

Lesson A1–5

Practicing Horticulture Safety

Unit A. Horticultural Science

Problem Area I. Exploring the Horticulture Industry

Lesson 5. Practicing Horticulture Safety

New Mexico Content Standard:

Pathway Strand: Safety, Health, and Environmental

Standard: X: Identify health goals and safety procedures for AFNR occupations.

Benchmark: X-A: Apply safety/health precautions to participation in AFNR projects.

Performance Standard: 1. Wear personal protective clothing. 2. Demonstrate how to avoid placing oneself in hazardous work situations. 3. Identify various emergency response plans for a facility.

Student Learning Objectives. Instruction in this lesson should result in students achieving the following objectives:

1. Explain the importance of safety in horticulture.
2. Define personal protective equipment and give examples.
3. Identify safety precautions necessary when handling, applying, and storing chemicals.

List of Resources. The following resources may be useful in teaching this lesson:

Recommended Resources. One of the following resources should be selected to accompany the lesson:

Schroeder, Charles B., et al. *Introduction to Horticulture*, Third Edition. Danville, Illinois: Interstate Publishers, Inc., 2000.

Morgan, Elizabeth M., et al. *AgriScience Explorations*, Second Edition. Danville, Illinois: Interstate Publishers, Inc., 2000.

Other Resources. The following resources will be useful to students and teachers:

Biondo, Ronald J. and Jasper S. Lee. *Introduction to Plant and Soil Science and Technology*, Second Edition. Danville, Illinois: Interstate Publishers, Inc., 2003.

List of Equipment, Tools, Supplies, and Facilities

Writing surface
Overhead projector
Transparencies from attached masters
Copies of student lab sheet
Examples of personal protective equipment

Terms. The following terms are presented in this lesson (shown in bold italics):

Accidents
Hazards
Personal protective equipment
Safe
Safety

Interest Approach. Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Enter the classroom wearing safety glasses, earmuffs, a respirator, rubber gloves, and boots. Go about starting class as if nothing were out of the ordinary. When students question your appearance, simply continue with the lesson. As you proceed with the lesson, remove each PPE as you describe its use.

Summary of Content and Teaching Strategies

Objective 1: Explain the importance of safety in horticulture.

Anticipated Problem: Why is safety important in horticulture?

- I. Safety is important in horticulture, other areas of agriculture, in work, and in life in general. To be **safe** means to be free of harm. Practicing **safety** in horticulture involves preventing injury and loss. Safety is everyone's responsibility.
 - A. Knowing about safety can help prevent accidents. **Accidents** are actions that occur unintentionally. Accidents cannot be predicted, but they are more likely to occur in hazardous situations. **Hazards** are dangers where risk is present. In the United States, accidents kill nearly one million people and injure 900,000 more per year. Accidents are the leading cause of death. Accidents can happen anywhere including in the home, at work, or in public areas.
 - B. Major areas of concern in horticulture safety include safety practices in pest control, safety with machinery and tools, and safety with tractors and large equipment. Knowing how to properly use these items can help reduce risk and help prevent accidents.

Safety is an important issue in any career, especially horticulture. Additional safety statistics can be found on several Internet sites. If you have access to a computer or computer lab, give students the opportunity to look up more recent data for classroom discussion. TM: A1–5A highlights the definitions given in objective one.

Objective 2: Define personal protective equipment and give examples.

Anticipated Problem: What is personal protective equipment?

- II. **Personal protective equipment**, or PPE, are devices worn to help protect people from injury. It is important to know what personal protective equipment should be worn in certain situations and how to wear them so they provide the most protection.
 - A. Eye protection should be worn any time you are working with chemicals, working in the shop, or when bright light could cause injury. Examples of eye PPE include: safety glasses, safety goggles, safety shields or helmets, and eyewash. Chemicals are frequently used in horticulture. At times, it may also be necessary to work with tools or large equipment. Therefore, it is important to have these items and wear them at the appropriate times.
 - B. Hearing protection is also important, especially when working around tractors or large machinery. Examples of hearing PPE include earplugs or earmuffs. Wearing hearing protection properly can help reduce hearing loss.

- C. Respiratory protection is also important in horticulture. Working with chemicals or around vapors and fumes can cause lung injury or death if you're not careful. Examples of respiratory PPE include particulate masks and respirators.
- D. Skin and body protection is also important when the skin may be exposed to toxic, or poisonous chemicals. The type of skin and body protection used should be based on the job being done and materials being handled. Examples include: gloves, aprons, hard hats, long sleeves, long pants, and boots.

While students may be amused by your appearance in PPE, it is important to remind them that safety is no laughing matter. Explain the types of injury that could occur if someone wasn't wearing the proper PPE. TM: A1-5B shows examples of common PPE's.

Objective 3: Identify safety precautions necessary when handling, applying, and storing chemicals.

Anticipated Problem: Why is it important to follow safety precautions when handling, applying, and storing chemicals?

- III. Anytime chemicals are used to control pests there is risk involved. Those at risk include other plants, animals, people, and the environment. In order to reduce risks, it is important to follow safety precautions when handling, applying, and storing chemicals.
 - A. Before opening or handling any chemical, it is important to first read the label. The pesticide label is a legal document that gives information regarding the safe use, application, and storage of that particular chemical.
 - B. When applying chemicals, it is important the applicator wear the approved PPE, check all equipment to be used, and clear the area of all people and animals. Chemicals should be applied as directed on the label.
 - C. To protect the health of humans and animals and help protect the environment, it is important to store chemicals properly. Areas where chemicals are stored should be easy to lock, well-ventilated, properly lighted, dry, and protected from temperature extremes. In order to store chemicals safely it is important to follow approved management techniques.

TM: A1-5C highlights PPE that should be worn when handling horticulture chemicals. Review this transparency when discussing objective three. To help students further master this objective, reinforce classroom discussion with text readings.

Review/Summary. Summarize the lesson by reviewing the student learning objectives. The anticipated problems can be used as student review questions. Chapter reviews from the books listed on the resource list may also be useful.

Application. The following student activity can be used to apply the student learning objectives: LS: A1-5A Safety Search.

Evaluation. Evaluation should be based on student comprehension of the learning objectives. This can be determined using the attached sample written test.

Answers to Sample Test:

Part One: Matching

1.e 2.d. 3. c 4. f 5. b 6. a

Part Two: Completion

1. everyone's
2. hazardous
3. read the label
4. injury
5. accidents

Part Three: Short Answer

1. see Objective II

Test

Lesson A1–5: Practicing Horticulture Safety

Part One: Matching

Instructions. Match the term with the correct response. Write the letter of the term by the definition.

- | | |
|----------------------------------|---------------------|
| a. personal protective equipment | d. safety |
| b. safe | e. particulate mask |
| c. hazards | f. accidents |

- _____ 1. example of a PPE
- _____ 2. preventing injury and loss
- _____ 3. dangers where risk are present
- _____ 4. actions that occur unintentionally
- _____ 5. to be free of harm
- _____ 6. devices worn to help protect people

Part Two: Completion

Instructions. Provide the word or words to complete the following statements.

- 1. Safety is _____ concern.
- 2. Accidents cannot be predicted, but they are most likely to occur in _____ situations.
- 3. Before opening or handling any chemical it is important to _____.
- 4. Personal protective equipment are devices worn to help protect people from _____.
- 5. _____ are the leading cause of death.

Part Three: Short Answer

Instructions. Provide information to answer the following question.

List five examples of PPE.

SAFETY IN HORTICULTURE

- **Safe**—free of harm
- **Safety**—preventing injury or loss
- **Accidents**—actions that occur unintentionally
- **Hazards**—dangers where risk are present

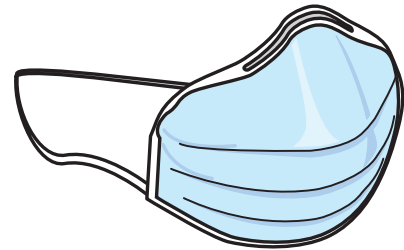
EXAMPLES OF COMMON PPE



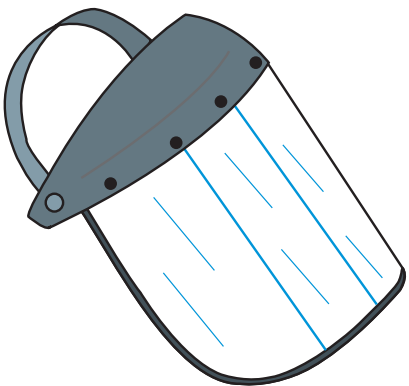
Hard Hat
and Respirator



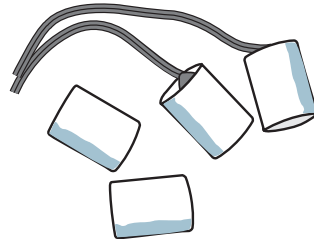
Ear (hearing) Muffs



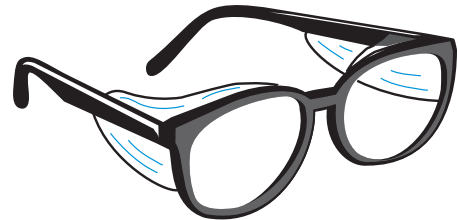
Particle Mask



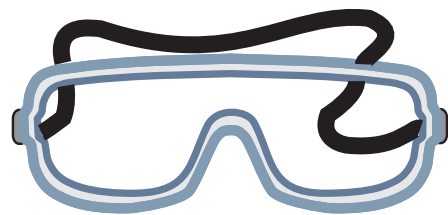
Face Shield



Corded and Uncorded
Ear Plugs



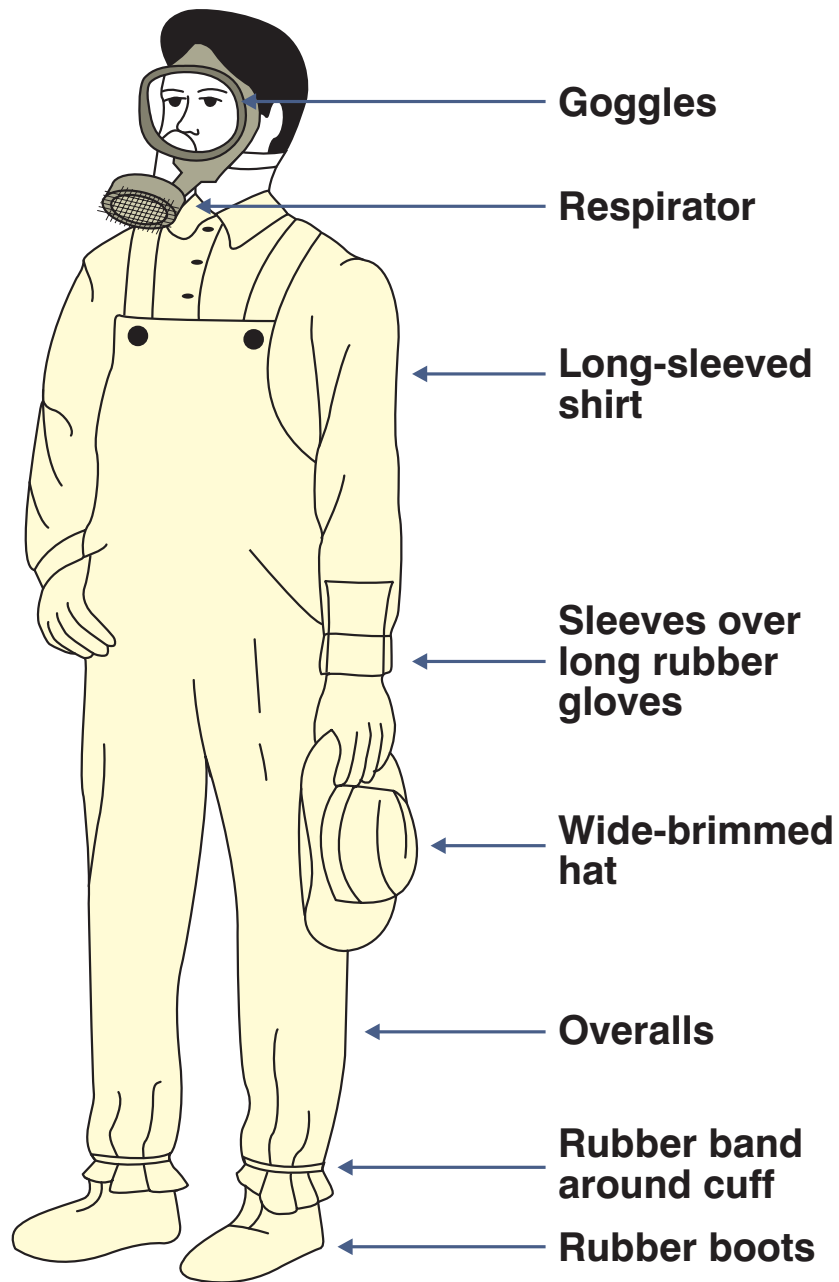
Safety Glasses
with sideshields and brow guard



Goggles

(Courtesy, Interstate Publishers, Inc.)

PROPER PPE FOR CHEMICAL HANDLING



(Courtesy, Interstate Publishers, Inc.)

Lab Sheet

Safety Search

Instructions: After school today, look around your garage or the area where you keep your horticulture chemicals and answer the following questions.

1. Are all of the chemicals stored in their original containers?
2. Are all chemicals stored safely out of the reach of children?
3. Is there a fire extinguisher available for use?
4. Is there a phone nearby along with a listing of important emergency numbers?
5. Is there a first aid kit available for use?

If you answered yes to all of the above questions you're in good shape.

If you answered no to any of the above questions, explain why. Also explain what you can do to make your home safer for everyone in it.