that drips from the foliage of treated plants or from other treated surfaces. Also the rainwater or irrigation water that leaves an area.

SENSITIZATION An allergic reaction to pesticides.

SIGNAL WORD One of three words (danger, danger-poison, warning, or caution) found on every pesticide label to indicate the relative hazard of the chemical.

SKIN ABSORPTION The passage of pesticides through the skin into the blood stream or other organs of the body.

SUPPLEMENTAL LABEL Additional instructions and information that are not found on the pesticide label but is considered to be part of the pesticide labeling.

SYMPTOM Any abnormal condition that can be caused by a pesticide exposure that can be seen or felt or can be detected by examination or laboratory tests.

TOXICITY The potential the pesticide has for causing harm.

TOXICITY TESTING A process in which known doses of a pesticide are given to groups of test animals and the results observed.

TRAINING RECORD A document intended to record the date, type of PESTICIDE SAFETY training, and names of the attendees. This requirement varies from state to state; contact state and local pesticide regulatory agencies for guidance.

TREATED SURFACE The surface of plants, soil, or other items that were treated with pesticides.

TREATED AREA The area where pesticides have been applied.

WARNING The signal word used on labels of pesticides having an oral LD50 between 50 and 500 and a dermal LD50 between 200 and 2000.

WORKER PROTECTION STANDARD (WPS) Regulation cited in 40 CFR Part 170 which contains a national standard designed to reduce the risks of occupational illness or injury resulting from worker and handler exposure to pesticides used in the production of agricultural plants on farms or in nurseries, greenhouses, and forests and also from the accidental exposure of workers and other persons to such pesticides. It requires workplace practices like the pesticide safety training of agricultural workers and pesticide handlers, central information postings, and procedures for responding to exposure-related emergencies.
BIBLIOGRAPHY


