PROMOTOR **TRANSFERABLE TRAINING MODULES ON**

Pesticides

Dean Carter Binational Center for Environmental Health Sciences
National Institute of Environmental Health Sciences Superfund Research Program
The University of Arizona
1110 East South Campus Drive Tucson, Arizona 85721
Phone: 520.626.9049 Fax: 520.626.6782
E-Mail: dmoreno@email.arizona.edu
Websites: https://www.superfund.arizona.edu

Promotor Transferable Training Modules on Pesticides

Instructor's Guide

Statement by the Authors

Transferable Training Modules that are part of this series were supported by Superfund Grant P42 ES004940.

(Suggested citation: Baker, P. & Moreno Ramírez, D. (2013). Promotor Transferable Training Module on Pesticide. Retrieved from: https://www.superfund.arizona.edu/resources/modules-english/pesticides)

Table of Contents

Pesticide Module

Dr. Paul B. Baker
University of Arizona, Department of Entomology

Denise Moreno Ramírez, M.S.
University of Arizona, NIEHS Superfund Research Program Community Engagement Core

Pesticide – *Shoot Fly, Don't Bother Me!*

Module Summary

We have all used pesticides in and around our homes at least once. They are used to kill or decrease pest populations. Even though they target pests, we must be careful when using them since they can affect our health and the environment. *Promotores* will come to a greater understanding of the diverse types pesticides, associated health risks, and pest management alternatives.

Learning Objectives

- Understand the definition of a pesticide.
- Learn about the different types of pesticides.
- Acquire information about the risks associated with the use of pesticides.
- Familiarity with pesticide safe handling.
- Interpret pesticide labels and images.
- Define integrated pest management and other pesticide alternatives.

Pesticide Background

Pests are living organisms that are either harmful or a cause of concern to humans and their surrounding environment. Pests may also have a negative economic impact. They come in all shapes and sizes. For instance, they can range from insects (e.g. cockroach) to plants (e.g. dandelion) to mammals (e.g. rats) to fungus (e.g. mold). As a result of this diversity, there are different types of pesticides that target them such as **insecticides**, **herbicides**, **rodenticides,** and **fungicides**.

The term **pesticide** defines a chemical substance mixture of chemical substances used to prevent, eliminate, or repel pests. There are different types of pesticides with different uses. The general pest control categories include: 1) **chemical pesticides**, 2) **biopesticides**, and 3) **pest control devices** (Table 1).

Humans can be exposed to pesticides via: 1) ingestion, 2) skin contact, 3) eye contact, or 4) inhalation. The risks associated with pesticides and the effects to human health vary based on age and lifestyle as well as dose, duration, and toxicity of the substance. The US Environmental Protection Agency (US EPA) uses a four-step process to assess risk. This process consists of: 1) identification of the health affects from exposure (**hazard identification**), 2) dose of the pesticide and the effects that develop (**dose-response assessment**), 3) how the exposure occurred (**exposure assessment**), and 4) a combination of the last three steps to describe the overall risk (**risk characterization**).

Table 1 Pesticide categories with respective description.

Pesticide	Description
Chemical Pesticides	Chemically synthesized and related. The main families include: 1) **organochlorines** (DDT or Anofex®), 2) **organophosphates** (parathion or Blandan M®), 3) **pyrethroid** (allethrin an active ingredient in Raid®), and 4) **carbamates** (carbofurancarbofuram or Furadan®).
Biopesticides	Pesticides derived from animals, plants, bacteria, and minerals. They usually fall under three categories: 1) **microbial pesticides** (contain microorganisms), 2) **plant incorporated protectants** (toxic plant substance produced when genetic material is introduced), and 3) **biochemical pesticides** (natural substances).
Pest Control Devices	Instruments that are used to trap, kill, or repel pests. There are no chemicals associated (mousetrap).

Table 1. Pesticide categories with respective description.

People that are sick, the elderly, those with asthma and allergies, and young children can be especially sensitive to toxic substances. Chronic effects potentially caused by pesticides include: 1) damage to the nervous system, 2) development of cancer, 3) harm to the reproductive system, 4) changes in hormone function, 5) impairment of fertility, and 6) effects to the immune system.

The use of pesticides in the home can be risky and therefore caution should be taken. First and foremost, it is extremely important to follow the directions and precautions indicated on the label (Figure 1). Understanding this information increases safety and effectiveness. Look for such words as "*caution*" or "*warning*" that signify that the product can be toxic to humans or pets. Make sure that the pesticide that you are using is appropriate to kill the targeted pest. Keep the product in the original bottle since it contains important information such as first aid instructions, assistant phone number, and product handling instructions.

It is also extremely dangerous to place pesticides in food or beverage containers since those that are not aware may think that what is inside can be consumed. Puncture used pesticide containers in order to prevent reuse. It is also important to keep pesticide containers out of the reach of children and pets. Use locked cabinets, store out of reach, and make sure tamper proof caps are secure. Remember, the safety of a pesticide has to do with how you use and store it. In the U.S., approximately 87 people die per day as a result of unintentional pesticide poisoning, and another 2,277 per day are treated in emergency departments (Centers for Disease Control and Prevention, 2012).

Precautions should be taken when dappling pesticides inside and outside of the home. If it is being applied indoors, open windows to promote good ventilation. Always, wear gloves and eye protection to avoid exposure (especially on a windy day). It is also important to wear protective clothing. Remember, if a pesticide falls on the protective clothing, wash separately from your other clothes. Do not eat, chew gum, or smoke when applying pesticides or near a recently treated area. Keep children or pets away from any spills and promptly clean-up as indicated in the product instructions. Dispose of any rags or containers properly that have been used to clean up the spill.

Always apply only what you need. The product effectiveness might have an expiration date; therefore a larger size might not be a better value after all. If you have pesticide left over, you can pass them on to someone else who use them or dispose of them properly (e.g. designated hazardous waste drop off locations). Do not apply these products near rain or storm sewers so they do not enter drainages or waterways. Never pour pesticides down the household drain.

Figure 1. Basic pesticide label and general information that it may contain.

Within agriculture fields, pesticides are applied to large areas. Therefore, workers that apply pesticides and those living near agricultural fields are the most at risk to exposure of these substances. If you live adjacent to a field, make sure that you close the windows in your home when they are spraying or during a windy day. Dust and air that may enter your home may contain pesticides. Research studies suggest that the amount of pesticide dust found in the home is related to how close the home is to agriculture fields (Beamer, 2011).

If you or a family member works in agriculture fields, it is important to take certain steps to decrease exposure. Before leaving the work site, either shower or wash body parts that have been exposed to pesticides in addition to changing your clothes. Studies show that a likely pathway that introduces pesticides into the home is the family car (Beamer, 2011). Therefore, it is important to decontaminate at the work site before entering the vehicle. Lastly, be sure to practice safe handling of pesticides at work since it can decrease exposures at home.

Integrated pest management (IPM) is a management philosophy that combines various practices to minimize pests. It combines knowledge about the lifecycle and tendencies of pests, application of the proper pest control methods, and common sense prevention techniques. It has been applied both in and around the home as well as agricultural sites. It is considered effective and environmental friendly. This management approach may be more time consuming, but in the end it is safer and less costly. The following are the general steps (Table 2):

Table 2 Integrated pest management steps and actions.

Steps	Actions
Monitor and Identify	• Identify and monitor pests accurately. • Locate all areas where the pest has been seen and take samples for identification. • If you spot a pest, find out what it is by either looking up information online or consulting an expert (best way).
Action Threshold	• Once a pest is identified, establish an action threshold (level at which the pest population indicates that a solution or action must be taken). • Everyone will have a different action threshold, or in other words, the amount of pests that they can tolerate. • Information about the pest is important in order to develop a realistic action threshold.
Prevention	• Inspect both indoor and outdoor to prevent pests from becoming a problem. For example, properly caulk around windows and cover door gaps.
Control	• When a pest has been identified and the population considered a nuisance, the proper control method should be evaluated and applied. • It should be the most effective with the less risk to humans and pets.

Table 2. Integrated pest management steps and actions.

An important part of IPM is the prevention of pest infestation in the home and garden. There are precautionary steps that can be taken to decrease the likelihood of pest problems. The following are less harmful suggestions to prevent pests in your home (Table 3):

Table 3 Suggested actions on how to prevent pests.

Eliminate	Actions
Food Sources	• Store perishable food in the refrigerator. • Do not leave dirty dishes in the sink overnight. • Secure leftovers or food scraps in a sealed container. • Avoid keeping food scraps in the garbage inside your home. • Use a garbage bin with a lid inside and outside of your home. • Keep an eye on the expiration dates of flour or cereals. • If you leave your pet's dish with food, set it inside a bigger dish with water and a drop of dish soap. • Clean your pet's waste frequently. • Keep your kitchen clean from cooking grease and oil. • Mix crop types in garden or field (**mixed cropping**).
Water Sources	• Repair any leaking faucets or drips. • Keep an eye out for accumulation of water. • Frequently change your pet's water. • Dry or remove any water damaged or wet materials. • Do not let water standing too long in garden or fields.
Hiding Places	• Do not accumulate paper or paper products. • Repair any holes or crevices in and around your home. • Clean frequently areas where food or paper is stored; do not let dirt and debris accumulate. • Vegetation and shrubs should be trimmed at least one foot away from your home. • Bathe pets or animals frequently along with their bedding or mats. • Remove piles of old or diseased plant debris. • Sink and bath tub drains should be covered when not in use. • Check for any pests in boxes, packages, or luggage that you bring into your home.

Table 3. Suggested actions on how to prevent pests.

When it comes to gardening or agriculture, additional steps can be taken in order to decrease pest invasions than those already presented. It is important to properly care for flowers, trees, and vegetables. A healthy plant resists pests much better than a weak plant. Make sure you have healthy soil, which promotes healthy plants. Different types of crops should be planted in the garden, since a pest might prefer one type and cannot easily spread to others. Have a realistic goal when it comes to weeds. It is impossible to get rid of all weeds, so keep them to a minimum. Lastly, make sure that all water is drained in order to prevent plant disease as well as insect reproduction.

Pesticide alternatives can decrease exposure and are considered less toxic than conventional methods. When using pesticide alternatives around the home, it is important to identify where the pests are entering and the time of day they seem most active. The following chart summarizes some of the alternatives to common pesticides used around the home:

Table 4 Alternatives to pesticides.

Alternative	Pests	Suggested Use*
Glue Traps or Tapes	Cockroaches, scorpions, rodents, flies, and spiders	Place glue traps near entrances or where pests are frequently seen.
Traps	Cockroaches, flies, bees/wasps, rodents	Place traps near areas where pests are seen.
Beneficial Predators	Variety of pests	Ladybugs eat the larvae of aphids, mites, and white flies. Cats hunt and eat mice and other pests.
Canola Oil and Baking Soda	Fungi	One teaspoon of baking soda to 1/4 gallon of water, add 1/4 teaspoon of canola oil. Spray all over your plants.
Boric Acid	Cockroaches and ants	Apply directly to cracks, crevices, and behind appliances or furniture. Keep out of reach from children and pets (moderately toxic).
Citronella Oil	Insects	Candles, lamp oil, skin lotions, and sprays.
Soap and Water Solution	Insects	Mix water and soap solution and apply to plant or area were insects are found. Use soaps that are low in salts (e.g. potassium salts) or do not contain antibacterial chemicals.
Vacuuming	Insects	Vacuum various areas around the home. You can vacuum pests, nests, or eggs. Remember to dispose of the vacuum bag after use.
Neem Derivatives	Scabies, ticks, fleas, lice, and mites	Oil, infusion, or premade products.

Table 4. Alternatives to pesticides.

Additional Resources

Web Resources – More Information on Pesticides

The "background" section in this module was developed to provide basic knowledge on the theme. In other words, important components and ideas are only highlighted and summarized. The purpose of this section is threefold: 1) provide additional sources of information in order to deliver an alternative way of looking at a theme, 2) expand the general information provided in the "background" to facilitate better training preparation, 3) offer potential training handouts or supplemental material that can also assist training participants. The brevity of the "background" section encourages the

*Please follow the product instructions since these are only general use suggestions.

trainer to learning more outside of what is presented. The "background" section is a good jumping off point. Here are some suggested on-line resources that contain relative information, but please feel free to research others:

Table 5 Web Resources – More Information on Pesticides

Home, Pets, and Garden (English)	Pesticide Action Network – North America	www.panna.org/your-health/home-pets-garden
Pesticides (English/Spanish)	U.S. Environmental Protection Agency	www.epa.gov/pesticides/index.htm www.epa.gov/espanol/saludhispana/pesticidas.html
National Pesticide Information Center (English/Spanish)	Oregon State University and U.S. Environmental Protection Agency	http://npic.orst.edu/
Pesticides Nearby… But Staying Healthy Comic Book (English/Spanish)	Migrant Clinicians Network	www.migrantclinician.org/toolsource/resource/aunque-cercasano-pesticide-comic-book.html
A Little Bit of Poison…Will Kill You (English/Spanish)	Migrant Clinicians Network	www.migrantclinician.org/toolsource/resource/little-bit-poisonwill-it-kill-youpoco-veneno...no-mata-pesticide-education-manual-
Citizen's Guide to Pest Control and Pesticide Safety (English)	U.S. Environmental Protection Agency	www.epa.gov/oppfead1/Publications/Cit_Guide/citguide.pdf
Help! It's a Roach (English/Spanish)	U.S. Environmental Protection Agency	www.epa.gov/opp00001/kids/roaches/english/index.html
Pest Solutions (English)	Northwest Center for Alternatives to Pesticides	www.pesticide.org/solutions/home-and-garden-toolbox/pest-solutions/pest-solutions
What you need to know about… reading a pesticide label (English/Spanish)	Penn State Extension	http://pubs.cas.psu.edu/freepubs/pdfs/UO215.pdf http://pubs.cas.psu.edu/FreePubs/pdfs/uo226.pdf
What you need to know about… disposing of a pesticide (English/Spanish)	Penn State Extension	http://pubs.cas.psu.edu/freepubs/pdfs/UO214.pdf http://pubs.cas.psu.edu/FreePubs/pdfs/uo224.pdf

Try Pesticide Alternatives (English)	Maryland Department of Agriculture	http://www.mda.maryland.gov/pdf/tip1.pdf
What you need to know about… protecting yourself when using a pesticide (English/Spanish)	Penn State Extension	http://pubs.cas.psu.edu/FreePubs/pdfs/uo218.pdf http://pubs.cas.psu.edu/FreePubs/pdfs/uo227.pdf
Alternativas para Pesticidas (Spanish)	National Institute of Health	www.niehs.nih.gov/health/assets/docs_p_z/pesticide-alts-span.pdf
50 Ways to Treat Your Pesticide and Dress for Success: Personal Protective Equipment (English/Spanish)	Pesticide Environmental Stewardship Center for Integrated Pest Management	http://pesticidestewardship.org/Pages/Resources.aspx

Training Tools

Video Resources – More Information on Pesticides

This section provides video suggestions that may help in preparation for the training or can be utilized as a training tool to help trainees understand theme concepts. Some of the videos can also be used as visual demonstrations when you are not able to set-up real-life activities. Here are some suggested video resources that contain relative information, but please feel free to research others:

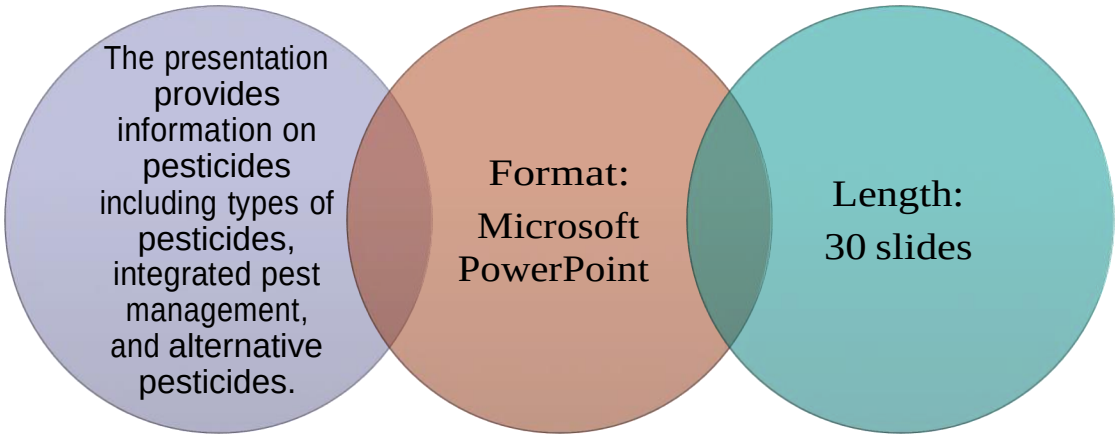
Table 6 Video Resources – More Information on Pesticides

Pesticides and Food Safety (English/Spanish)	U.S. Environmental Protection Agency	http://yosemite.epa.gov/opa/mmwebcon.nsf/HTML/KCHK-7QGLEF?OpenDocument http://yosemite.epa.gov/opa/mmwebcon.nsf/HTML/KCHK-7QWL6N?OpenDocument
Larry the Label (English)	United State Department of Agriculture	http://vtpp.ext.vt.edu/training/water-quality-for-commercial-applicators/view
Pesticidas PSA (Spanish)	Anthony Gettig	http://vimeo.com/5000678
Green Gardening	U.S. Environmental	www.youtube.com/watch?v=o0nN-MD0nj4&hd=1

(English)	Protection Agency	
Safe Handling of Pesticides (English/Spanish)	University of California	www.youtube.com/watch?v=1Yi4IRNSc0o&hd=1 www.youtube.com/watch?v=npRy4jk92Kw&hd=1
What is IPM? (English)	National Pest Management Association	http://www.youtube.com/watch?v=UZPeanRqW5s&hd=1
Plaguicidas y Etiquetas Definicion (Spanish)	ODEPA	http://vimeo.com/50565739
Understanding Pesticide Labels: From the Ground Up (English)	University of Wyoming	www.youtube.com/watch?v=nutmH74t_tM&hd=1
IPM: An Overview for the Consumer (English/Spanish)	University of California	www.youtube.com/watch?v=56qrZpN0-fU&hd=1 www.youtube.com/watch?v=ZXcqyO56eGs&hd=1

Visual Aids – PowerPoint Presentation

The PowerPoint presentation provided is a prepackaged visual aid that can be utilized to train *promotores* on the respective theme of the module. It is meant to be adaptable and should be modified according to the audience needs and knowledge base. The information in the presentation is similar to that in the "background" section of this module. Certain terms and/or ideas may not be in the "background" section, thus a separate glossary is provided in this section to assist in defining.



Concept Glossary

- Signal words and images are visual indications that provide information about the level of toxicity or how poisonous the pesticide may be. They are universal images that include caution, warning, and danger. Refer to the presentation for the images. If you would like more information you can look up the following resources: http://pesticidestewardship.org/homeowner/Pages/ReadingtheLabel.aspx
- Personal Protective Equipment --- is clothing and barriers worn to protect from contact with pesticides or pesticide residues. They usually include such items as protective suits, footwear, gloves, aprons, respirators, eyewear, and headgear. During pesticide application they reduce exposure by significantly reduce the chances of a pesticide poisoning.

Training Assessments and Extensions

- Review with the *promotores* the "Do's and Don'ts of Pesticides" PowerPoint presentation and engage them in a group discussion. Have them fill out the "What is the problem?" worksheet and discuss their observations as a group.
- Have them brainstorm the alternative pesticides that they have used in and around their home. Have them create a group list. Compare what they come up with to the chart in the module on page 51.
- Play the "Pesticide BINGO" developed by the US EPA Region 6 (to print a free online copy or order a professionally printed copy go to http://www.epa.gov/region6/6pd/bingo/index.htm).

Concept Activities

These complimentary activities were designed to provide a hands-on component to the module trainings. They may be used to demonstrate a concept to visual learners or reinforce ideas presented to ensure comprehension. The activities have been divided into three sections (warm up, activity, and wrap up) in order to guide *promotores* through the concept(s). Also, some activities have "cheat sheets" for the trainer or handout materials that can be copied and handed out to the *promotores* at the training. Similar to other components in these modules, they may be adapted as needed considering training time, knowledge base, or available materials.

Activity 1. Glittery Exposure†

Materials

- Glitter
- Hand lotion
- Bucket (sprinkle glitter on the bottom of the bucket)

Warm Up

Mention to the *promotores* that approximately 87 people die as a result of unintentional pesticide poisoning according to the Center for Disease Control. Tell them that research conducted has revealed that the hands are most likely to be exposed during pesticide application. As a result of this, the group will be observing this type of exposure through the activity.

Activity

1. Get the bottle of hand lotion and pass it around. Instruct the *promotores* to put lotion on their hands. Also, put some lotion on your hands.
2. Place the hand that you use to shake hands at the bottom of the bucket where the glitter is located.
3. Go up to a *promotor* at the front of the room and shake his/her hand.
4. Tell him/her to shake the hand of the *promotor* next to him/her.
5. Have them repeat this until all the *promotores* have had their hand shaken by someone.
6. Ask them to look at their hands. How many of them have glitter on their hands?
7. Let them know that the glitter represents a pesticide residue left on your hands since you did not use personal protection (gloves) nor did you wash your hands.
8. Let everyone wash his/her hands with water and soap to get the glitter off or alternatively you can use hand wipes.

†Modified activity from: "Glitter Germs" – A to Z Teacher Stuff (http://atozteacherstuff.com/pages/334.shtml)

Wrap Up

After they return, state to them that gloves can reduce 99% of exposure to pesticides when it comes to personal protection. It is considered an essential piece of personal protection. In addition, it is important to use chemical resistance glove and the best ones are synthetic (e.g. nitril and neoprene). Ask them what they thought of the demonstration. Are there any additional observations or comments?

Activity 2. And The Pesticide Labels Says…

Materials

- Pesticide Labels (copies of the labels for each *promotor*)
- Notepads
- Writing utensils

Warm Up

Ask the *promotores* how many of them read the label on a pesticide bottle before they use it? If some of them or all of them read the label, follow-up by asking them what information do they find on a pesticide label. If none of them read the label, ask them why don't they read the label?

Activity

1. Have them form pairs or small groups.
2. Pass out the notepads and writing utensils to each pair *promotores* or group.
3. Tell them that you will be handing out pesticide labels and you would like them to take a minute or two to study them.
4. Pass out the pesticide labels.
5. Now, have them answer the following questions:
    a. What is the pesticide intended to kill?
    b. What is the active ingredient?
    c. What are the first aid indications?

d. How should the pesticide be used or what are the product directions?
e. Are there any warning or caution statements?
f. How should the pesticide be disposed of after use?

6. Once they have jotted down their answers, have them share out loud to the group what they come up with. What additional information did they find on the label?

Wrap Up

Let them know that they should read pesticide labels before they buy a apply them. Remind them that protection of human health and the environment against the harmful effects of pesticide is based on: 1) registration of pesticides bought and sold with the US EPA, 2) pesticide labels must provide the user with safe handling information, and 3) pesticides must be used according to the indications on the label in order to achieve effective pest control.

Activity 3. What is the problem?

Materials

- What is the Problem? Worksheet (one copy per *promotor*)
- Computer (PowerPoint capability)
- Projector (connect the projector to the computer)
- PowerPoint slide presentation containing the Pesticide Scenario Pictures (load the slides on the computer)‡
- Writing utensils

Warm Up

Begin the activity by reminding the *promotores* that one of their mayor functions as community health workers is to educate. In addition, *promotores* provide invaluable advice that can help change behaviors when it comes to health choices. With this in mind, let the *promotores* know that they will be spotting "don'ts" in pesticide scenarios that will be shown on the PowerPoint slides.

‡ Preload the slides prior to the beginning of the activity. If you do not have access to a computer and projector, you can alternatively make copies of the slides and provide a set to each of the *promotores*.

Activity

Wrap Up

1. d out copies of the "What is the Problem?" worksheets to each of the *promotores* along with a writing utensil (ifneeded).
2. Display the pesticide scenario photos, either on the projector or as a handout, and have them fill out the "What is the Problem?" worksheet.
3. Provide the *promotores* enough time complete the worksheet.
4. After they are done, review as a group the problems that they observed and the potential corrections that they suggest.
5. Engage the *promotores* in a group discussion.

Conclude the activity by stating that many times their work involves going into people's homes or businesses in order to discuss diverse health themes. Also, they may have the opportunity to visit agriculture fields, local businesses, or industrial sites as part of their outreach work. With this, they have the potential to observe and recommend corrections that can help people make changes that can safe guard their health.

Supplemental Materials

What is the Problem? Worksheet

Photo No.	Potential Problem(s)	Proposed Correction(s)
# 1		
# 2		
# 3		
# 4		
# 5		
# 6		

Pesticide Label

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS & DOMESTIC ANIMALS

CAUTION: Harmful if swallowed. May cause irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.

ENVIRONMENTAL HAZARDS
Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark.

This pesticide is toxic to birds and fish. Wildlife feeding on treated bait may be killed. Do not contaminate water by cleaning equipment or disposal of waste Do not feed to livestock or poultry. Do not mix with grain for livestock or poultry feed.

DIRECTIONS FOR USE
It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

USE RESTRICTIONS
Do not apply to food or feed crops. Do not use where stored food or feed (such as grain or meat) might become contaminated.

Avitrol must not be exposed in any manner that may endanger desirable and protected bird species. If there is a question of such hazard, consult local, state and federal game authorities before undertaking bird management with Avitrol.

Investigate local laws that may prohibit the use of any toxic chemical in bird control.

Applicators shall wear gloves and use a scoop when mixing, applying and broadcasting this product.

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

Storage: Store only in original container in a cool, dry location inaccessible to children and pets. Store apart from food or animal feed and protect against rodent penetration of the carton. Store apart from other pesticides, fertilizers, food or feed that may cause cross- contamination of odor or insect infestation.

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: Fiber Drums with Liners: Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in sanitary landfill or by incineration if allowed by State and local authorities. If drum is contaminated and cannot be reused, dispose of in the same manner.

RESTRICTED USE PESTICIDE
DUE TO ACUTE AVIAN TOXICITY
For 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.

Avitrol®

MIXED GRAINS

Active Ingredient: 4-Aminopyridine	0.5%
Inert Ingredients:	99.5%
Total	100.0%

Avitrol is a poison with flock alarming properties used for the control of Pigeons, House Sparrows, Red-Winged, Yellow-Headed, Brewer's and Rusty Blackbirds, Grackles, Cowbirds and Starlings in, on or in the area of structures, nesting, feeding, loafing and roosting sites, in such a way that a part of the flock may react and frighten the rest away. Birds that react and alarm a flock usually die.

NOT FOR USE IN NEW YORK STATE WITHOUT NEW YORK STATE TECHNICAL BULLETIN, AVITROL #2 FOR AVITROL MIXED GRAINS.

KEEP OUT OF REACH OF CHILDREN
CAUTION

FIRST AID

Have label with you when obtaining treatment advice.

If swallowed	- Call a poison control center, doctor or 1-800-424-9300 immediately for treatment advice. - Have person sip a glass of water if able to swallow. - Do not induce vomiting unless told to do so by the poison control center or doctor.
In Eyes	- Hold eye open and rinse slowly and gently with water for 15-20 minutes. - Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. - Call a poison control center, doctor or 1-800-424-9300 immediately for treatment advice.

Manufactured By
AVITROL CORPORATION
7644 East 46th Street
Tulsa, Oklahoma 74145-6370
(918) 622-7763 * (800) 633-5069
EPA Reg. No. 11649-4
EPA est. 11649-OK-1

SPECIMEN LABEL

PREBAITING DIRECTIONS
This product must not be applied where non-target birds are feeding. Careful observations of the birds' feeding habits must therefore be made to establish proper feeding locations and to determine that no non-target birds are feeding on the prebait. Prebaiting with untreated grains of the same composition as the Avitrol carrier is usually essential to the effective deterrence of birds with Avitrol. The target species are primarily ground feeders and should be prebaited on the ground when possible. Pigeons will feed from roof tops as well as from the ground. Inside structures, prebaiting may be performed on elevated flat surfaces, perching and loafing areas and ledges. Bait trays may be used but feeding acceptance will normally require more time.

DILUTION DIRECTIONS
Avitrol treated grain should be thoroughly mixed with untreated grain of the same composition as the Avitrol carrier at the dilution ratios indicated below. For the control of Pigeons, Blackbirds, Grackles, Starlings and Cowbirds with Avitrol, no dilution ratio less than one part treated to nine parts untreated is recommended. House Sparrows, however, usually operate within limited areas, with feeding and nesting sites relatively close to one another. Thus, while ratios of one part treated to nine (or more) untreated parts have given good control in many instances, particularly stubborn cases may require a ratio of one part treated to five parts untreated. Greater numbers of birds may be killed, however, as toxic bait is made less dilute.

BAITING DIRECTIONS
To obtain minimal mortality, the distribution of Avitrol should be limited to scattered spot placements that will provide feeding opportunities only for the necessary number of target birds. After the birds' feeding pattern has been established through prebaiting, replace untreated bait with diluted treated bait only at sites where the target birds are actively feeding. Do not apply treated bait to inactive feeding sites. Where uneaten bait may be a hazard to other birds or animals, it should be picked up at the end of each day. Pick up and dispose of dead birds by burial. This product must not be applied where nontarget bird species are feeding. During the first few days, baiting with Avitrol may require successive applications until control is obtained. Note that retreatment may also be necessary after rainfall.

Notice: Buyer and/or user assumes all risks of use and/or handling of these materials contrary to label instructions.

6/15/2005

Pesticide Label

ECO Exempt™ D

DUST INSECTICIDE

With
HEXA-HYDROXYL®

Active Ingredient: *From Plant Essential Oils*

2-Phenethyl Propionate 4.50%
Eugenol (Clove Oil) 1.75%
OTHER INGREDIENTS: (Detailed on Back).. 93.75%
100.00%

Hexa-Hydroxyl® is a blend of plant oils proven to kill and control a broad spectrum of insects

Kills:
Ants, centipedes, cockroaches, crickets, earwigs, firebrats/silverfish, fleas, millipedes, sowbugs/pillbugs, scorpions, spiders, and other indoor pests. Wasps, nuisance bees, yellow jackets and other stinging insects.

- ***Residual Protection****
- Quick Control
- Residual Protection
- Non-Staining & Non-Corrosive
- Non-Clumping
- Ideal for IPM Programs

Botanical Scent

KEEP ALL INSECTICIDES OUT OF THE REACH OF CHILDREN

NET CONTENTS: 12 OZ.

ECO EXEMPT™ D
DUST INSECTICIDE

For use in and around Residential, Commercial and Institutional Establishments, and Transportation Equipment (Aircraft*, Buses, Trucks, Trailers, Boats, Ships, and Trains.) Excellent for use in sensitive facilities (i.e. schools, government buildings, etc.)

** Do not use in occupied aircraft cabin.*

This product has not been registered by the US EPA. EcoSMART Technologies Inc. represents that this product qualifies for exemption from registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

DIRECTIONS FOR USE:

READ ENTIRE LABEL. USE IN ACCORDANCE WITH LABEL INSTRUCTIONS.

Eco EXEMPT™ D applications may be made using its own container, a hand-held or power duster is also appropriate.

SHAKE WELL BEFORE USING.

For Crack/Crevice and Void Treatments: Apply uniformly in and around areas where insects may be crawling, hiding or living. The amount to be applied will vary depending on the severity of the problem and the site treated, but should be in the range of 1 to 2 ounces per 100 square feet of surface area. Applications should include, but are not limited to, cracks/crevices and void areas around and behind interior and exterior walls, cabinets, baseboards, moldings, pipe openings, electrical outlets, stairs, window and door frames and appliances. Repeat as necessary.

For Broadcast Treatments (Attics, Crawl Spaces, False Ceilings, etc.): Apply uniformly around the perimeter and in and around areas where insects may be hiding or living. Apply at a rate of 12 to 16 ounces per 1000 square feet of surface area, depending on the severity of the problem. Repeat as necessary.

For Wasps, Yellow Jackets and Other Stinging Insects: It is advisable to treat wasp and yellow jacket nests in the evening when insects are less active and have returned to the nest. Wear protective clothing if necessary to avoid stings. Use a hand or power duster with extension tubes if necessary. Thoroughly dust nest, entrance and surrounding areas. For nests in wall voids, drill a hole in the area of the nest, apply dust, and reseal. For best results, check nests one or two days after treatment to ensure complete kill. Remove and destroy nest to prevent emergence of newly-hatched insects. If removal is not possible, retreat the nest if necessary.

For Product Information: Call 1-888-326-7233 weekdays, 9:00 a.m. to 5:00 p.m. CST.

For Chemical Safety Information: Call 1-800-535-5053 anytime (InfoTrac Chemical Response System)

Storage & Disposal: Store only in original container in a cool, dry place inaccessible to children and pets. Bottle/pails: Discard in trash collector.

Statement of First Aid: Avoid contact with eyes. IF IN EYES: Wash with plenty of water.

Limitation of Liability: EcoSMART Technologies, Inc. makes no warranties of merchantability, or of fitness for a particular purpose, nor any other express or implied warranty except as stated above.

Other Ingredients: Attapulgite, Sodium Bicarbonate, Calcium Carbonate, Soybean Oil, Wintergreen Oil

www.ecopco.com

318 Seaboard Lane, Suite 202
Franklin, TN 37067

Made in USA
U.S. Patent No. 5,459,690 / 5,893,344 / 6,004,569
U.S. and Foreign Pat. Pending
CODE PCD61122 (USA)

** Residual Protection is a combination of Knockdown, Kill and Repellency*

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

READ THIS LABEL: Read this entire label and follow all use directions and use precautions.

IMPORTANT: Do not expose children, pets, or other nontarget animals to rodenticides. To help prevent accidents:

1. Store product not in use in a location out of reach of children and pets.
2. Apply bait used to control rats and mice in locations out of reach of children, pets, domestic animals and nontarget wildlife, or in tamper-resistant bait stations. These stations must be resistant to destruction by dogs and by children under six years of age, and must be used in a manner that prevents such children from reaching into bait compartments and obtaining bait. If bait can be shaken from bait stations when they are lifted, units must be secured or otherwise immobilized. Even stronger bait stations are needed in areas open to hoofed livestock, raccoons, bears, other potentially destructive animals, or in areas prone to vandalism.
3. Apply bait used to control pocket gophers directly into their underground tunnels.
4. Dispose of product container, and unused, spoiled, and unconsumed bait as specified on this label.

RATS AND MICE

USE RESTRICTIONS: Use against the Norway rat, Roof rat and the House mouse in and around homes, industrial, agricultural and commercial buildings, and similar man-made structures. Do not place in areas where there is a possibility of contaminating food or surfaces that come in direct contact with food. When used in USDA-inspected facilities, this product must be applied in tamper-resistant bait stations.

SELECTION OF TREATMENT AREAS: After removing as much food, water and harborage as possible, determine dry, acid-free areas where rats and mice will most likely find and consume the bait. Generally these areas are along walls, by gnawed openings, in or beside burrows, in corners and concealed places, between floors and walls, or in locations where rats and mice or their signs have been observed.

APPLICATION DIRECTIONS FOR RATS: Apply 1 to 2 teaspoon amounts of bait per placement. For outdoor use, place bait in active rat burrows or tamper-resistant bait stations. Maintain an uninterrupted supply of fresh bait until all signs of feeding have stopped. Do not treat the same area at less than 30 day intervals.

APPLICATION DIRECTIONS FOR MICE: Apply 1 teaspoon of bait per placement at 8 to 12 foot intervals. For outdoor use, place bait in tamper-resistant bait stations. Maintain an uninterrupted supply of fresh bait until all signs of feeding have stopped. Do not treat the same area at less than 30 day intervals. Collect and dispose of all dead animals and excess bait properly.

ZP®

Rodent Bait

KILLS RATS, MICE AND GOPHERS

ACTIVE INGREDIENT:
Zinc Phosphide (CAS #1314-84-7) 2%
INERT INGREDIENTS:..... 98%
TOTAL 100%

KEEP OUT OF REACH OF CHILDREN
CAUTION

FIRST AID

Have label with you when obtaining treatment advice, including 1-877-854-2494.

Any persons applying zinc phosphide products and experiencing signs and symptoms such as nausea, abdominal pain, tightness in the chest, or weakness, should be seen by a physician immediately.

If swallowed	• Call a poison control center or doctor immediately for treatment advice or transport the patient to the nearest hospital. • Do not drink water. • Do not administer anything by mouth or induce vomiting unless told to do so by the poison control center or doctor.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 – 20 minutes. • Call a poison control center or doctor immediately for treatment advise.
If inhaled	• Move person to fresh air. • If person is not breathing, call an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor immediately for treatment advise.
If in eyes	• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, ir present, after the first 15 minutes, then continue rinsing eye. • Call a poison control center or doctor immediately for treatment advise.

NET WEIGHT: 12 lbs. (5.4 kg)

Manufactured by:

Bell Laboratories, Inc.
Madison, WI 53704 U.S.A.

EPA REG. NO. 12455-18 EPA EST. NO. 12455-WI-1

DIRECTIONS FOR USE (Continued from other panel)
APPLICATION DIRECTIONS (Continued from other panel)

POCKET GOPHERS

USE RESTRICTIONS: Use against pocket gophers in rangeland and cropland (grain fields, forage crops, hay and alfalfa crops and vegetable crops). May also be used in forest areas, parks, nurseries, lawns, golf courses, around homes, and other noncrop areas. Only apply the bait underground. Collect and bury all dead animals found above the ground.

APPLICATION DIRECTIONS FOR POCKET GOPHERS: Use one of the following baiting methods for controlling pocket gophers.

PLUG REMOVAL BAITING: Burrowing pocket gophers (Thomomys spp. and Geomys spp.) throw out low, fan shaped mounds on either side of their underground tunnel. These lateral tunnels coming to the surface are on the flat side of the fan and are plugged with soil. Using a long-handled spoon, carefully remove the plug. Insert one teaspoon of bait as far down as possible. Reclose opening, being careful not to cover bait with soil.

MAIN RUNWAY BAITING: To locate main runways, probe about 6 to 8 inches away from mounds by use of an iron bar, a strong stick, or other suitable implement. Resistance on probe will drop suddenly and probe will fall about two inches when main runway is entered. Carefully enlarge the opening to accommodate insertion of the bait. Insert one teaspoon of bait into each active tunnel. Carefully close the hole with a stone, sod, or soil. Take care not to cover bait with soil.

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

Keep away from humans, domestic animals and pets. Harmful if swallowed, absorbed through the skin, inhaled, or in eyes. Do not breathe dust. If the bait is handled, wear gloves. Wash hands thoroughly after applying bait and before eating, drinking, chewing gum, using tobacco or using the toilet. Avoid contamination of feed or foodstuffs. Avoid contact with acids. Wash all utensils, spoons, or measuring devices thoroughly after using.

ENVIRONMENTAL HAZARDS

This product is toxic to fish, birds and other wildlife. Do not apply this product directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark.

STORAGE AND DISPOSAL

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

STORAGE: Store only in original container in a cool, dry place inaccessible to children and pets. Keep containers closed and away from other chemicals.

DISPOSAL: **If empty:** do not reuse this container. Place in trash or offer for recycling if available. **If partially filled:** Place in trash or call your local solid waste agency for disposal instructions. Never place unused product down any indoor or outdoor drain.

WARRANTY: Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk of use and/or handling of this material when such use and/or handling is contrary to label instructions.

101504

Pesticide Label

Prescription Treatment® brand

ADVANCE®

Granular Ant Bait Formula 1

KILLS ANTS:
Including many common varieties of household ants such as Acrobat, Argentine, Bigheaded, Carpenter, Crazy, Field, Fire, Harvester, Little Black, Pavement, Pharaoh, Odorous House and Thief Ants.

FOR USE IN AND AROUND:
Homes, Residential Areas, Commercial and Other Structures, Non Food/Feed Areas of Commercial Buildings, Warehouses, Hotels, Food Storage Areas, Inedible Product Areas of Meat Packing Plants, Motels, Schools, Supermarkets, and Non-Occupied Patient Areas of Hospitals and Nursing Homes, Golf Courses, Parks, Lawns and Turf.

ACTIVE INGREDIENT:

Abamectin* B_1	0.011%
OTHER INGREDIENTS:	99.989%
	TOTAL: 100.000%

*U.S. Patent 4,310,519

EPA Reg. No. 499-370
KEEP OUT OF REACH OF CHILDREN
CAUTION

FIRST AID

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.

Have product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-225-3320 for emergency medical treatment information.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Harmful if swallowed or absorbed through the skin. Avoid breathing dust. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Do not contaminate kitchen utensils with this product. Pets may be attracted to this product.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and wildlife. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

DIRECTIONS FOR USE

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

Advance Granular Ant Bait is a ready-to-use product for use in controlling numerous ants both indoors and outdoors. This bait formulation combines a mixture of foods and the delayed action insecticide, abamectin. This insecticide acts to reduce the population of worker ants and can cause an immediate halt in egg production resulting in colony elimination. Avoid use of other insecticides or sprays on or near Advance.

OUTDOORS

BROADCAST APPLICATION: Use this product at a rate of 8 oz. per 1/2 acre. This is equivalent to approximately 1.8 oz. per 5,000 sq. ft., or 0.4 oz. per 1,000 sq. ft. (One Tablespoon equals approximately 0.3 oz. of bait.) Apply the product as uniformly as possible. Repeat application as necessary.

AROUND STRUCTURES: Lightly sprinkle the product evenly in a band approximately 1-2 feet wide around the foundation of the building. Treat visible trails with approximately 0.3 to 1 ounce of product depending on the number of ants in the trail. Repeat application as necessary.

INDIVIDUAL COLONY TREATMENT: Use 1.5 to 2.1 oz. of product per mound. Apply product at the edge of the mound. Repeat application as necessary.

INDOORS

LOCATE ANT ACTIVITY: Follow ants back to voids. Apply product to cracks and crevices or voids where ants are active. In heavily traveled sites, use up to 1.5 ounces of product. Use a large Centrobulb* puffer or other appropriate application device to place the product into crevices or voids. Repeat application as necessary. Do not use in the food/feed areas of food/feed handling establishments, restaurants or other areas where food is commercially prepared or processed. Do not use in serving areas while food is exposed or facility is in operation. Serving areas are defined as those areas where prepared foods are served such as dining rooms but excluding areas where foods may be prepared or held. Non-food areas are defined as areas such as garbage rooms, lavatories, floor drains (to sewers), entries and vestibules, offices, locker rooms, machine rooms, boiler rooms, garages, mop closets and storage (after canning or bottling). When applying this product in the home, all food processing surfaces and utensils should be covered during treatment or thoroughly washed before use. Exposed food should be covered or removed.

*Centrobulb - Registered trademark of the Centro Co.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal. Consult federal, state or local disposal authorities for approved alternative procedures.

STORAGE: Store in a cool, secure, dry place.

CONTAINER DISPOSAL: Empty container by using the product according to the label directions. Do not reuse! Place empty container or bag in trash or offer for recycling if available. If container or bag is partly filled, call your local solid waste agency or call 1-800-CLEANUP for disposal instructions. NEVER PLACE UNUSED PRODUCT DOWN ANY INDOOR OR OUTDOOR DRAIN!

A Prescription Treatment® brand insecticide from:
Whitmire Micro-Gen Research Laboratories, Inc.
3568 Tree Court Industrial Blvd.
St. Louis MO 63122-6682
www.wmmg.com

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. **For automatic specimen label updates, register at www.wmmg.com.**

060329-73 (Rev. 3/06)

Glossary

Biochemical pesticide: a pesticide substance that is naturally derived.

Biopesticides: pesticides derived from animals, plants, bacteria, and minerals.

Carbamates: organic pesticide compounds derived from carbamic acid.

Chemical pesticides: pesticides that are chemically synthesized.

Dose-response assessment: determine the dose of the substance and the effects that develop.

Exposure Assessment: determine how the exposure occurred.

Fungicides: chemical pesticide used to kill or inhibit fungi or fungal spores.

Hazard identification: identification of the health affects from exposure.

Herbicides: chemical pesticide used to kill unwanted plants.

Insecticides: chemical pesticide used to kill insects.

Integrated pest management (IPM): management philosophy that combines knowledge about the lifecycle and tendencies of pests, application of the proper pest control methods, and common sense prevention techniques.

Microbial pesticide: pesticide that contains microorganisms that are used to kill pests.

Mixed cropping: agricultural system that grows two or more crops in the same area instead of just one crop.

Organochlorines: organic pesticide compounds that contain chlorine.

Organophosphates: organic pesticide compounds that contain phosphate.

Pests: living organisms that are either harmful or a cause of concern to humans and their surrounding environment.

Pest control devices: instruments that are used to trap, kill, or repel pests. There are no chemicals associated.

Pesticide: defines a chemical substance mixture of chemical substances used to prevent, eliminate, or repel pests.

Plant incorporated protectants: pesticides that produce toxic plant substances when a specific type of genetic material is introduced.

Risk characterization: step that combines hazardous identification, dose-response assessment, and exposure assessment.

Rodenticides: chemical pesticide used to kill rodents or small mammals.

Bibliography

Beamer, P.I. (2011). Pesticide Exposure of Farmworkers' Children Agricultural and Biological Sciences. In M. Stoytcheva (Eds.), *Pesticides in the Modern World – Effects of Pesticides Exposure*, (pp. 79-100). doi: 10.5772/943.

Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS). (2012) [cited 2012 Feb 1]. CDC http://www.cdc.gov/homeandrecreationalsafety/poisoning/poisoning-factsheet.htm