

Pest Management Safety: Integrated Pest Management Part 2

Brief Description:

Pest management is needed in order to have a healthy and productive garden. There are many options for pest control. This lesson will show students the importance of reading a pesticide label and what information they can find. Students will also be exposed to safety equipment that may need to be used when applying a pesticide.

Objective:

Students will:

1. Be introduced to Personal Protection Equipment, pesticide regulating government agencies and parts of a pesticide label.
2. Identify and understand Personal Protective Equipment used during pesticide application.
3. Learn parts of the pesticide label.

Time:

Introduction: 15 minutes

Activity 1: 20 minutes to one hour

Activity 2: 30 to 50 minutes

Vocabulary:

chemical resistant, fungicide, herbicide, insecticide, Material Safety Data Sheet (MSDS), personal protective equipment, pesticide, pesticide label, restricted entry interval, restricted use, pesticides and signal word

Background:

Personal protection equipment:

Garden chemicals for sale are required to have a label. The label will specify the types of Personal Protective Equipment (PPE) required. PPE may include: chemical resistant gloves, respirator, long sleeves, protective eyewear, and in some cases, a chemical resistant spray suit. Before applying a store-bought chemical to a school garden, find out which chemicals can be used at your school and seek the advice of your local UF/IFAS Extension Agent. There are many laws regarding the application of chemicals to property that you do not own (such as school grounds), who purchases the chemical and if the applicator has the required certification or license.

Parts of a Pesticide Label:

Pesticides may be sold as concentrate or ready to use. Concentrates are much more dangerous than ready to use. It is always recommended to have the Material Safety Data Sheet within reach. Visit <http://pest.ca.uky.edu/PSEP/2labels.html> to see an example of a pesticide label with interactive labels.

1. Type of pesticide – the type of pest(s) controlled; i.e., herbicide (weeds), fungicide, insecticide. Also the label will indicate what plants the chemical can be used on.
2. Name of product – Tradename and chemical name
3. Name and address of manufacturer
4. Net contents
5. EPA Reg. No. – EPA Registration number
6. EPA Est. No. – EPA Establishment number
7. Ingredient statement
8. Signal word (based on lethal dose 50%)
 - Danger/ Poison – highly toxic
 - Warning – moderately toxic
 - Caution – slightly to relatively low toxicity
9. Warning or caution statements
10. First aid – what to do if there is an exposure
11. Directions for use – how to mix with water and how much area can be covered
12. Personal protective equipment required
13. Environmental hazards – i.e., wind, runoff, cleaning equipment, time of day, bee activity, high water table, surface water nearby
14. Hazards to wildlife – i.e., toxic to bees, fish or other wildlife



Introduction:

1. Show image 1, image 2 and image 3 (images are on IPM Power Point, found at www.faitc.org/teachers/STEMming-Up), and then ask students, “If your employer asked you to spray a pesticide, what would you want to know?” Make a list of student responses on the board.
2. Ask students, “Do you know what a pesticide is?”
3. Ask students, “Are all pesticides dangerous?” This is where most people will say yes because that is what social media has led everyone to believe. If appropriately applied on the right crop, using the right application rate and right application method, then pesticides are safe. This is a great time to ask a pesticide company representative to come in and talk with the students about the science behind pesticides.

Activity 1: Personal Protection Equipment and the Pesticide Label

1. Display Personal Protection Equipment which is used with both least toxic chemicals (chemicals available to consumers in the plant and garden department) as well as pesticide handlers. Examples can be found at <http://edis.ifas.ufl.edu/pi061>
2. For better understanding show the video (suggest only parts) of “Pesticide Handler and the Worker Protection Standard.” https://www.youtube.com/watch?v=ArfBQvs_zLE

**Image 2****Image 1****Image 3**

Activity 2: Pesticide Label

- Students will be comparing pesticide labels. Find one pesticide that contains synthetically made Bt toxins and one that contains natural Bt toxin. Print the labels for those pesticides and make copies for the students.
- Use the label with the synthetic-made Bt toxin to model how students will answer the questions in the activity described below:
 - Safety: What is the signal word? What PPE is required? What are first aid instructions in the event of an exposure?
 - Chemical use: What crops can the chemical be used on? What pests will be treated?
 - Application: How is the chemical applied? How soon until harvest can the chemical be applied?
 - Environmental effects/considerations: What are environmental hazards? What are the effects on wildlife?
- Provide students with two different pesticide labels. A suggestion: Print one organic and one non-organic pesticide label for students to be able to compare and contrast. Use the Jigsaw Method to divide students into five separate teams to study parts of a pesticide label(s). Have each group of students answer questions about one topic below for both pesticides:
 - Safety: What is the signal word? What PPE is required? What are first aid instructions in an exposure?
 - Chemical use: What crops can the chemical be used for? What pests will be treated?
 - Application: How is the chemical applied? How soon until harvest can the chemical be supplied?
 - Environmental effects/considerations: What are environmental hazards? What are the effects on wildlife?
 - MSDS Sheets: What does this tell you? Why is it important to have accessible by applicator?
- Have groups share their answers.



Evaluation:

- Provide the students with a pesticide label for an insecticide that is made to mimic nicotine.
- Ask students to complete the *Pesticide Labels and PPE Worksheet*.

Pesticide Labels and PPE Worksheet

1. **Safety:** What is the signal word? What PPE is required? What are first aid instructions in the event of an exposure?
2. **Chemical use:** What crops can the chemical be used for? What pests will be treated?
3. **Application:** How is the chemical applied? How soon until harvest can the chemical be applied?
4. **Environmental effects/considerations:** What are environmental hazards? What are the effects on wildlife?

Pest Management Safety

Sample Pre-Post Test Assessment

Directions: Answer each question to the best of your ability.

1. Describe what a pesticide is.
2. Name two safety items you may need when using pesticides.
3. Name two signal words.

