



INTEGRATED PEST MANAGEMENT

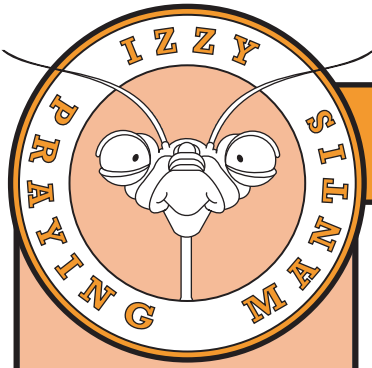
Unit 2 Section 2 Lesson 5 Pesticide Wise

Focus Areas: Pest Control Methods -
Chemical; Science, Language Arts

Focus Skills: Skimming / scanning,
summarizing, drawing conclusions

Level of Involvement: AVERAGE





***Dedicated
to Reducing
Pesticides***

Unit 2 Section 2 Lesson 5: Pesticide Wise

Focus Areas: Pest Control Methods - Chemical; Science, Language Arts

Focus Skills: Skimming/scanning, summarizing, drawing conclusions

Level of Involvement: AVERAGE

Objective

To help students understand how to select, handle, use, store and dispose of pesticides

Essential Question

Why is it important to read pesticide labels?

Essential Understanding

Pesticides, while useful in controlling unwanted pests, pose a risk to humans, other animals and plants. They need to be used with caution, concern and care.

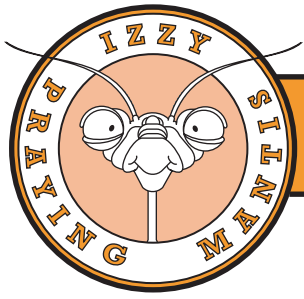
Background

A pesticide is any substance or mixture intended to prevent, repel, reduce or destroy infestation by plant, animal or microorganic pests. The term applies not only to insecticides, but also to herbicides, fungicides, rodenticides, disinfectants, sanitizers, repellents, biocides, and antifouling agents among others. In the United States, anti-defoliant and plant growth regulators are also classified as pesticides.

Most pesticides, though useful to society for their intended purpose, pose a risk of harm to humans, pets and the natural environment. Therefore, pesticides and their use are regulated in this country by the Environmental Protection Agency (EPA). Extensive testing for negative health and economic impacts must be conducted prior to application for EPA registration, which is required before any pesticide can be sold. This process takes several years and costs companies millions of dollars. Furthermore, by law, the EPA requires strict labeling of all pesticides.



University of
Connecticut
College of Agriculture
and Natural Resources
Cooperative Extension System



Unit 2 Section 2 Lesson 5: Pesticide Wise

Background (Continued)

Consumers have a responsibility to read pesticide labels carefully to insure safety and proper use against personal injury, environmental damage and loss, and liability prosecution. Failure to do so may result in unintended results.

Vocabulary



active ingredient

the major component of the pesticide that produces the desired results

fungicide

a pesticide that controls plant diseases

herbicide

a pesticide that controls weeds and other undesirable plants

inert ingredient

the inactive materials in the pesticide that have no direct effect on the pest but make the pesticide easier to handle and apply

insecticide

a pesticide that controls insects

rodenticide

a pesticide that controls rodents

Challenge

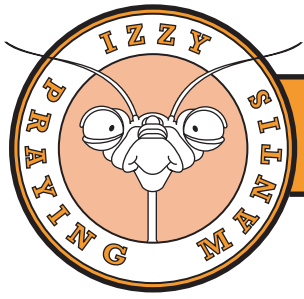
Become a pesticide professional!

Logistics

Time: 45 to 60 minutes

Group size: 2 to 30

Space: seating for group



Unit 2 Section 2 Lesson 5: Pesticide Wise

Materials



black/white board or chart paper
sample labels (including Overhead 7) *
labels for each participant *
Overheads 1 through 7 *
Handout 1(4 pages)
Handout 2 Pesticide Wise Checklist *
Handout 3 Analysis of a Pesticide Label *
Answer Key for Handout 3 *
Assessment for a Persuasive Piece *
overhead projector

* single copy provided

Preparations

Option #1

1. Make copies of Handouts 1 and 2 (one per participant).
2. Collect empty boxes, cans, bottles (cereal, dish detergent, rice, soup, etc.) to use with group.

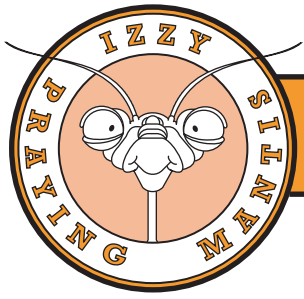
Option #2

Have participants examine boxes, bottles or cans of foodstuffs at home to determine what information is included. **Note:** These should be foodstuffs, NOT pesticides.

Activity

Introduction

1. Examine the containers. Pose the following questions:
 - a. What information do labels provide? (List responses on board/chart.)
 - b. Why should we read labels?



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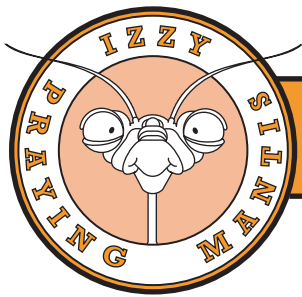
Activity

Introduction (continued)

- c. What is the difference between labels and labeling ? (Labels attract attention. Labeling is required by law to inform consumers of product ingredients, directions for use and safe disposal.) Use Handout 1 at this time. How does this affect price? (Depending on selection of option #1 or #2, discussion will be based on prior knowledge or examination of actual products.)
2. Write the word PESTICIDE on the board. Using background information, lead participants to the understanding that pesticides include a variety of products that are potentially harmful to living things and the environment.
3. Brainstorm what information they would expect to find on a pesticide container; record on the board.
4. Display Overhead 1 and compare to the group generated list.

Involvement

1. Distribute samples of pesticide labels to either individuals or cooperative groups.
2. Tell group that they are to become Pesticide Wise consumers.
3. Depending on time restrictions, either divide the group in fourths, or have each person / group find all the information on their label.
4. Using Overheads 3, 4, 5, and 6, participants seek to find relevant information on pesticide labels. **Note:** If each person / group is finding all the information, only the overhead currently under investigation should be shown.
5. By group or as individuals participants share their findings (what, where) orally.



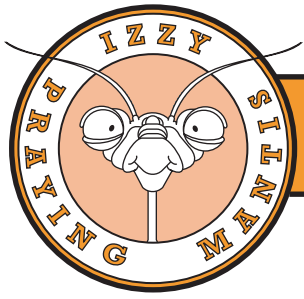
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Follow Up: Discussion

1. On the board, randomly write the signal words **Danger-Poison**, **Danger**, **Warning** and **Caution**. Discuss the differences among them and have students arrange them in order of toxicity.
2. Why does the EPA monitor labeling of pesticides?
3. Determine the difference among the precautionary statements:
 - * **Hazardous to humans and domestic animals**
 - * **Environmentally hazardous**
 - * **Physically or chemically hazardous**
4. Determine the difference between active and inert ingredients.
5. Discuss the consumer responsibility inferred by the statement, It is in violation of Federal law to use this product in a manner inconsistent with its labeling.
6. What factors should you consider when buying a pesticide? Brainstorm; list on board. (**Note:** The results of this activity should be copied and saved for the **Follow Through**.)

Answer Key to Follow Up

1. See #9 on Handout 1.
2. Pesticides pose potential dangers to humans, domestic animals and the environment. These negative side effects must be made public knowledge in order to protect public safety.
3. See #13 to #15 on Handout 1.
4. See #3 on Handout 1.



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Answer Key to Follow Up (continued)

5. Improper use of a pesticide makes the user liable to legal action if negative consequences result. It is important to read all instructions and warnings carefully. See #16 of Handout 1.
6. Consumers should consider effectiveness, cost (based on amount of product needed and number of applications needed), ease of application and potential negative effects to man and his environment when selecting a pesticide.

Follow Up Homework Assignment

Emerging Level: Using the label provided with Handout 2 (Pesticide Wise Checklist), identify and list important pieces of information on the label.

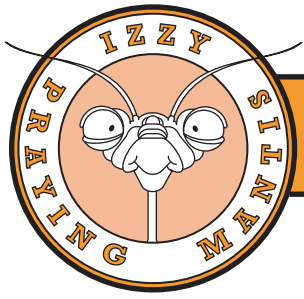
Mastery Level: Using the label provided, complete Handout 3 (Analysis of a Pesticide Label). Explain to participants that in general, they should be familiar with the entire label, but that certain parts of the label apply to activities before, during or after use.

Follow Through

Focus Areas: Consumer science, cooperative learning

Focus Skills: Comparison/contrast, evaluating information, reaching consensus, supporting an opinion

Time: 30 minutes



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Follow Through (continued)

1. Randomly distribute labels from different classes of pesticides (fungicides, herbicides (weed killers) and insecticides (insect repellents)) to individuals.
2. Group participants in triads who have labels for the same type of product (e.g., fungicides, herbicides, insecticides).
3. Using the group-generated list (See # 6 Follow Up), have members determine which product in the group is the safest product to use.
4. Have each group share their decision and reasons for their choice.

Assessment

Participants compare two pesticide labels from similar products in order to determine the best choice, and write a paragraph to defend their selection. (analysis, evaluation, drawing conclusions, defending an opinion)



Resources

Internet Websites for Additional Information/Activities

Pesticides: Learning About Labels

<http://www.ext.nodak.edu/extpubs/plantsci/pests/a1098w.htm>

California Environmental Protection Agency Department of Pesticide Regulation

<http://www.cdpr.ca.gov/docs/label/prodnam.htm>

University of Nebraska Lincoln Pesticide Education Resources.

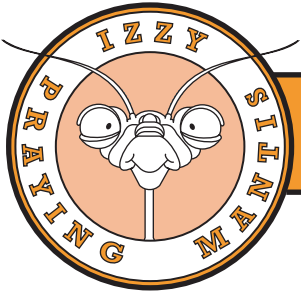
Links to Pesticide Labels

<http://pested.unl.edu/>

Washington State University

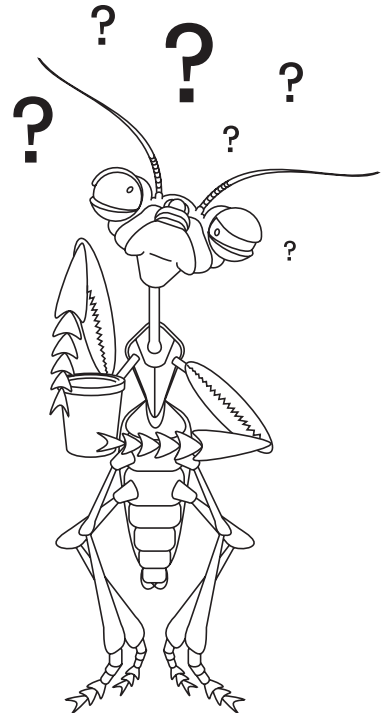
<http://pep.wsu.edu/factsheet/understanding.htm>

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Notes





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Handout 1

By law, certain kinds of information must appear on a pesticide label. Pesticide applicators have the legal responsibility to read, understand and follow the label directions. Pesticide labels will usually contain the following sections:

1. Product name

Every pesticide has a product name or a trade name. Examples of some product names include Deep Woods Off Insect Repellent[®], Black Flag[®] Ant & Roach Killer, Lysol[®] Brand Disinfectant Deodorizing Cleaner, Roundup[®] Herbicide, and Hi-lex[®] Bleach.

2. Type of pesticide

The label must indicate what type of pesticide the product is or what types of pests it will control.

3. Ingredient statement

Each pesticide label must include the active and inert ingredients in the product. The list is written to show what the active ingredients are and the amount of each ingredient listed. The ingredient statement must list the official chemical names and/or common names for the active ingredients. Inert ingredients need not be named, but the label must show what percent of the total contents they comprise.

Check the active ingredients when comparing pesticides. Many different pesticides will contain the same active ingredient. By purchasing pesticides according to the common or chemical name you will be sure you are getting the right active ingredient no matter what the trade name or formulation is. When comparing two different products with the same active ingredient, be sure to compare the amount of active ingredient in each product. Often products will contain the same active ingredient, but in different concentrations. Make comparisons based on use rates that contain the same amount of active ingredient.

4. Net contents

The net contents statement on the front panel of the pesticide label will tell you how much product is in the container.

5. Name and address of the manufacturer of the pesticide



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Handout 1

6. EPA registration number

The EPA registration number indicates that the pesticide has been registered by EPA and legally may be sold or applied according to label directions. The EPA registration is not a guarantee of safety in all situations. The EPA registration number usually has two numbers. The first number identifies the company and the second number identifies the product.

7. EPA establishment number

The EPA establishment number identifies the establishment or facility where the pesticide was manufactured. The first number indicates the company and the second the location.

8. Keep out of reach of children precaution

The keep out of reach of children warning statement is required to be on all pesticide containers. Many accidental poisonings and personal tragedies could be prevented by observing this precaution.

9. Signal word

The signal word indicates approximately how toxic the pesticide product is. Products that are highly toxic must display on the label the signal words **DANGER-POISON** along with a skull and crossbones symbol. Products that display only the signal word **DANGER** are corrosive and can cause irreversible eye damage or severe skin injury. Products that display the signal word **WARNING** are moderately toxic or can cause moderate eye or skin irritation. Products that display the signal word **CAUTION** are slightly toxic or may cause slight eye or skin irritation.

10. Statement of practical treatment

The statement of practical treatment lists the first aid treatment that should be administered to someone accidentally exposed to the pesticide.

11. Note to physicians

The note to physicians provides emergency medical personnel with poison treatment information, antidotes, and often provides an emergency phone number to contact for further information.



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Handout 1

12. Precautionary statements

Precautionary statements identify potential hazards and recommend ways that the risks can be minimized or avoided. Types of precautionary statements include Hazards to Humans and Domestic Animals, Environmental Hazards, and Physical or Chemical Hazards.

13. Hazards to humans and domestic animals

The signal word is listed, followed by statements indicating which route(s) of entry (mouth, skin, lungs, eyes) are most likely to be harmful and must be particularly protected against. The label will then provide specific actions that can prevent overexposure to the pesticide. Protective clothing and equipment required to handle or apply the pesticide will be listed under the heading Hazards to Humans and Domestic Animals.

14. Environmental hazards

The environmental hazards section of the label warns of pesticide risks to wildlife, birds, fish, bees or to the environment and provides practical ways to avoid harm to organisms or the environment.

15. Physical or chemical hazards

The physical or chemical hazards section of the label will tell you of any special fire, explosion, or chemical hazards the product may pose.



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Handout 1

16. Directions for use

The directions for use section of the pesticide label begins with the statement, It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Correct application of a pesticide product is accomplished by following the use instructions found on the label. The use instructions will tell you the pests which the manufacturer claims the product will control; the crop, animal or site the product is intended to protect; when, where, how, and in what form the product should be applied; the proper equipment to be used; the correct dosage; mixing directions; compatibility with other often-used products; minimum time between the application and reentry into the treated area for unprotected persons, and possible plant injury problems.

Labels for pesticides used on food plants will often list the days-to-harvest or preharvest interval (PHI), which is the minimum number of days between the last pesticide application and crop harvest. The pesticide is degraded during PHI so that pesticide residues, if present, will be at levels below tolerances established by EPA.

17. Storage and disposal

All pesticide labels contain general instructions for the appropriate storage and disposal of the pesticide and its container.



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Handout 2

Name _____

Pesticide Wise Checklist

Date _____

Examine the pesticide label. Does your label:

- _____ Show the product name?
- _____ Show the type of pesticide?
- _____ List the active and inert ingredients?
- _____ Show the net contents (how much product is in the container)?
- _____ List the name and address of the manufacturer of the pesticide?
- _____ Display the EPA registration number?
- _____ Show the EPA establishment number?
- _____ Have the precaution statement Keep out of reach of children ?
- _____ Show the signal word?
- _____ Show the statement of practical treatment?
- _____ Have the note to physicians?
- _____ Show the precautionary statements?
- _____ Show hazards to humans and domestic animals?
- _____ List any environmental hazards?
- _____ List any physical or chemical hazards?
- _____ Show directions for use?
- _____ Show storage and disposal instructions?



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Handout 3

Analysis of a Pesticide Label

Directions for Completion

Fold a piece of notebook paper in quarters and label as follows:

- A) Before Purchasing
- B) Before Preparing
- C) Before Applying
- D) Before Storing or Disposing

Use the sample label to complete 10 of the following 12 questions:

- * Find the information on the label.
- * Print the question number and information on the lines beneath the heading (A — D) that indicates **when the information applies and should be reread**.
- * If the information needs to be reread more than once, you may indicate its 2nd, 3rd or 4th placement by printing the question number only in the appropriate space.
- * If the information is extensive, you may summarize it.

Questions

1. What should be done with surplus quantities of this product?
2. What safety precautions must be taken when applying?
3. What should be done with an empty container of the product?
4. What pests will this product control?
5. How can potential dangers to plant and animal life be minimized?
6. What protective equipment is needed when handling this product?
7. Where can this product be used?
8. How much of the product is needed per application?
9. What are the restrictions regarding use of the product?
10. What are the restrictions for reentering the treated area?
11. How is the product prepared for use?
12. How is the product used?

Extra Credit

1. What is the signal word for this product?
2. Why should the smallest amount necessary for use of this product be purchased?



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Analysis of a Pesticide Label Answer Key

Directions for Completion

Fold a piece of notebook paper in quarters and label as follows:

- A) Before Purchasing
- B) Before Preparing
- C) Before Applying
- D) Before Storing or Disposing

Use the sample label to complete 10 of the following 12 questions:

- * Find the information on the label.
- * Print the question number and information on the lines beneath the heading (A — D) that indicates **when it the information applies and should be reread**.
- * If the information needs to be reread more than once, you may indicate its 2nd, 3rd or 4th placement by printing the question number only in the appropriate space.
- * If the information is extensive, you may summarize it.

Questions

1. What should be done with surplus quantities of this product? **D**
2. What safety precautions must be taken when applying? **C**
3. What should be done with an empty container of the product? **D**
4. What pests will this product control? **A, B**
5. How can potential dangers to plant and animal life be minimized? **C**
6. What protective equipment is needed when handling this product? **B, C**
7. Where can this product be used? **A, C**
8. How much of the product is needed per application? **A, B**
9. What are the restrictions regarding use of the product? **A, C**
10. What are the restrictions for reentering the treated area? **C**
11. How is the product prepared for use? **B**
12. How is the product used? **C**

Extra Credit

1. What is the signal word for this product? **Answers will vary**
2. Why should the smallest amount necessary for use of this product be purchased? **To eliminate the need for storage and potential risk reduction**



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Overhead 1

Pesticide Labels

The information on pesticide labels is carefully controlled. Labels must have certain information on them, in certain places. This information helps people use the pesticides safely and correctly.

Refer to the sample label as you read the explanation of a pesticide label:

Name - The name of the pesticide is placed in this block on the label. A short statement of what the pesticide is for may be included here.

Ingredients - Active ingredients are those which are actually poisonous. Inert ingredients are necessary for carrying the poison. This means that they give the pesticide the properties necessary to kill the pest. Inert ingredients may also cover or change the smell of the pesticide. By themselves, inert ingredients are not pesticides.

<p>PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS (& DOMESTIC ANIMALS) CAUTION</p> <p>-----</p> <p>-----</p> <p>ENVIRONMENTAL HAZARDS</p> <p>-----</p> <p>-----</p> <p>PHYSICAL OR CHEMICAL HAZARDS</p> <p>-----</p> <p>-----</p> <p>DIRECTIONS FOR USE GENERAL CLASSIFICATION</p> <p>It is a violation of Federal law to use this product in a manner inconsistent with its labeling</p> <p>RE - ENTRY STATEMENT (if applicable)</p> <p>-----</p> <p>STORAGE AND DISPOSAL STORAGE----- DISPOSAL-----</p> <p>CROP-----</p> <p>-----</p>	<div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <h2 style="margin: 0;">PRODUCT NAME</h2> </div> <table style="margin: 0 auto; border-collapse: collapse;"> <tr> <td style="padding: 2px 10px;">ACTIVE INGREDIENT</td> <td style="text-align: right; padding: 2px 10px;">%</td> </tr> <tr> <td style="padding: 2px 10px;">INERT INGREDIENTS</td> <td style="text-align: right; padding: 2px 10px;">%</td> </tr> <tr> <td style="padding: 2px 10px;">TOTAL</td> <td style="text-align: right; padding: 2px 10px;">100%</td> </tr> </table> <p style="margin: 10px 0 0 0;">THIS PRODUCT CONTAINS LBS OF PER GALLON</p> <div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p style="text-align: center; margin: 0;">KEEP OUT OF REACH OF CHILDREN</p> <h2 style="text-align: center; margin: 0;">CAUTION</h2> <p style="text-align: center; margin: 0;">STATEMENT OF MEDICAL TREATMENT</p> <p>IF SWALLOWED -----</p> <p>IF INHALED-----</p> <p>IF ON SKIN-----</p> <p>IF IN EYES-----</p> <p style="text-align: center; margin: 0;">SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS</p> </div> <p>MFG BY-----</p> <p>TOWN, STATE-----</p> <p>ESTABLISHMENT NUMBER-----</p> <p>EPA REGISTRATION NUMBER-----</p> <p style="margin-top: 10px;">NET CONTENTS-----</p>	ACTIVE INGREDIENT	%	INERT INGREDIENTS	%	TOTAL	100%	<p>CROP-----</p> <p>-----</p> <p>-----</p> <p>CROP-----</p> <p>-----</p> <p>-----</p> <p>CROP-----</p> <p>-----</p> <p>-----</p> <p>CROP-----</p> <p>-----</p> <p>-----</p> <p>CROP-----</p> <p>-----</p> <p>-----</p> <p>WARRANTY STATEMENT</p> <p>-----</p> <p>-----</p>
ACTIVE INGREDIENT	%							
INERT INGREDIENTS	%							
TOTAL	100%							



Unit 2 Section 2 Lesson 5: Pesticide Wise

Overhead 2

- * Pesticides provide many benefits and improve the quality of life when they are used carefully and properly. Pesticides can control, destroy or repel pests such as weeds, insects, rodents, birds, fungi, bacteria or other organisms that are unsightly or annoying, cause loss or damage, or may be harmful to health. Pesticides handled in a careless manner can endanger the health of the applicator, other people, animals, plants, or the environment.
- * The pesticide label provides valuable information about proper handling and use of the pesticide, potential risks the pesticide may pose, and instructions on how to minimize or avoid those risks. Every pesticide applicator has the responsibility to read and follow the label information so no harm will result from misuse or mishandling of pesticides.

The pesticide label should be read at several critical times to make sure the expected benefits are realized and harm is prevented.



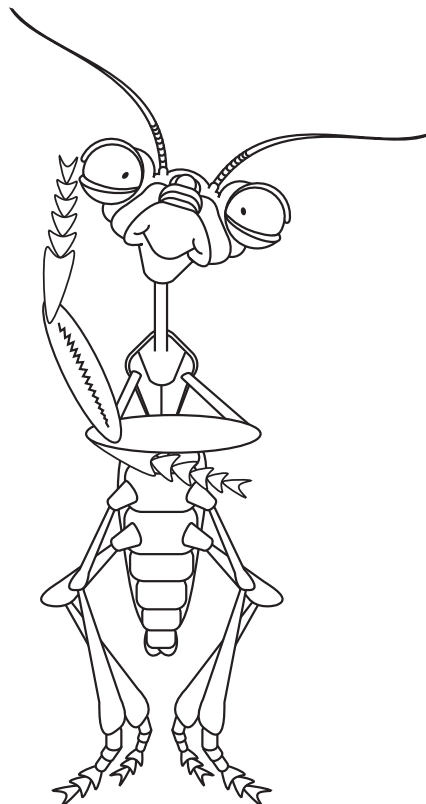
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Overhead 3

Izzy's Words to the Wise

Before you buy a pesticide, read the pesticide label to determine:

- * If the pesticide will control the pest or pests
- * If the pesticide can be applied safely and legally under the application conditions
- * Where the pesticide can and cannot be applied
- * Necessary application and safety equipment
- * The amount of pesticide needed for the application (buy only the amount needed)
- * Relevant restrictions for use of the pesticide





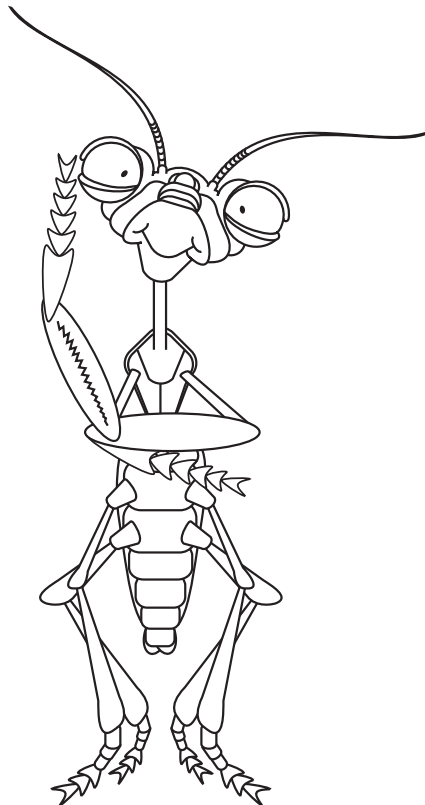
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Overhead 4

Izzy's Words to the Wise

Before you mix the pesticide, read the label to determine:

- * Protective equipment you should use
- * Compatibility of the pesticide with other products or additives
- * Amount of the pesticide to use
- * Mixing procedure





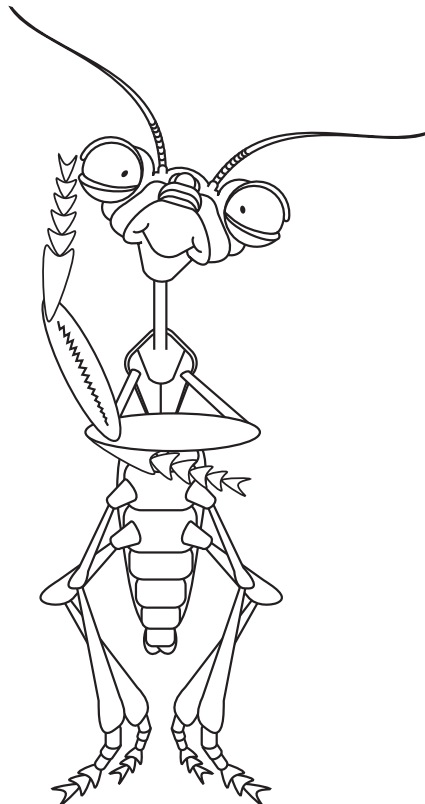
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Overhead 5

Izzy's Words to the Wise

Before you apply the pesticide, read the label to determine:

- * Safety measures you should follow
- * Procedures to follow to minimize potential harm to people, animals, plants or the environment
- * How to apply the pesticide
- * When to apply the pesticide (including the limitations about reentering a treated area and the minimum number of days that must elapse after the application before vegetables, fruits, or other crops can be harvested or when people or pets can walk on a lawn)





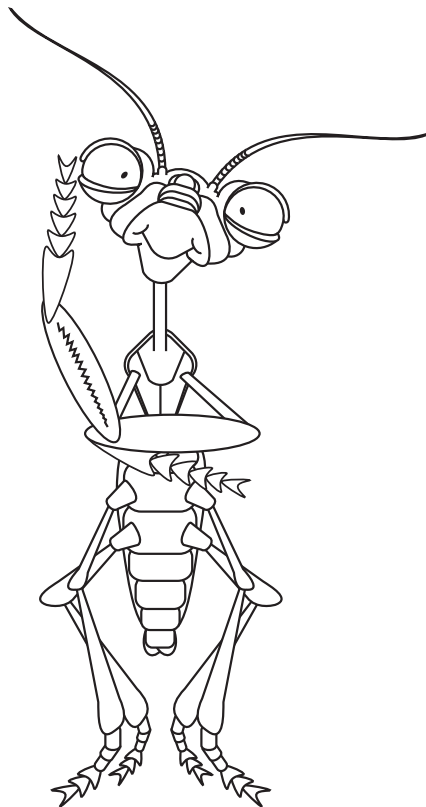
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Overhead 6

Izzy's Words to the Wise

Before you store or dispose of the pesticide or pesticide container, read the label to determine:

- * Where and how to store the pesticide
- * Pesticide label information
- * How to decontaminate and dispose of the pesticide container
- * Where and how to dispose of surplus pesticides





Unit 2 Section 2 Lesson 5: Pesticide Wise

Assessment for a Persuasive Piece

1. The position of the author is clearly stated in the introduction 10 pts _____
2. A minimum of 3 reasons for the author's position are stated 20 pts _____
3. Each reason is supported by relevant and accurate information 20 pts _____
4. The paper is well organized and flows naturally 10 pts _____
5. The conclusion includes a persuasive statement of the writer's position 10 pts _____
6. The conclusion includes a to do statement for the reader 10 pts _____
7. The writing is mechanically correct 10 pts _____
8. The paper is neat and presentable 10 pts _____

Total Points _____

Comments:

RESTRICTED USE PESTICIDE

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

Prescription Treatment® brand

DuraGuard™ ME

Microencapsulated Chlorpyrifos

Liquid Concentrate

ACTIVE INGREDIENTS:

Chlorpyrifos 20.0%

OTHER INGREDIENTS:

..... 80.0%

TOTAL: 100.0%

EPA Reg. No. 499-367 EPA Est. No. 499-MO-1

KEEP OUT OF REACH OF CHILDREN

CAUTION

See side panel for additional Precautionary Statements.

PRECAUTIONARY STATEMENTS

FIRST AID

This product contains an organophosphate.

IF SWALLOWED: Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger or blunt object. Do not induce vomiting or give anything by mouth to an unconscious person.

IF ON SKIN: Wash skin with plenty of soap and water. Get medical attention.

IF IN EYES: Wash thoroughly with water for at least 15 minutes. Call a physician if symptoms occur.

IF INHALED: Remove patient to fresh air. Apply artificial respiration if indicated.

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Harmful if inhaled or absorbed through skin. Avoid breathing spray mist. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Do not apply to humans, their clothing or bedding. Do not allow children or pets to contact treated surfaces until spray has dried. Do not contaminate food or use on household pets.

PERSONAL PROTECTIVE EQUIPMENT - Applicators and Other Handlers Must Wear: Long-sleeved shirt and long pants, Waterproof gloves, Shoes plus socks.

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.
- Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergents and hot water. Keep and wash PPE separately from other laundry.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to birds, fish and aquatic invertebrates. Birds feeding in treated areas may be killed. Clean up spilled product to reduce exposure to wildlife. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Runoff may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

PHYSICAL OR CHEMICAL HAZARDS

Do not spray where electrical short circuits might result, such as wall outlets, conduits, motors, switches, etc. Do not spray directly into any electronic equipment, such as radio, televisions, computers, telephones, etc.

DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

STORAGE AND DISPOSAL

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

STORAGE: Store in original container only, preferably in a locked storage area. Do not store in a manner where cross contamination with other pesticides, fertilizer, food or feed could occur. If spilled during storage or handling, soak up spillage with absorbent material and dispose of in accordance with Pesticide Disposal instructions listed below.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse container, then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.



WHITMIRE MICRO-GEN
RESEARCH LABORATORIES, INC.

NOTE: This specimen label is for informational purposes only. All uses may not be approved in all states. See labeling which accompanied product for Directions for Use or call 800-777-8570 for more information.



DuraGuard™ ME Microencapsulated Chlorpyrifos

AGRICULTURAL USE REQUIREMENTS

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.

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). 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 24 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: Coveralls, Waterproof gloves, and Shoes plus socks. 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.

MIXING INSTRUCTIONS

Thoroughly clean spray equipment before using DuraGuard™ ME. Shake concentrate well before diluting. When diluting, first add approximately one-half of the water to the spray tank and then add the proper amount of DuraGuard™ ME. When emptying the bottle, rinse thoroughly with water, shake well and add the rinsate to the spray tank. Add the rest of the water and agitate the sprayer thoroughly. Agitate sprayer occasionally during use to ensure even coverage. Shake or reagituate sprayer if spraying is interrupted or if dilution is left in sprayer overnight. If spray screens are used, they should be 50 mesh or larger.

HORTICULTURAL USE

Commercial Ornamental Greenhouses and Nurseries

KILLS: Ants, Aphids, Beetles, Caterpillars (Cabbage Worms, Rose Slugs, Hornworms), Cockroaches, Crickets, Cucumber Beetles, Flea Beetles, Firebrats, Flies, Fungus Gnats, Fungus Gnat Larvae, Gnats, Japanese Beetles, Leafhoppers, Leaf Miner, Mealybugs, Root Mealy Bugs, Root Weevils, Rose Aphids, Rose Chafer, Scale, Scorpions, Shore Flies, Spider Mites, Stink Bugs, Tarnished Plant Bugs, Thrips and Watermelon Beetles.

MIXING AND DILUTION INSTRUCTIONS

HEAVY INFESTATION: Use 0.5 fl. oz. DuraGuard™ ME per gallon of water. Spray upper and lower foliage surface of plants uniformly.

PREVENTATIVE AND MAINTENANCE: Use 0.25 fl. oz. DuraGuard™ ME per gallon of water. Spray upper and lower foliage surfaces of plants uniformly.

FOR CONTROL OF FUNGUS GNAT LARVAE AND SHORE FLY LARVAE: Apply at the rate of 0.25-0.5 fl. oz./gal. as a coarse spray to all insect infested surfaces or where insects may breed. Apply with adequate water to wet soil surface thoroughly. Apply when soil is moist but not saturated. Complete coverage of insect infested area is essential for control.

DRENCHING DIRECTIONS - For control of soil borne organisms such as, but not limited to, Root Mealy Bugs and Root Weevils: Mix at one of the above rates or at 0.125 fl. oz. per gallon depending on the organism to be controlled and the amount of finished spray used per pot. Apply approximately 0.5 to 2 fl. oz. of finished spray per inch diameter of pot. Use higher rate for lower volumes and lower concentration if greater volumes of finished spray are used. Apply when soil is drier, but do not stress plant.

SPECIAL NOTICE: This product has demonstrated excellent plant safety; however, all varieties of the plants listed have not been tested. When treating large numbers of plants of a single variety, spray a few plants and observe for phytotoxicity prior to full scale application.

FOR USE ON:

Bedding plants (including): impatiens, marigolds, petunias, geraniums, garden mums, verbena, New Guinea impatiens, and dahlia.

Cut flowers (including): roses, chrysanthemums, carnations, snapdragons, and orchids.

Flowering hanging baskets (including): fuchsia and lantana.

Foliage (including): Boston fern, dracaena, ficus, schefflera, and philodendron.

Potted flowering plants (including): poinsettia, chrysanthemums, florist's azaleas, lilies, African violets, geraniums, hibiscus, begonias, gloxinia, cyclamen, cineraria, calceolaria, and exacum.

Trees & shrubs (including): azalea, barberry, cotoneaster, euonymus, ilex, ivy, juniper, oak, pine, rhododendron, roses, spiraea, spruce, virburnum, and yew.

Direct spray to some open blooms may cause petal drop. Do not spray on kalanchoes.

PEST CONTROL OUTDOORS

KILLS: Ants, Boxelder Bugs, Carpenter Ants, Clover Mites, Cluster Flies, Cockroaches,

Crickets, Dermestids, Earwigs, Elmleaf Beetles, Fleas, Flies, Millipedes, Psocids, Silverfish, Sowbugs and Spiders.

GENERAL INFORMATION

DuraGuard™ ME is a flowable microencapsulated concentrate containing chlorpyrifos. DuraGuard™ ME may be sprayed on any surface which will not be damaged or stained by water. Heavy applications may leave a visible deposit. On some surfaces this deposit can be removed with a damp cloth or sponge. Dilute DuraGuard™ ME with water using the spray dilution chart.

SPRAY DILUTION CHART

Amount of Finished Spray	0.25% Spray	0.50% Spray
1 gallon	1.5 fl. oz.	3 fl. oz.
3 gallons	4.5 fl. oz.	9 fl. oz.
5 gallons	7.5 fl. oz.	15 fl. oz.
10 gallons	15 fl. oz.	30 fl. oz.

The higher rate should be used for clean-outs, for longer residual control or for high insect infestations.

DuraGuard™ ME can be used as a residual spray and/or as a crack, crevice and void treatment on outdoor surfaces of industrial plant sites and warehouses. Treat areas such as window frames, eaves, patios, refuse dumps and other areas where pests congregate or enter premises. Repeat treatment as necessary to maintain effectiveness. Use the 0.25% or 0.5% rate.

PERIMETER SPRAY: To help prevent infestations of buildings, treat a band of soil 6 to 10 feet wide around and adjacent to the building. Also treat the building foundation to a height of 2 to 3 feet and where pests are active and may find entrance. Treat other insect entry points around doors, windows, under siding and eaves of structure. DuraGuard™ ME may be applied in compressed air equipment or power spray equipment. Depending on type of equipment used to apply product and landscaping of perimeter, use 0.5 to 1.75 fl. oz. per 1,000 sq. ft.

FLIES: Spray outside surfaces of screens, doors and window frames or wherever these insects enter. Also treat surfaces around light fixtures, in garages, and other places where insects light or congregate. Treat normal fly resting areas on ceilings, upper corners of the area. Repeat as necessary. Spray inside and outside surfaces of dumpsters and other trash holding containers. Spray trash corrals and other trash storage areas. Spray so as to lightly moisten the target surface. For best results, begin treatments at the start of the fly season and repeat weekly during periods of heavy fly activity.

OUTDOOR ORNAMENTALS IN INDUSTRIAL PLANT SITES TO CONTROL ANTS, CRICKETS AND COCKROACHES: For treatment of localized infestations of these insects in outdoor areas which are landscaped, planted, mulched or unmaintained, spray infested areas thoroughly. For ants, thoroughly wet hills and runways. Repeat applications as infestations warrant and as reinfestations occur. Use 0.5 to 1.75 fl. oz. per 1,000 sq. ft.

A PRESCRIPTION TREATMENT® brand insecticide from:

Whitmire Micro-Gen Research Laboratories, Inc.
3568 Tree Court Industrial Blvd.
St. Louis MO 63122-6682

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NOTE: This specimen label is for informational purposes only. All uses may not be approved in all states. See labeling which accompanied product for Directions for Use or call 800-777-8570 for more information.

Prescription Treatment[®] brand Green-Shield

Disinfectant & Algicide

THIS PRODUCT IS A CONCENTRATE AND MUST BE DILUTED BEFORE USING

ACTIVE INGREDIENTS:

n-Alkyl (60%C14, 30%C16, 5%C12, 5%C18) dimethyl benzyl ammonium chloride 10%
n-Alkyl (68%C12, 32%C14) dimethyl ethylbenzyl ammonium chloride 10%

INERT INGREDIENTS:

80%

EPA Reg. No. 499-368 EPA Est. No. 499-MO-1

**KEEP OUT OF REACH OF CHILDREN
DANGER**

See side panel for additional precautionary statements.

DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

This product has been designed specifically for greenhouse and home use where cross contamination may occur. Pre-clean all surfaces prior to application of disinfectant solution. All inanimate surfaces must be thoroughly wetted and remain wet for 10 minutes for disinfection. Fresh solution should be prepared daily and when use solution becomes visibly dirty.

It will help to control fungal, bacterial and viral plant pathogens, bacterial and fungal leaf rots, slime forming fungi, odor-causing bacteria and algae.

FOR ORNAMENTAL HORTICULTURE

WORK AREA AND BENCHES: Spray or swab working surfaces before each work period. Again after each plant is completed, to help control transfer of such diseases as root rot, crown rot, botrytis, downy mildew. USE: 1 Tablespoon of this product concentrate to 1 gallon water.

POTS, FLATS AND FLOWER BUCKETS: Used pots and flats should be brushed or washed, then soak in this product solution for 10 minutes before using to help control transfer of such diseases as root and crown rots, anthracnose, mildew, rusts and blight. USE: 1 Tablespoon of this product per gallon water.

DISINFECTING CUTTING TOOLS: Soak cutting edge of tool for 10 minutes in this product solution before use to help control transfer of such diseases as stem and root rots, Tobacco Mosaic Virus (TMV) and botrytis. Use

wet tool on plants. At end of work, dry and oil tools. USE: 1 teaspoon of this product concentrate per quart of water.

ALGAE - Greenhouse Glass: Spray or swab surfaces with this product. Allow to air dry. Wash off dead algae with water. Spray clean surfaces again with this product solution. USE: 1 teaspoon of this product concentrate per gallon water.

ALGAE - Walkways: For heavy infestation, spray or swab. Let stand for an hour or more. Brush and wash away dead algae. Soak area again with this product. Do not rinse. This product will inhibit the growth of algae on walkways. Allow to dry on surface and repeat application when algae growth returns. USE: 1 Tablespoon of this product concentrate to 1 gallon water.

EVAPORATIVE COOLERS - Algae, Fungus, Odors: Controls algae, slime forming fungi on cooler pads and certain fungal plant pathogens that may carry over in the cooler, as well as bacterial odors. USE: 1 teaspoon of this product per 15 gallons water every other week.

ALGICIDE FOR DECORATIVE POOLS, FOUNTAINS AND WATER DISPLAYS

NOTE: Do not use when fish are present. It may cause fish to suffocate and die.

APPLICATIONS FOR DECORATIVE POOLS - Initial Dosage:

1 tsp. of this product per 52 gallons of water (5 ppm*).

1 oz. of this product per 312 gallons of water (5 ppm*).

1 pt. of this product per 5,000 gallons of water (5 ppm*).

1 qt. of this product per 10,000 gallons of water (5 ppm*).

* ppm - part per million active ingredients.

WEEKLY MAINTENANCE: You will observe that this product created a few extra bubbles. Each week add not more than one half (1/2) the initial dosage. Or, add slowly until the permissible bubble level is obtained. Apply by hand or automatic proportioner. NOTE: When pool is to remain empty for several weeks or longer, spray all exposed surfaces with solution (1 ounce per 2 gallons of water). This will control the growth of algae.

APPLICATIONS FOR FOUNTAINS AND WATER DISPLAYS - Initial Treatment: Fountain operating, put a few drops at a time in water until slight patches of foam appear. Overdose reduces lighting efficiency.

EACH WEEK: Add drops until slight foam reappears.

EACH MONTH: Drain and clean bowl. Refill with fresh water and repeat initial treatment. Draining removes airborne dirt, dust, contamination and alkali buildup.

SANITIZER: COMMERCIAL FOOD GRADE EGGS ONLY

To sanitize PREVIOUSLY CLEANED WHOLE FOOD GRADE EGG SHELLS (dirty, cracked or punctured eggs cannot be sanitized) in shell egg and egg processing plants intended for food or food products, spray with a solution of 1/2 ounce of product in 4 gallons of water (providing 200 ppm of active ingredient). The solution should be equal to or warmer than the eggs, but not to exceed 130° F. Wet eggs thoroughly and allow to drain. Eggs that have been sanitized with this product shall be subjected to a thorough potable water rinse only if they are to be immediately broken for use in the manufacture of egg products. Eggs should be reasonably dry before casing or breaking. The solution should not be reused for sanitizing eggs.

**SANITIZER:
FOOD CONTACT SURFACES ONLY**

For use in restaurants, dairies, and food processing plants. Remove all gross food particles and soil from areas which are to be sanitized with a routine pre-flush, pre-soak or pre-scrape treatment. Thoroughly pre-clean all surfaces with a detergent. Then rinse with a potable water prior to applying the sanitizing solution.

To sanitize pre-cleaned inanimate nonporous food contact surfaces, prepare a 200 ppm active solution by adding 1/2 ounce of this product to 4 gallons of water.

To sanitize immobile items such as counter tops, flood the area for at least 60 seconds, making sure to wet all surfaces completely. Remove, drain the use solution from the surface, and let air dry. Prepare a fresh solution daily or more frequently as soil is apparent.

To sanitize mobile items such as drinking glasses, eating utensils, immerse the item for at least 60 seconds, making sure to immerse completely. Remove, drain the use solution from the surface, and let air dry. Prepare a fresh solution daily or more frequently as is apparent.

GENERAL PURPOSE DISINFECTANT

For use in food processing plants, dairies, restaurants, animal quarters, poultry and turkey farms, kennels and other nonmedical institutions to disinfect pre-cleaned inanimate hard nonporous surfaces such as floors and walls. Remove all gross filth or heavy soil and thoroughly clean the surfaces prior to application of the disinfectant solution. Prepare a disinfecting solution of 1 3/4 ounce per 5 gallons of water and apply with a mop, cloth or mechanical sprayer so as to wet all surfaces thoroughly. Allow to remain wet for 10 minutes, then remove excess liquid. Prepare a fresh solution daily or when solution becomes diluted or soiled.

POULTRY HOUSE DISINFECTANT

- 1) Remove all poultry and feeds from premises, trucks, coops and crates.
- 2) Remove all litter and droppings from floors, walls and surfaces of facilities occupied or traversed by poultry.
- 3) Empty all troughs, racks, and other feeding and water appliances.
- 4) Thoroughly clean all surfaces with soap or detergent and rinse with water.
- 5) Saturate surfaces with the recommended disinfecting solution (1 3/4 ounce per 5 gallons of water) for a period of 10 minutes.
- 6) Ventilate buildings, coops and other closed spaces. Do not house poultry or employ equipment until treatment has absorbed, set or dried.
- 7) Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before reuse.

FARM PREMISE DISINFECTANT

- 1) Remove all animals and feed from premises, vehicles and enclosures.
- 2) Remove all litter and manure from floors, walls and surfaces of barns, stables, stalls, pens, chutes, kennels and other facilities and fixtures occupied or traversed by animals.
- 3) Empty all troughs, racks, and other feeding and watering appliances.
- 4) Thoroughly clean all surfaces with soap or detergent and rinse with water.
- 5) Saturate surfaces with the recommended disinfecting solution (1 3/4 ounce per 5 gallons of water) for a period of 10 minutes.
- 6) Immerse all halters, ropes, and other types of equipment used in handling and restraining animals, as well as forks, shovels, and scrapers used for removing litter and manure.
- 7) Ventilate buildings and other closed spaces. Do not house live-stock or employ equipment until treatment has absorbed, set or dried.
- 8) Thoroughly scrub treated feed racks, troughs, mangers, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before reuse.

PRECAUTIONARY STATEMENTS

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Flush eye with plenty of water for 15 minutes and call a physician.

IF SWALLOWED: Drink egg whites, gelatin solution or, if these are not available, drink large quantities of water. Call a physician.

IF ON SKIN: Flush skin with plenty of water for at least 15 minutes.

IF ON CLOTHING: Remove and wash all contaminated clothing before reuse.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

**HAZARDS TO HUMANS
AND DOMESTIC ANIMALS**

DANGER: Corrosive. Harmful or fatal if swallowed. Causes severe eye and skin damage. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Avoid contamination of food. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container.

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 incineration, or, if allowed by State and Local authorities, by burning. If burned stay out of smoke.

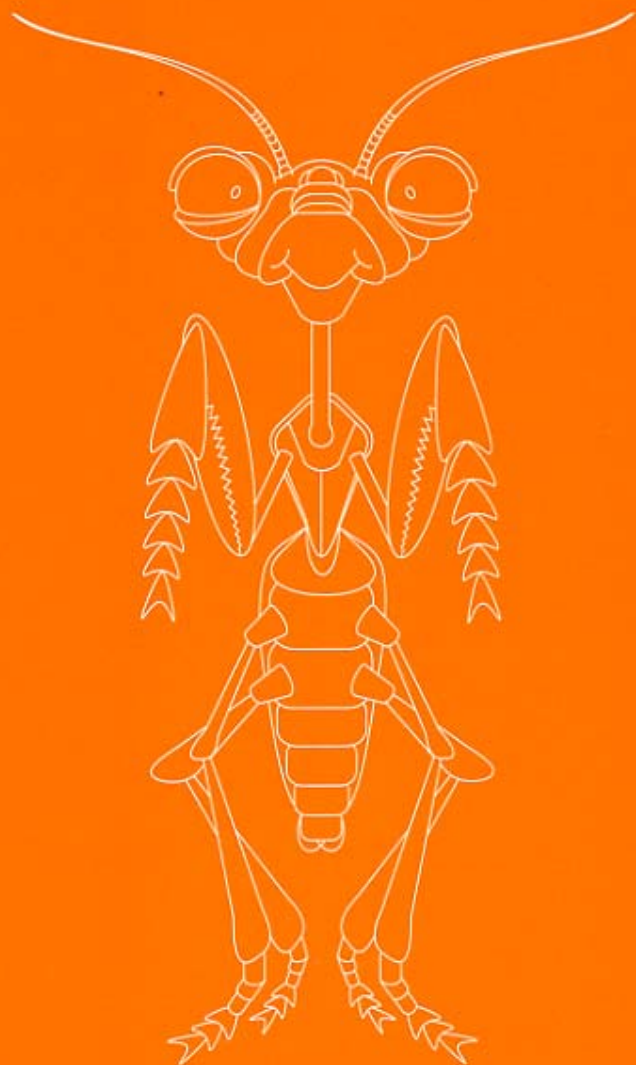
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Whitmire Micro-Gen Research Laboratories, Inc.
3568 Tree Court Industrial Blvd.
St. Louis MO 63122-6682
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Green-Shield® Disinfectant & Algicide



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